APPENDIX SI: Questions Delphi round 1a/b

Delphi Round 1a

GENERAL INFORMATION

1. Email address
2. Name
3. Work Setting
4. Profession/discipline
5. Years of experience

Please select from which background you will answer the questions below:

- ☐ Clinical practice
- ☐ Research
- ☐ Clinical practice AND research
- ☐ Other …..

Theme 1: Defining the population

Our scoping review has found only small study populations with substantial variety in patient characteristics. Therefore it remains unclear which children could benefit (the most) from physical rehabilitation interventions in the subacute rehabilitation phase. In the knowledge that there is no global definition of 'subacute rehabilitation phase', we define subacute rehabilitation phase as the phase directly after acute or immediate treatment phase in hospital, when the patient is admitted to an inpatient or outpatient rehabilitation programme.

The following 5 questions have the aim to generate ideas about the relation between patient-characteristics and physical rehabilitation during the subacute phase.

We would like to encourage you by substantiate your answers and reactions with references from the literature when possible.

1. Please provide a short description of the patient population (clinical and personal characteristics) in which you have expertise in your daily work setting.

In the following three questions, we aim to define patient-related variables, categorized by the ICF-CY, which have impact on the content of physical rehabilitation interventions in the subacute phase. See for more information about the ICF-CY: https://apps.who.int/classifications/icfbrowser/Default.aspx

2a Body functions and structures (Max 5): Body functions - The physiological functions of body systems (including psychological functions). Body structures - Anatomical parts of the body such as organs, limbs and their components.

2b. Activities and Participation (Max 5): Activity - The execution of a task or action by an individual. Participation - Involvement in a life situation.

2c. Personal and Environmental factors (Max 5): The physical, social and attitudinal environment in which people live and conduct their lives. These are either barriers to or facilitators of the person's functioning.

2a. What are, in your opinion, the 5 most important patient-related variables that you consider in your work related to physical rehabilitation in the subacute phase for children and young people with ABI? Please define below the variables for the ICF-domain of body functions and structures:

2b. What are, in your opinion, the 5 most important patient-related variables that you consider in your work related to physical rehabilitation in the subacute phase for children and young people with ABI on the ICF-domain of activities and participation:

2c. What are, in your opinion, the 5 most important patient-related variables that you consider in your work related to physical rehabilitation in the subacute phase for children and young people with ABI on the ICF-domain of personal and environmental factors:

3a. Please describe for each variable, mentioned in question 2a, how it affects your approach and your clinical practice and choice of intervention?

3b. Please describe for each variable, mentioned in question 2b, how it affects your approach and your clinical practice and choice of intervention?

3c. Please describe for each variable, mentioned in question 3c, how it affects your approach and your clinical practice and choice of intervention?

4. Which clinical outcome measures do you recommend to quantify the most important patient-related variables?

5. Please add any other additional opinions about the relation between patient-characteristics and physical rehabilitation interventions.

Delphi Round 1b

General information

** Definition subacute phase:* In the knowledge that there is no global definition of 'subacute rehabilitation phase', for this Delphi study we have, defined subacute rehabilitation phase as the phase directly after acute or immediate treatment phase in hospital, when the patient is admitted to an inpatient or outpatient rehabilitation programme.

We would like to ask you a few questions regarding the theoretical understanding and application of physical rehabilitation intervention in children and young people with acquired brain injuries. In addition to the option to check mark the listed variables, we encourage you to substantiate your answers and reactions with references from the literature when possible.

Theme: theoretical understanding and application

Physical rehabilitation during subacute phase is a dynamic process of (re)learning in which many factors (personal, task and environmental; Newell 1986) could influence this process and their effects. In round 1a we defined 'PERSONAL' factors related to physical rehabilitation interventions.

In the following four questions, we aim to define the other most important variables related to 'TASK and ENVIRONMENT' that you consider in your work related to physical rehabilitation interventions during subacute phase.

1a. Please, place a check mark next to all variables that you feel are important in the subacute rehabilitation phase related to THERAPY and add any that are missing.

- □ Dosage of practice (FITT criteria)
- □ Meaningful context of practice
- □ Multisensory stimulation during session
- □ Fun factor
- □ Devices
- □ Other…

1b. Please describe for each variable, mentioned in question 1a, why you believe this is an important factor? Please specify your rationale for each factor, and when possible provide us with a reference.

2a. Please, place a check mark next to all variables that you feel are important in the subacute rehabilitation phase related to CONTEXT/ENVIRONMENT and add any that are missing.

- □ Involvement of friends / peers
- □ Involvement of family

- □ Adequate facilities
- □ Multidisciplinary collaboration and coordination
- □ Stimulating environment
- □ Other…

2b. Please describe for each variable, mentioned in question 2a, why you believe this is an important factor? Please specify your rationale for each factor, and when possible provide us with a reference.

3a. Please, place a check mark next to all variables that you feel are important in the subacute rehabilitation phase related to THERAPIST and add any that are missing.

- □ General attitude
- □ Knowledge base of therapist
- □ Therapist-patient relationship
- □ Therapist-parent relationship
- □ Other…

3b. Please describe for each variable, mentioned in question 3a, why you believe this is an important factor? Please specify your rationale for each factor, and when possible provide us with a reference.

4a. Please, place a check mark next to all OTHER variables that you feel are important in the subacute rehabilitation phase and add any that are missing.

- □ Nutritional status
- □ Adequate sleep
- □ Other…

4b. Please describe for each variable, mentioned in question 4a, why you believe this is an important factor? Please specify your rationale for each factor, and when possible provide us with a reference.

5. Physical rehabilitation interventions could focus on all ICF-domains. How does the balance between these ICF-domains look like in your current physical rehabilitation approach? If possible, please explain how your clinical decision making looks like when considering your focus for a specific ICF-domain. *See for more information about the ICF-CY: https://apps.who.int/classifications/icfbrowser/Default.aspx*

6. To what extent do scientific evidence or theories inform your current physical rehabilitation approach? If possible, would you share any references that you have used to support the clinical intervention approach that you take?

7. To what extent do personal insights and (clinical) experiences inform your current physical rehabilitation approach? Please provide some examples.

8. In our scoping review (*doi*.org/*10.1111*/*dmcn.14997*), we discussed the potential of experience dependent neural plasticity. To what extent are the principles of experience-dependent neural plasticity part of your clinical rehabilitation practice? Please provide some examples.

9. In our scoping review we recommend the use of FITT(frequency, intensity, time and type)-criteria for reporting dose-response relationship. What are your ideas and suggestions about quantification of dose and content of physical rehabilitation interventions?

10. Please add any of your additional opinions or perspectives on the theoretical understanding and application of physical rehabilitation interventions in children and young people with ABI during subacute phase.

11. Text box for notes regarding discussion within your group

APPENDIX SII: Fictitious Case Delphi round 1b

Fictitious Case

This fictitious case, based on a composite of common clinical presentation and progress, is provided as starting point for expert's individual thinking process regarding the factors that are related to the content and theoretical understanding of physical rehabilitation interventions during subacute phase. The survey is not specifically focused on the patient from this case. This case provides an idea of the population and context of physical rehabilitation during subacute phase.

Patient description

Girl, 13 years old: Severe traumatic brain injury due to a bicycle vs car accident. Subdural hematoma left and diffuse axonal injury (grade 3). Clinical presentation: general weakness, reduced trunk control and muscle strength, unilateral paresis right, behavioral and cognitive functions were dysregulated with delirious features and loss of grip, consistent with post-traumatic amnesia (PTA), aphasia. After acute hospitalization for 3 weeks, the girl is medically stable and referred to inpatient rehabilitation at a specialized pediatric-ABI rehabilitation ward.

Recovery course after first week of inpatient rehabilitation

Since admission, this youth shows little progress especially in terms of consciousness, basic orientation, mobility and communication. She is still physically weak and stays most time of the day in bed. During the first week of inpatient rehabilitation, the multidisciplinary team tried to activate her by means of regulating daily activities and routines. Therapeutic activities (physical therapy, occupational therapy, speech-language therapy) were offered in the girl's room with a maximum of 3x 30 minutes per day.

Descriptive information after 2 weeks of inpatient rehabilitation, categorized by the ICF-CY

B1. Mental functions

Fluctuations in consciousness during the day resulting in periods of anxiousness and disorientation. Attention deficits and post-traumatic amnesia.

B3. Voice and speech functions

Aphasia and dysarthria.

B7. Neuromusculoskeletal and movement-related functions

Hypertonia and spasticity in right lower extremity. Restricted joint range of motion in right ankle. Limitation in selective motor control in right lower extremity and right upper extremity. Impaired gait. Reduced endurance, resulting in fatigue during her very limited daily life activities.

D1. Learning and applying knowledge

The girl is easily distracted and able to pay attention for a few minutes in a quiet environment. She is unable to remember new events or apply new knowledge. She shows better response to her relatives. She has several awakenings during the night, and needs sleep during the day as well (2 hours after lunch).

D2. General tasks and demands

The girl is able to undertake a simple and single task. Multiple tasks are not possible. She needs help to manage a daily routine in all activities.

D3. Communication

The girl answers simple questions with yes or no. It is not possible to have a full conversation with the girl due to limitations in speech functions and fluctuations in consciousness.

D4. Mobility

The girl maintains upright body position during sitting with direct supervision. She needs help of one person in transferring herself. She is using a walker with physical support of an adult to walk for a maximum of 15 meters. Due to the unilateral paresis right, she is not able to use her right hand and arm in daily activities. To prevent shoulder subluxation, she uses a sling.

D5. Self-care

The girl is dependent in all activities of self-care (washing, drying, dressing and feeding) and needs assistance of an adult.

E3. Environmental factors

The girl lives in a troubled family with recently divorced parents and 3 siblings. Parents alternate in rooming-in during this phase of rehabilitation.

Other: Personal factors

Pre-injury the girl was a “go-getter”. She liked sports and gaming. She had periods of behavioral challenges related to the start of puberty.

Context:

This Delphi study will focus on the subacute rehabilitation phase. In the knowledge that there is no global definition of ‘subacute rehabilitation phase’, we define subacute rehabilitation phase as the phase directly after acute or immediate treatment phase in hospital, when the patient is admitted to an inpatient or outpatient rehabilitation programme.