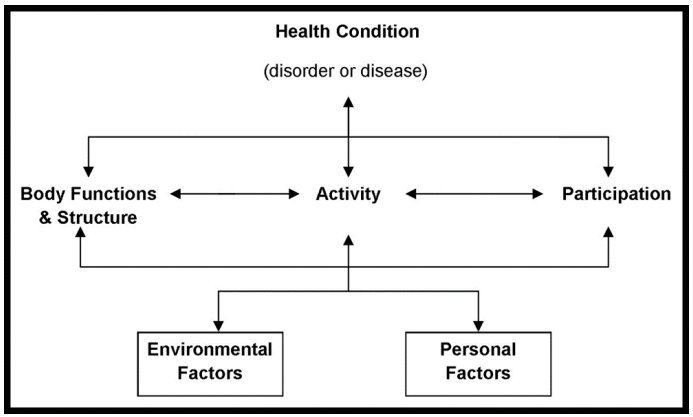
Aktiivsus Neurorehabilitatioonis

- mis see on ja kuidas seda tagada?-

Ines Margato
Füsioterapeut
Neljapäev 07. Sept 2023



What does ‘activity’ means?

- International Classification of Functioning (ICF)-

ICF components and their contents

The major components of functioning and disability are set out and defined in Box 1; these are understood ‘in the context of health’ which clarifies that participation restrictions related to other factors, for example racial prejudice, are not within the scope of the ICF.

Box 1: Definitions: Functioning, disability and the components of the ICF

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.

Impairments - Problems in body function and structure such as significant deviation or loss.

Activity - The execution of a task or action by an individual.

Participation - Involvement in a life situation.

Activity limitations - Difficulties an individual may have in executing activities.

Participation restrictions - Problems an individual may experience in involvement in life situations.

Environmental factors - 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.

Functioning is an umbrella term for body function, body structures, activities and participation. It denotes the positive or neutral aspects of the interaction between a person’s health condition(s) and that individual’s contextual factors (environmental and personal factors).

Disability is an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between a person’s health condition(s) and that individual’s contextual factors (environmental and personal factors).

Source: WHO 2001:8,10

Table 1: ICF components and domains/chapters

Body Function:	**Activities and Participation:**
Mental functions	Learning and applying knowledge
Sensory functions and pain	General tasks and demands
Voice and speech functions	Communication
Functions of the cardiovascular, haematological, immunological and respiratory systems	Mobility
Functions of the digestive, metabolic, endocrine systems	Self care
Genitourinary and reproductive functions	Domestic life
Neuromusculoskeletal and movement-related functions	Interpersonal interactions and relationships
Functions of the skin and related structures	Major life areas
	Community, social and civic life
Body Structure:	**Environmental Factors:**
Structure of the nervous system	Products and technology
The eye, ear and related structures	Natural environment and human-made changes to environment
Structures involved in voice and speech	Support and relationships
Structure of the cardiovascular, immunological and respiratory Systems	Attitudes
Structures related to the digestive, metabolic and endocrine systems	Services, systems and policies
Structure related to genitourinary and reproductive systems	
Structures related to movement	
Skin and related structures	

Source: WHO 2001: 29-30

Nervous System & Neuroplasticity

- refresher -

* Our brain needs: fuel (O2, glucose) and activation (use it or lose it!).

* Cortico-motor neuron pools are organized relative to specific tasks rather than specific muscles.

* Also, one group on muscles does not work isolated.

* Our brain is constantly changing and has the ability to reorganize itself in response to changes in behavioural, via new experiences.

* We are constantly using our nervous system, especially when we learn a new skill. Later, it turns into a habit, and it is not exhausting anymore.

* Learning is reported to be maximal during specific and meaningful task trained.

Nervous System & Neuroplasticity

- refresher -

* Meaningful task-specific learning has important role in improving cognitive and affective outcome.

* Movement emerges from an interaction between the individual, the task, and the environment in which the task is being carried out.

* The extent of functional improvement is strongly dependent on the speficic external stimulation
* Movement: active *versus* passive.

* The greatest neuroplastic adaptation potential is available within the first months to one year, following a neurological event.

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How Do Horticultural Activities Affect Brain Activation and Emotion? Scientific Evidence Based on Functional Connectivity

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Keywords. brain functional connectivity, functional magnetic resonance imaging, outdoor plantings, Profile of Mood States, urban agriculture activities

* There are physical and mental benefits associated with performing horticultural activities.

* There was physiological changes during the different stages of the activity—preparation and sowing, fertilizing and weeding, and harvesting.

* There was an increase positive emotions, creativity, attention, and relaxation and reduce depression.

Article

Benefits of Gardening Activities for Cognitive Function According to Measurement of Brain Nerve Growth Factor Levels

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* The goal was to determine the effects of the gardening activities on brain nerve growth factors related to memory. –> Participants in the present study exhibited significantly increased levels of the brain nerve growth by performing 20-min gardening activities with low to moderate intensity.

* This study revealed the potential of a short-term gardening activity for memory improvement in senior individuals and provided scientific evidence of the therapeutic mechanisms of gardening for memory.

Activity-based Rehabilitation

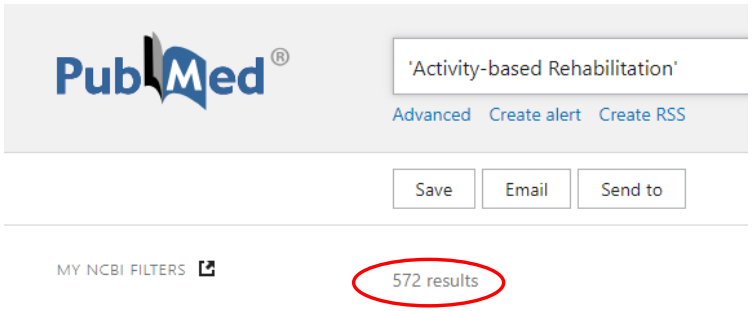
- what it is? -

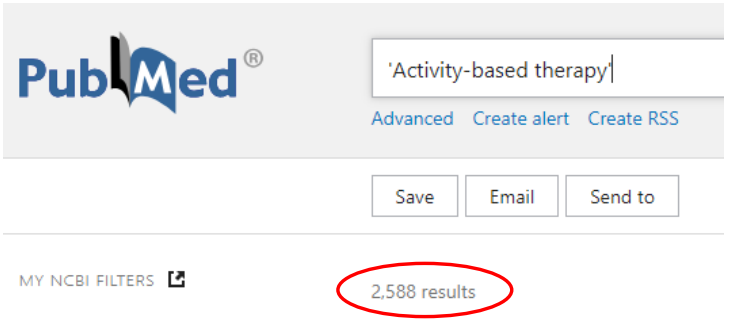
* Training, intervention or therapy which utilizes, as its principal therapeutic and ordinary everyday activities, which are intrinsically and/or extrinsically meaningful to the patient/client.

* Board range of interventions – physiotherapy, occupational therapy,psychology, speech and language therapy, swimming, robotic-assisted therapy, creative therapy, etc.

* Focus in improvement of performance in functional tasks.

* There is a strong empirical evidence for the effectiveness of task-specific training in rehabilitation and for neural plastic changes following task-oriented training.

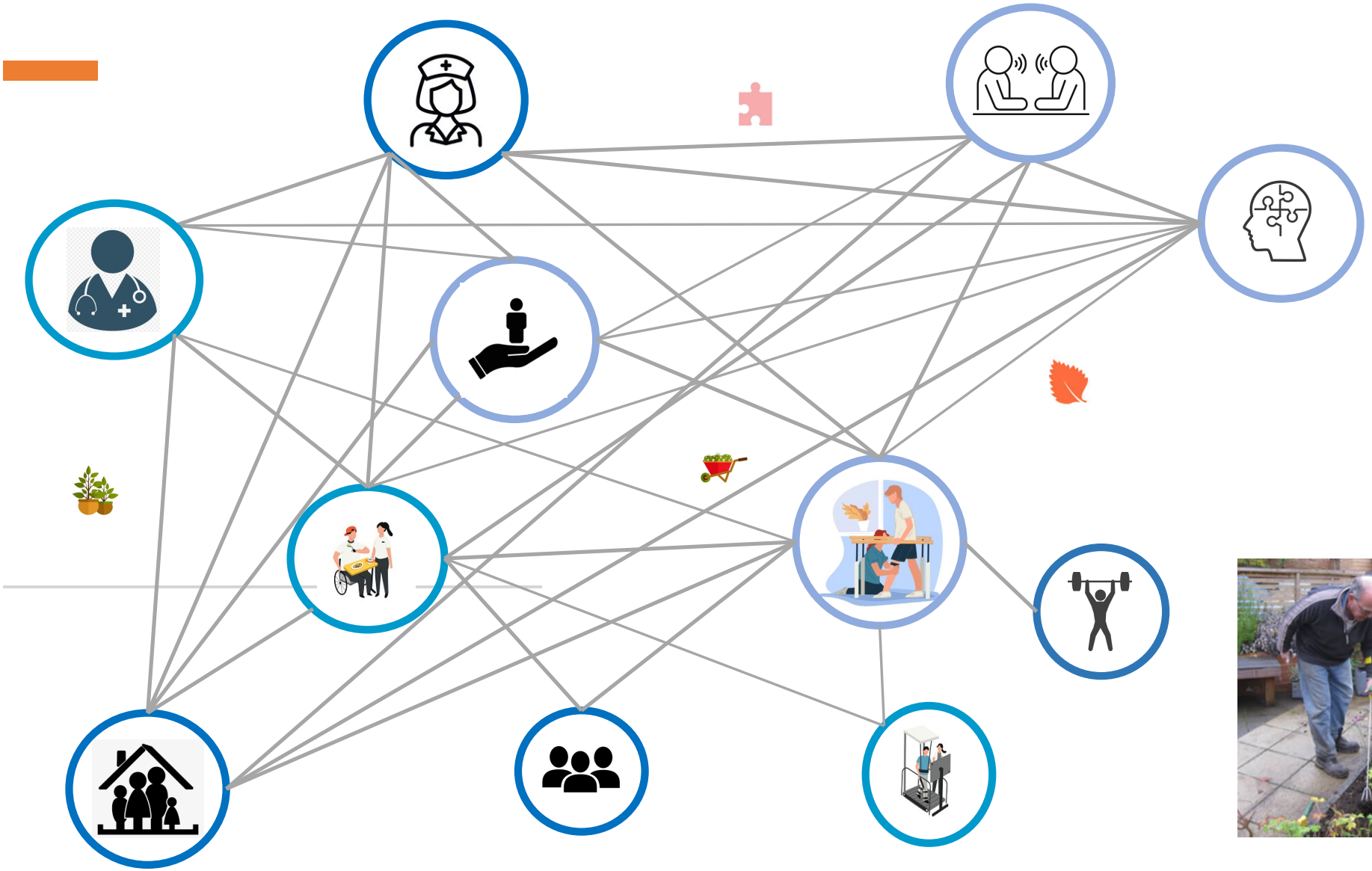




Activity-based Rehabilitation

- research evidence -

* Alzheimer's disease.
* Parkinson's disease
* Orthopaedics
* Geriatric
* Work-related injury
* Peadiatrics
* Covid-19
* Spinal cord injury
* Cardiology
* Traumatic brain injury.
* Multiple Sclerosis.
* Stroke



Activity-based Rehabilitation

- characteristics -

* Therapist decides on the most optimal interventions to trigger and optimize brain activation in healthy areas and areas adjacents to the injury lesion.

* Therapists focus on patterns of ‘impared’ movement, which should be incorporated in strategies in daily activities.

* It can be combined with techniques to enhance cognitive involvement.

* The use of real and functional objects might be an effective way of facilitating efficient, smooth and coordinated movement -> often uses ‘real-world’ or everyday tasks.

* It may include Constraint Induced Movement Therapy (CIMT), which involves a constraint applied to the less affected limb and intensive upper limb training of the more affected limb.

Activity-based Rehabilitation

- goals -

* It promotes neuroplasticity and minimizes impairment.

* To produce cortical reorganization and associated, meaningful functional improvements.

* To achieve optimal function, which in turn allows
the patient/client to adequately undertake everyday tasks, occupations and/or activities.

* To increase patient’s pariticpation level and his/her quality of life.

Activity-based Rehabilitation

- strategies -

* Needs to be routinely applied.

* Should be relevant to the patient and to the context.

* It should be ‘real world’ or context specific/ enriching the environment.

* Therapies should be random in its application using differing contexts and settings and differing occupational demands and sequences.

* It should be repetitive. The more a task is practiced, the better the overall performance.

* Task specifity *versus* intensity.

Activity-based Rehabilitation

- strategies -

* Frequency *versus* duration.

* Therapists should assume that more is better.

* It should be progressive in task difficulty. Complex tasks as a means of involving more regions of the brain in the reorganization response.

* Regular positive feedback.

* on-going motivation and encouragment.

* Carry-over effects should persist.

* Reconstruction/regrouping of the whole.

Activity-based Rehabilitation

- steps -

1. Need to identify what task (s) is/are important to the patient & family.

2. Break up a task into its component parts.

3. Assess the patient's performance of the whole task and of its component parts

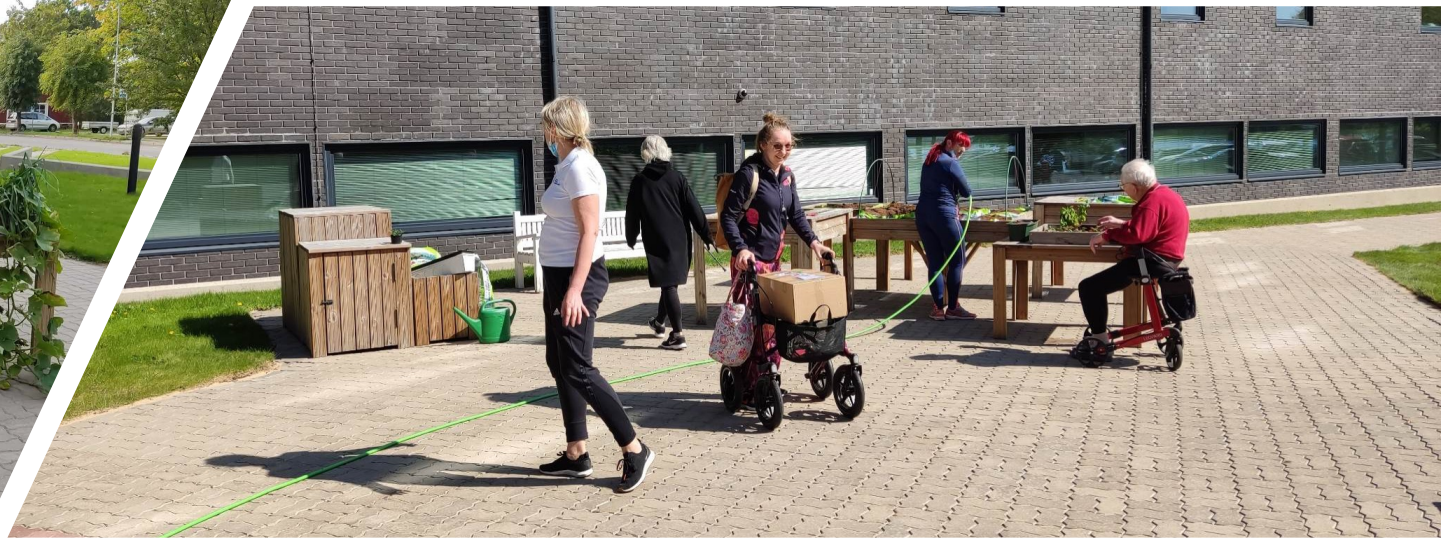
4. Identify which skills and/or component parts that are already present and the ones that are adversely affected and why.

5. Formulate a treatment plan targeted at the mismatch between 'can do' and 'need/want to do'.

Activity-based Rehabilitation

- In HNRK -

Haapsalu
Neuroloogiline
Rehabilitatsioonikeskus



Activity-based Rehabilitation

- siseterviserada/Internal Health trail -

* Designed for children and adults.

* To encourage movement, by offering different kinds of activities.

* To enhance learning, increase cognitive function with effects on behavior.

* It offers both general physical and manual around the house.

Activity-based Rehabilitation

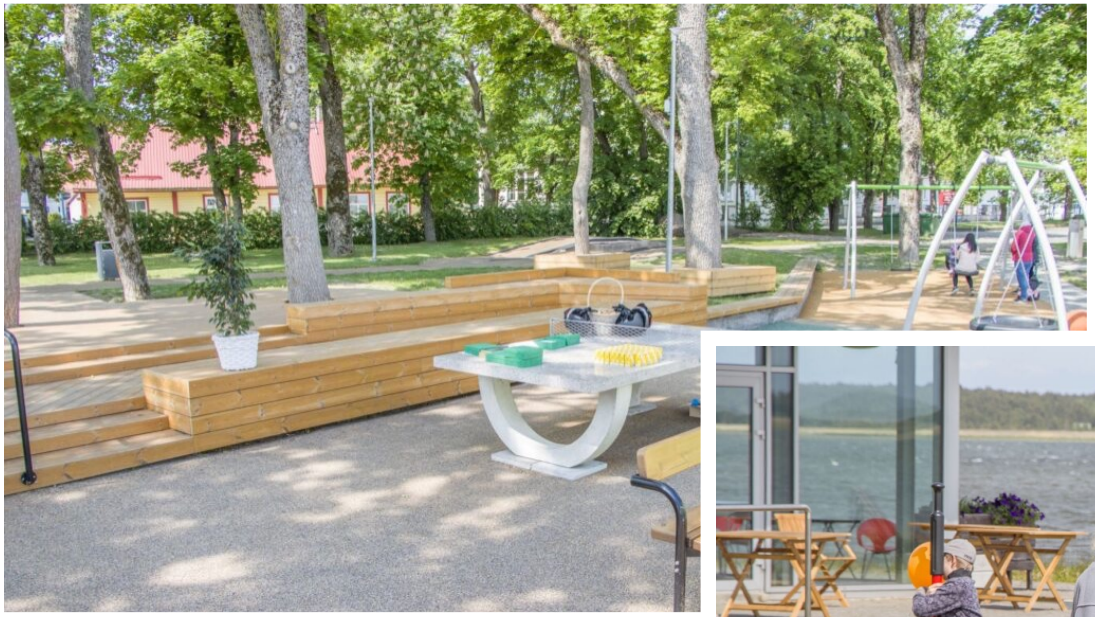
- HNRK tegevus- ja mängupark -

* Building work 2018(I), 2019 (II), 2022(III)
* The park is open to everyone.

* The main idea of the playground is to support opportunities for playing together.

* Multisensory and cognitive stimulation.

* Physical exercise.



Activity-based Rehabilitation

- barriers -

* Costs.

* In the midst of all the planning, prescribing, goal setting, documenting and discharge planning, the achieving of whole tasks may become lost in the day-to-day activity.

* Some recommendations (duration of the rehabilitation period, frequency per week, sessioon duration, number of repetitions per session, etc) that may not always be achievable.

Any questions?