UMC UNIVERSITY Medical Center
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National Children's Rehabilitation Center of «University Medical Center» Corporate Fund

Cerebral palsy: a multidisciplinary, integrated approach is essential

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Cerebral palsy, a syndrome of motor impairment resulting from a lesion in the developing brain, has a worldwide prevalence of 1.0–3.5 per 1000 livebirths*

*Yeargin-Allsopp M, Van Naarden Braun K. et al. Prevalence of cerebral palsy in 8-year-old children in three areas of the United States in 2002: a multisite collaboration. *Pediatrics* 2008; 121: 547–54

*Gladstone M. A review of the incidence and prevalence, types and aetiology of childhood cerebral palsy in resource-poor settings. *Ann Trop Paediatr* 2010; 30: 181–96.

National Children's Rehabilitation Center

Capacity – 306 beds. NCRC was opened in Astana, Kazakhstan in 2007.

It admits more than 4200 children annually, of whom around 2400 have cerebral palsy.

There are 3 centers: Center for clinical rehabilitation, Center for innovative rehabilitation, Center for social and pedagogical

- Admission department;
- 6 psycho-neurological departments;
- Laboratory of functional rehabilitation;
- Laboratory of robotic rehabilitation;
- Laboratory of modeling and orthosis;
- Kinesiotherapy department;
- Physiotherapy department;
- Pharmacy;

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Medical Rehabilitation

- Kinesiotherapy + Bobath & Vojta methods
- Hydrokinesiotherapy
- Mechanotherapy & Robot-assisted walking
- Occupational therapy
- Physiotherapy, Balneotherapy
- Neuropsychological diagnosis & rehabilitation
- Reflexotherapy, acupuncture
- Posturography, stabilometry
- Biofeedback for movement disorders & psycho-emotional correction
- Medications, Botulintherapy
- Cognitive sensory-motor therapy (Perfetti method)

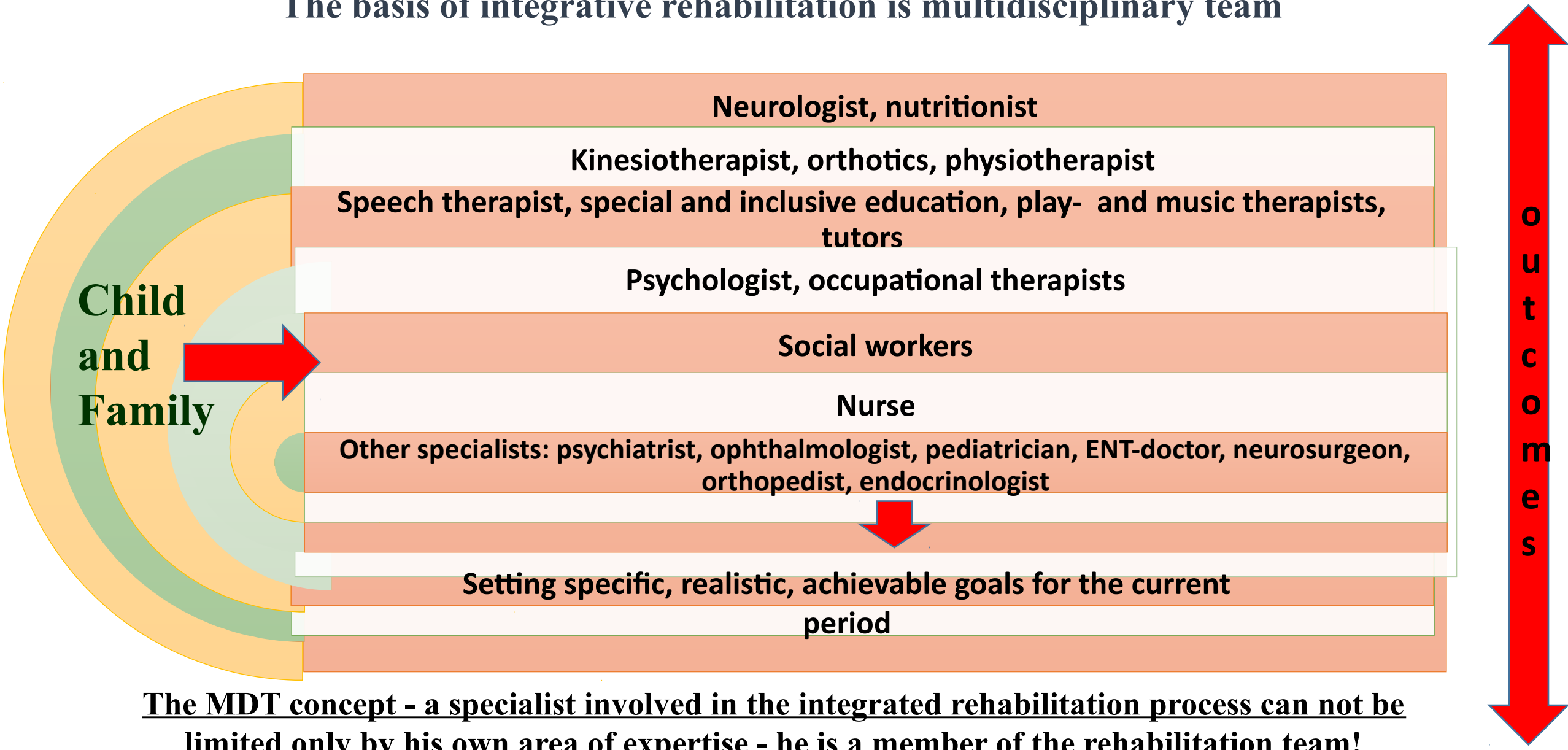
Pedagogical Correction

- Psychological correction & behavioral therapy
- Speech therapy
- Montessori therapy
- Music, art therapy
- Play therapy
- Defectologist (intervention for intellectual disability and learning difficulties
- Individualized education plan
- Special & inclusive education
- Biofeedback speech therapy

Social Adaptation

- Orthotics & modeling
- Adaptive physical education & adaptive sports
- Trainings in special prepared autodrome
- Professional orientation
- Assistance of social workers
- Legal (law) consultation

The basis of integrative rehabilitation is multidisciplinary team



The MDT concept - a specialist involved in the integrated rehabilitation process can not be limited only by his own area of expertise - he is a member of the rehabilitation team!

Individual trainings and plan

DPC suits

Mechanotherapy

Kinesiotherapy

Hippodrome, Autodrome

Adaptive sports

Parents training courses

Montessori therapist

Robot-assisted walking

Biofeedback: orthopedic, psycho-emotional, speech therapy

Posturography

Hydrokinesiotherapy

Orthotics

Botulinotherapy

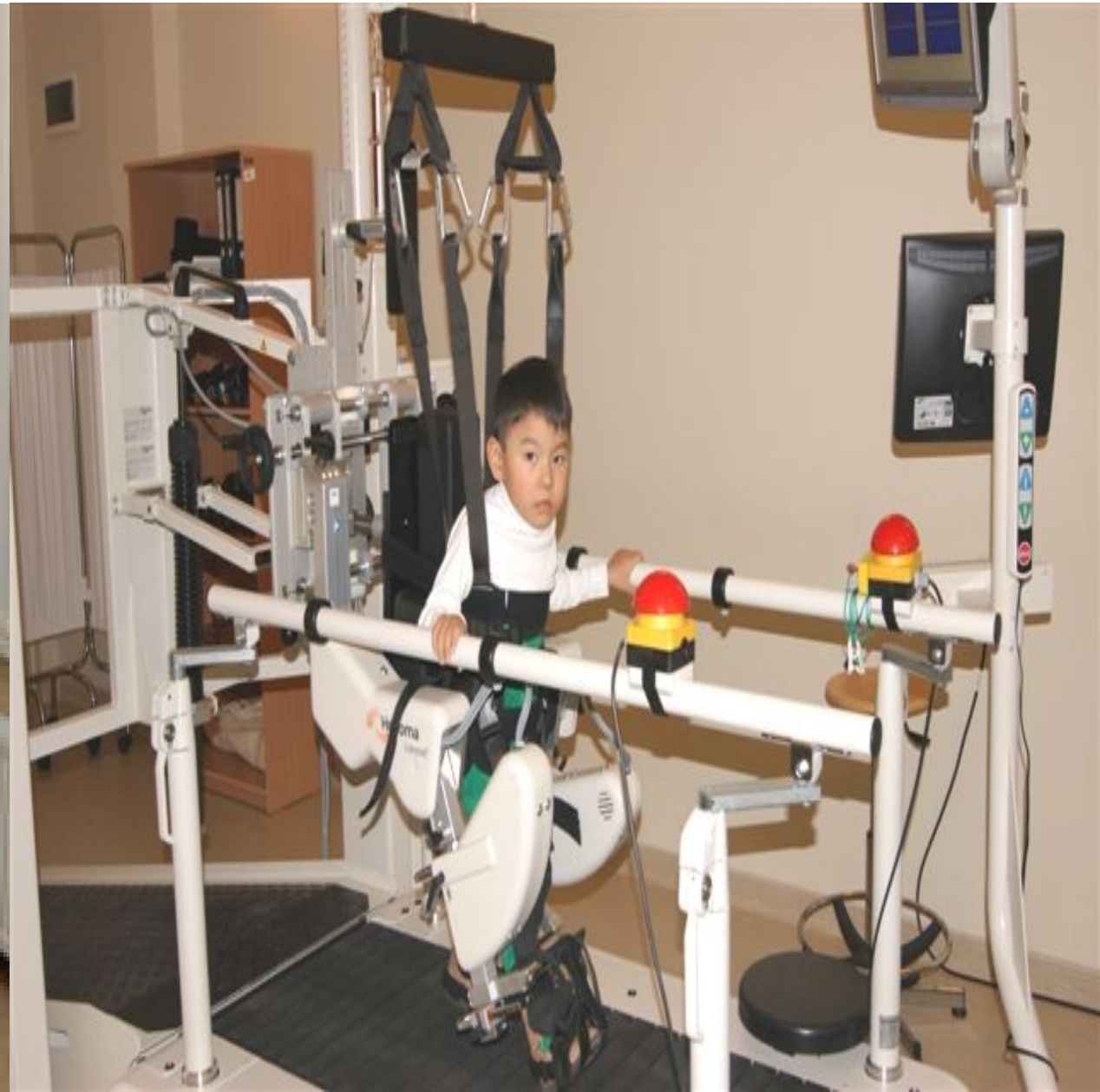
Kinesiotherapy by using Bobath and Vojta methods
PNF therapy – Prorioceptive Neuromuscular Facilitation

Positioning

Hydrokinesiotherapy

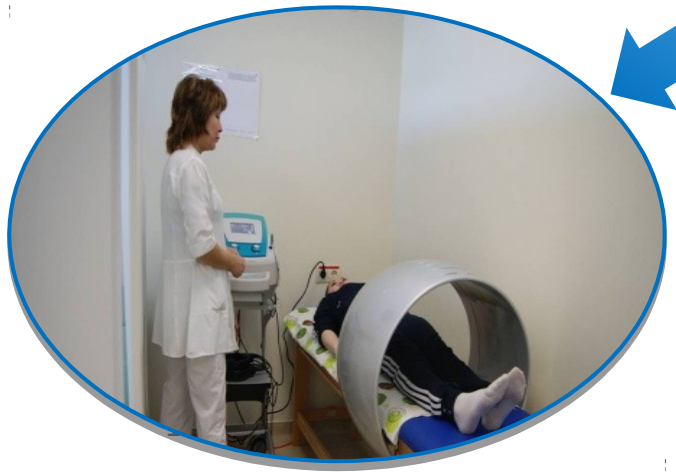
Adaptive physical education and sports (boxing, tennis, basketball, volleyball etc.

Lokomat ® - robot-assisted walking



Posturography and Biofeedback

Physiotherapy



1. Galvanization and drug electrophoresis
2. Amplipulse therapy
3. Electrostimulation
4. Magnetotherapy
5. Inductothermy
6. Ultrasound therapy
7. Electrosleep therapy
8. Bioptron therapy
9. Laser therapy
10. Cryotherapy
11. Speliotherapy
12. Inhalation

Hydrotherapy

Underwater shower massage

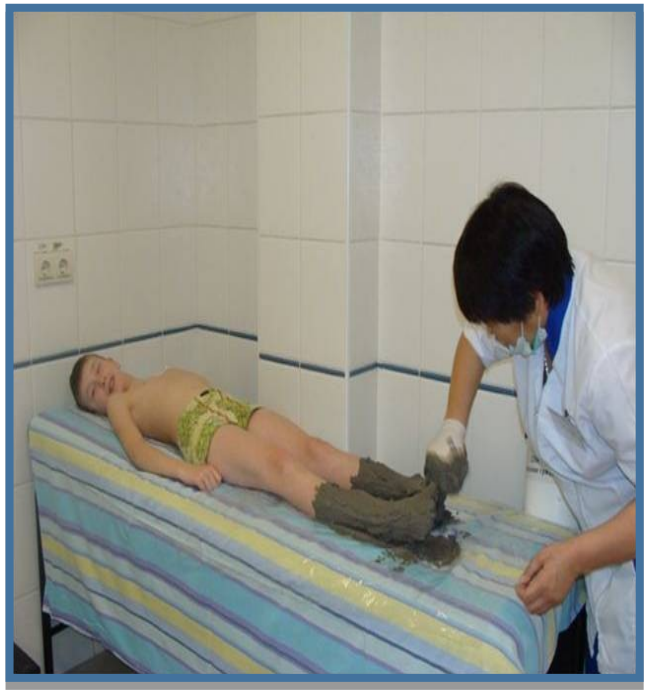
Charcot's shower

Pearl, salt baths

Thermotherapy

Complex for thermotherapy

Ozokerite – mineral wax therapy



Pelloid - pelotherapy

Paraffin - wax therapy

Ergotherapy
Occupational therapy

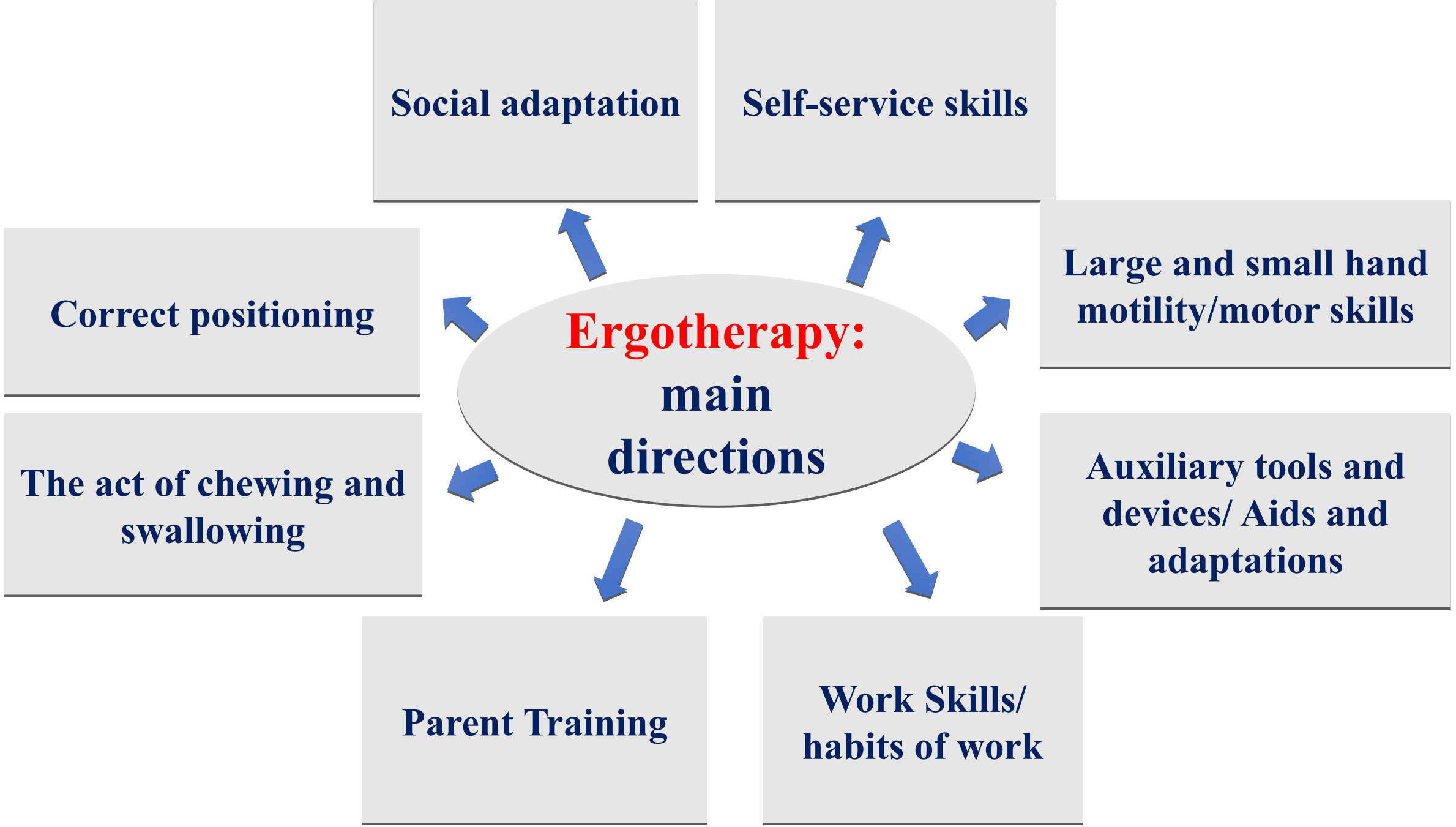
«Ergon» - Job, work (Latin)

«Therapia»-therapy (Greek)

Occupational therapy - a special multidisciplinary specialty, whose aim is to help people with various physical or mental disabilities to achieve maximum independence from others (surrounding) in their daily lives.

Goals of occupational therapists

To help children - taking into account their age, physiological, individual characteristics, to acquire and restore the ability to live independently or to adapt the existing deficit to the environment


Social adaptation
Self-service skills
Correct positioning
Ergotherapy: main directions
Large and small hand motility/motor skills
The act of chewing and swallowing
Auxiliary tools and devices/ Aids and adaptations
Parent Training
Work Skills/ habits of work

SELF-SERVICE SKILLS

Food intake skills/ Eating ability

Hygienic skills

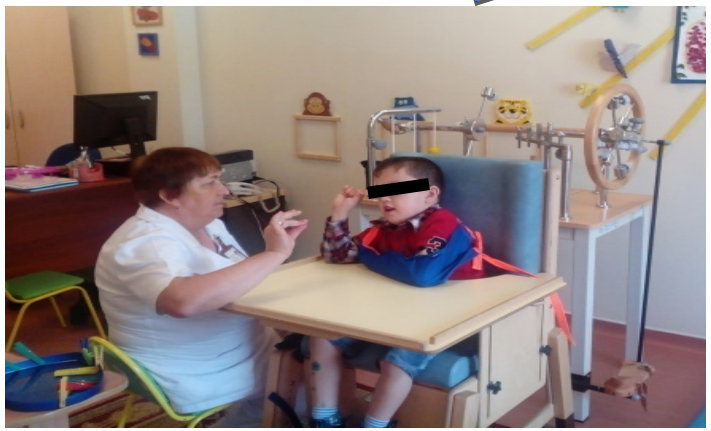
Skills undressing and dressing.

Improving the act of chewing and swallowing

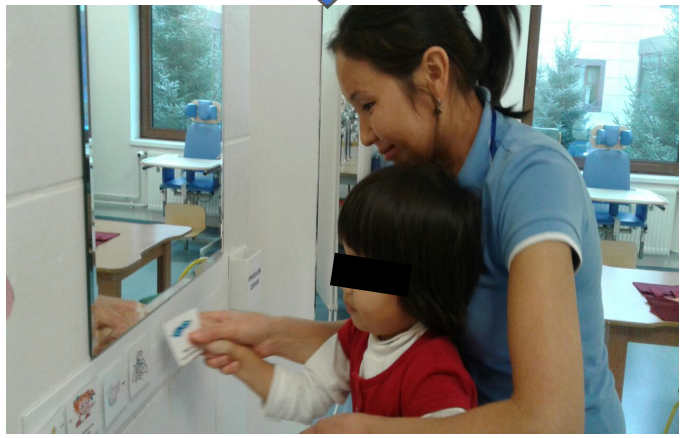
Treatment by position, positioning

Aids for daily living

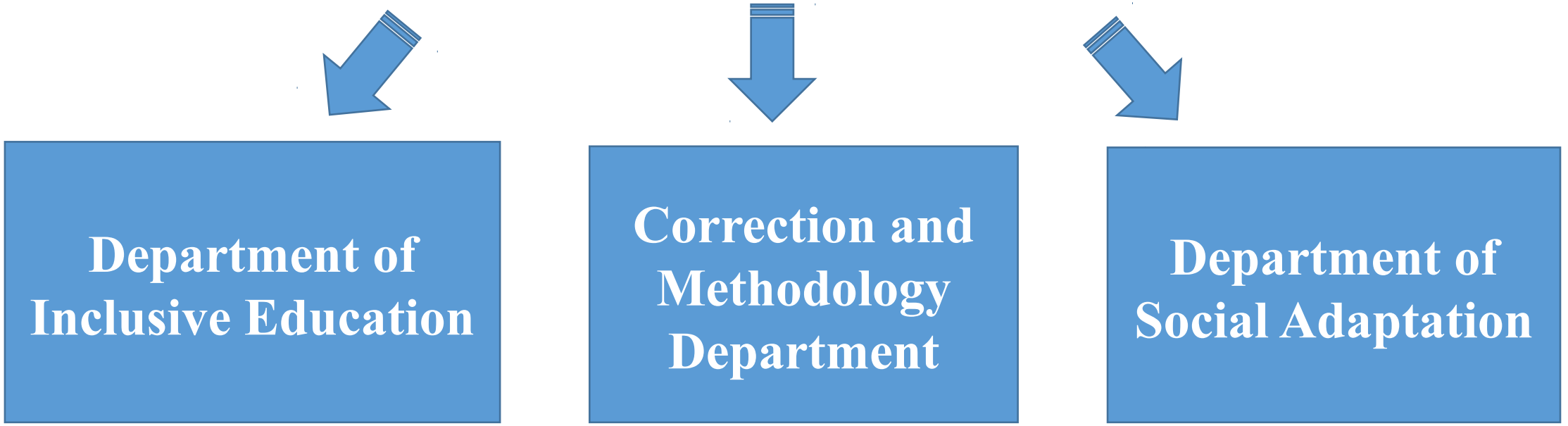
Development of small motor skills



Trainings for children with autism



Center for Social and Pedagogical Rehabilitation



Purpose: implementation of inclusive education and training of children with limited development opportunities in a rehabilitation center. It is implemented through training sessions, extra-curricular activities and organize study circles work.

Classes and Trainings in the School

Extracurricular Activities

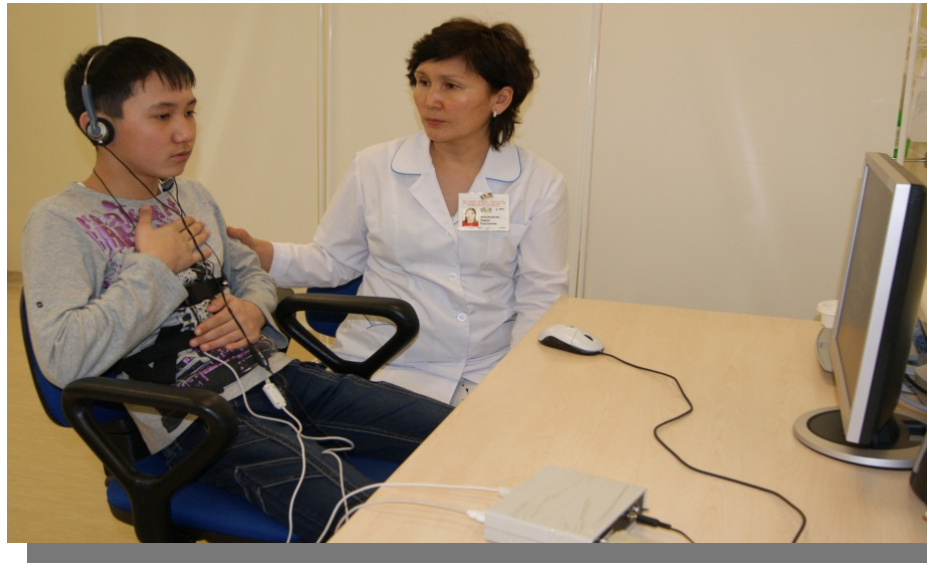
Interesting circles/ Hobby groups

Speech therapy correction

Speech therapist conducts a survey of children and adults to identify speech disorders and further works on correcting speech disorders.

logopaedic massage

Trainings on the simulator BFB logotherapy



Classes of logarithmics

Lessons for reading correction

Psychologist's Activities/Psychologist's correction/ activities

The goal/purpose of the work: the organization of psychological support for patients and their parents, also for employees of the Center.

Classes with a defectologist/ special education teacher

The defectologist performs diagnostics of the state of higher mental functions, the cognitive sphere and determines the program of restorative and corrective treatment, conducts correction and development of cognitive and educational skills.

Directions: classes for children with intellectual disabilities, hearing impaired (surdopedagogs), visually impaired (tiflopedagog).

Music therapy - a psychotherapeutic method that uses music as a healing agent/ as a therapeutic agent..

Forms/Directions of music therapy: vocal therapy, dancing-therapy, instrumental therapy, receptive music therapy.

Play therapy - a psychotherapeutic method based on the use of role-playing games - like one of the most powerful forms of influence on personality development.

Methods of play/game therapy: sensory integration, intensive interaction, therapeutic play, sensory exercises.

Montessori Therapy

The main goal of the Montessori methods - the development of the child's personality from an early age through the motor, sensory and intellectual activity.

The work of tutors/mentors in the departments

One of the components of pedagogical rehabilitation is the activity of educators.
The purpose of their work lies in the organization and conduct of activities aimed at improving the child's health, his social development, communication with other children and self-organization to the training sessions.

Department of Social Adaptation

Purpose/objective: to provide services for social and domestic adaptation for children with disabilities.

Sewing direction: teaching children the skills of lacing, tying, dressing, etc / Sewing direction: teaching children skills pinching, tying, dressing, etc .;.; Sewing costumes for theatrical.

Joinery: teaching children the basics of carpentry

Hairdressing: teaching children self-service skills / Training of children in self-care skills (hair care, nails, etc.).

Social pedagogue: counseling the patient and his family on the protection and security of the child's rights

Sports sections: organization of physical education classes and sports sections.

Autodrome: training in traffic rules

Library: social adaptation and integration of children in modern society through the use of library and information resources.

Agrotherapy: correction and development of the emotional and volitional sphere through agrotherapy and aromatherapy, the formation of skills in caring for plants.

Laboratory of Modeling and Orthosis

Orthosis is a conservative method of treatment and prevention musculoskeletal system's pathologies using:

- treatment by position

- prevention of deformities' progressing of the spine, limbs and joints

The main task of orthotic devices/ products is correction of pathological positions, retention of the affected limb and spine in a corrective position, which contributes to the restoration and improve motor abilities and ensures the normalization of their functions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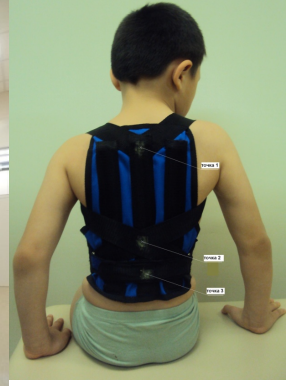



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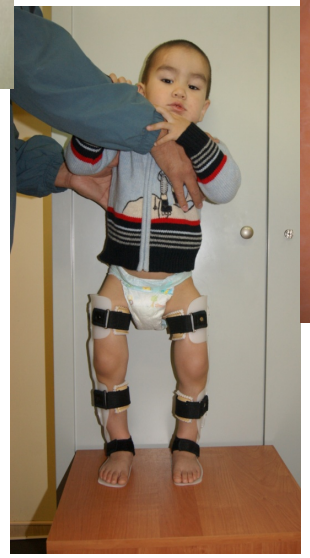

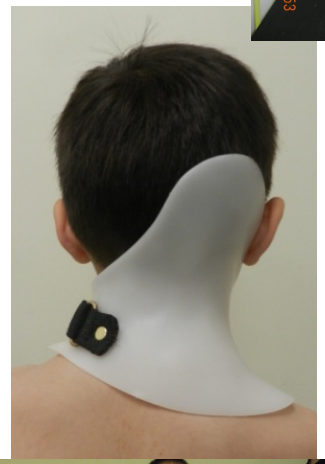


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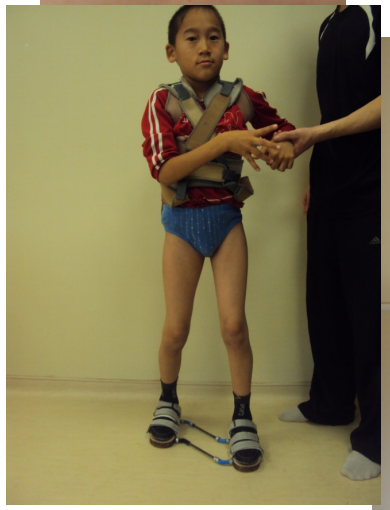



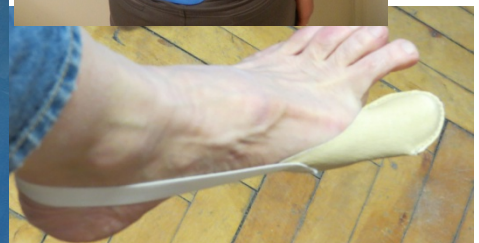

THE LANCET
Global Health

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Volume 5, No. 4, e401, April 2017

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Cerebral palsy: a multidisciplinary, integrated approach is essential

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Open Access | Altmetric 3

DOI: http://dx.doi.org/10.1016/S2214-109X(17)30082-7

Article Info

Summary Full Text References

Cerebral palsy, a syndrome of motor impairment resulting from a lesion in the developing brain, has a worldwide prevalence of 1·0–3·5 per 1000 livebirths.[1, 2] A life-course perspective needs to be adopted as more children live into their adolescence and adulthood. Individuals' participation in life and availability of family-centred services are very important and differ between countries.[3] In low-income countries, most treatments are provided by families and multidisciplinary assessment is done in rural clinics.[4]

We advocate for a multidisciplinary, integrative approach to rehabilitation, to be initially provided in child rehabilitation centres, as an effective way to manage this disorder. A Republican Children's Rehabilitation Centre was opened in Astana, Kazakhstan, in 2007. It admits more than 4200 children annually, of whom around 2400 have cerebral palsy. The multidisciplinary approach includes medical rehabilitation, assessment by psychologists, interventions for intellectual disability and learning difficulties, individualised education plans, occupational therapy, and social adaptation.

Статья «Церебральный паралич: мультидисциплинарный, интегрированный подход к реабилитации» опубликована в журнале The Lancet Global Health, том 5, №4, апрель 2017 года.

Импакт фактор журнала - 14,27

Cerebral palsy: a multidisciplinary, integrated approach is essential

Cerebral palsy, a syndrome of motor impairment resulting from a lesion in the developing brain, has a worldwide prevalence of 2·0–3·5 per 1000 livebirths.[1,2] A life-course perspective needs to be adopted as more children live into their adolescence and adulthood. Individuals' participation in life and availability of family-centred services are very important and differ between countries.[3] In low-income countries, most treatments are provided by families and multidisciplinary assessment is done in rural clinics.[4]

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The duration of a rehabilitation cycle is 25 days, to allow for as many children (coming from the whole country) as possible to be treated. One parent is allowed to stay with the child for the entire duration of the cycle and is instrumental in assuring continuity of treatment at home.

Outcomes are assessed using accepted standards and scales (International Classification of Functioning, Disability, and Health; functional independence measure, gross motor function classification system, Manual Ability Classification System, Barthel index of activity and daily living, and Ashworth scale), and an improvement is observed from a physical, psychological, and social viewpoint in most children. Follow-up is important; children's conditions are assessed through regular telephone conversations between their parents and the doctors. Families are also assisted by physicians in their home regions and during follow-up visits at the rehabilitation centre.

We think that a multidisciplinary, integrative approach to rehabilitation, started in well equipped and staffed centres, can improve appropriate diagnosis and treatment of children with cerebral palsy and ensure improved long-term results. Efforts should be made in middle-income (and, whenever possible, in low-income) countries to fund (perhaps through public–private partnerships), open, and sustain such centres.

We declare no competing interests.

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1 [illegible] Van Naarden Braun K, [illegible]. [illegible] cerebral palsy in [illegible] United States [illegible]. Pediatrics [illegible].
2 Gladstone M. A review of the incidence and prevalence, types and aetiology of childhood cerebral palsy in resource-poor settings. Ann Trop Paediatr 2010; 30: 181–96.
3 [illegible] children with cerebral palsy: cross sectional European study. BMJ 2009; 338: [illegible].
4 [illegible] Rehabilitation for children with cerebral palsy in rural [illegible]: parental perceptions of family-centred practices. Child Care Health Dev 2011; 37: [illegible].

ICF- МКФ

Повреждение (impairment)

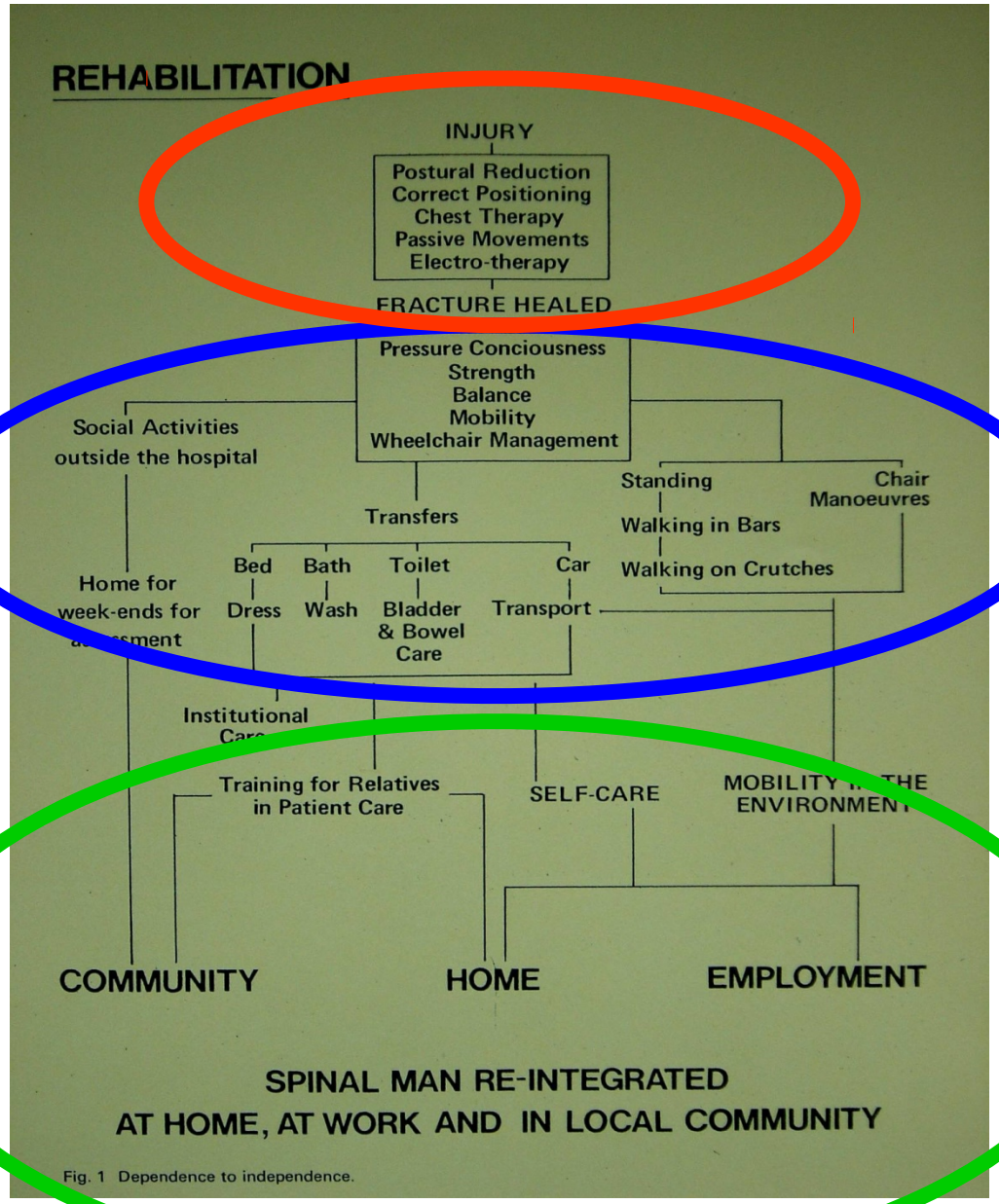
Functioning- функции организма

Ограничение жизнедеятельности (disability)

уровень активности

Социальная активность (handicap)

участие



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We think that a multidisciplinary, integrative approach to rehabilitation, started in well equipped and staffed centers, can improve appropriate diagnosis and treatment of children with cerebral palsy and other diseases of nervous system, ensure improved long-term results. Efforts should be made in countries to fund (perhaps through public–private partnerships), open, and sustain such centers.

- **Thanks for your attention!**