



UNIVERSITATEA DE STAT DE MEDICINĂ ȘI FARMACIE
“NICOLAE TESTEMIȚANU” DIN REPUBLICA MOLDOVA

Introduction to Physical and Rehabilitation Medicine

Department of Medical rehabilitation, physical
medicine and manual therapy



Purpose

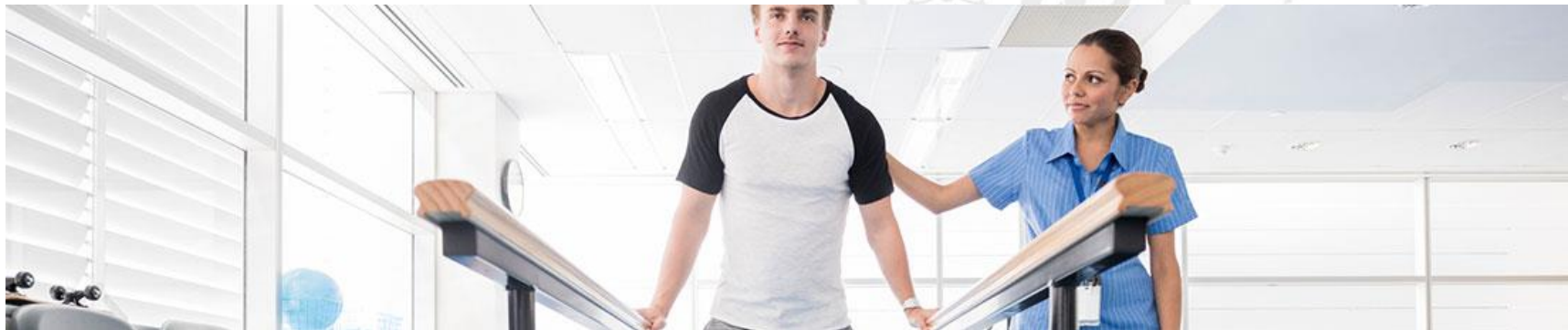
- Understanding the philosophy, modern concepts of physical medicine and rehabilitation, and its place in health care system.





Learning objectives

- To define physical and rehabilitation medicine, disability, functioning.
- To understand the components, principles and goals of medical rehabilitation.
- To define the competencies of its practitioners and its relationships to other medical disciplines and professions allied to health.
- To apply and integrate a specific ICF model in rehabilitation of patients with various pathologies.

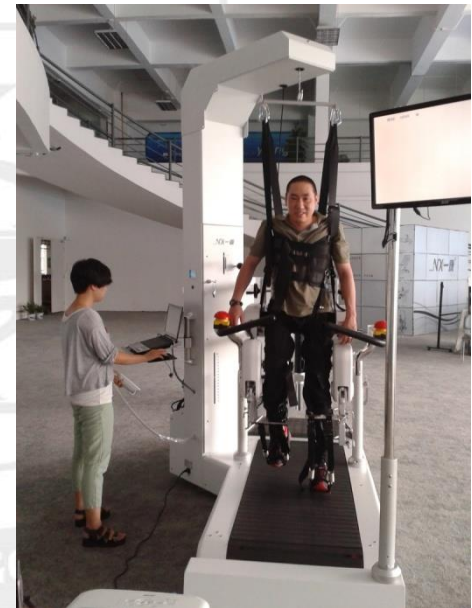




Importance

Rehabilitation is an increasingly important health service

- ✓ Increasing of life expectancy globally (ageing populations)
- ✓ Rising prevalence of noncommunicable diseases.
- ✓ Decreasing of mortality from trauma and other diseases.
- ✓ Progressive development of innovative technology.
- ✓ High costs of healthcare.

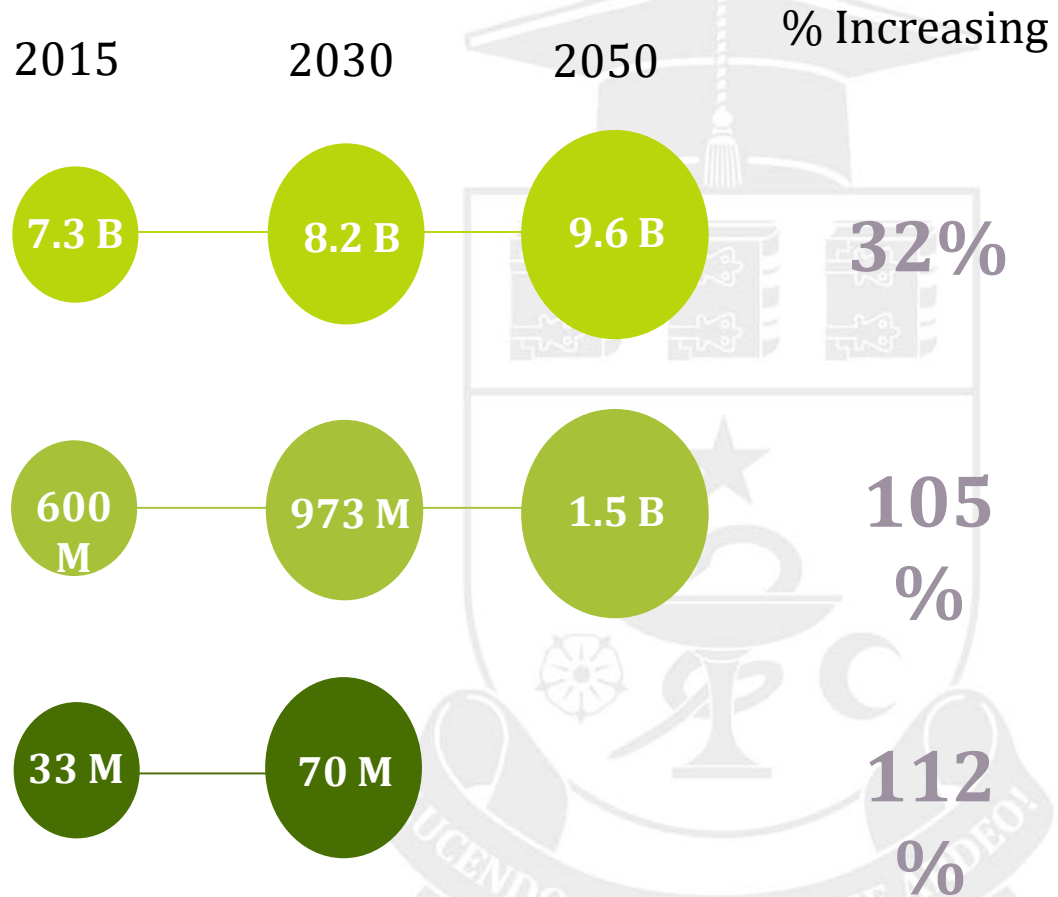
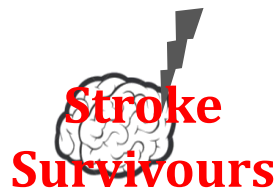




Demographic trends



Persons > 65





Demographic trends





World Report on Disability – WHO 2019



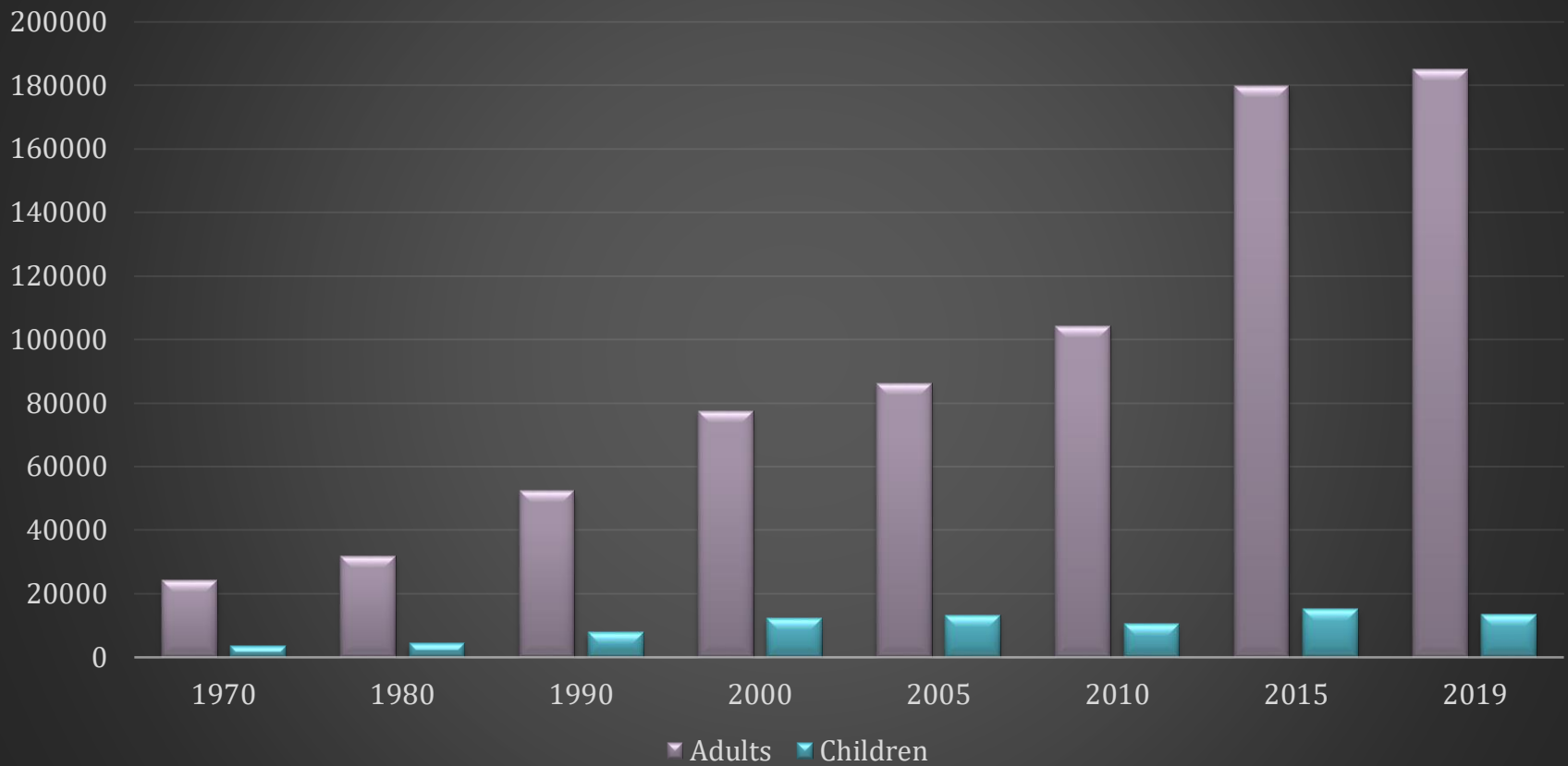
- More than 1,3 billion people in the world are living with a disability
- People with different types of disabilities make up 720 mln. (10%) of the world's population.
- 320 mln. are facing great operating difficulties.
- The prevalence of disability is constantly increasing.

World report on disability 2019. WHO Library Cataloguing.
http://www.who.int/disabilities/world_report/2019



Mondial Report on Disability

Dinamics of new cases of disabilities



Al XIX-lea raport anual al populației a lumii Europene.

http://www.demoscope.ru/weekly/knigi/ns_r01/razdel3g3_5_2.html



Republic of Moldova

- About 183 thousand people with disabilities
- 516 people with disabilities to 10 thousand inhabitants,
- Each 6th person with a disability falls into the category of the severely disabled.
- People with disabilities represent 5.2% of the total population of the country, and children with disabilities - 2.1% of the total number of children in the Republic of Moldova

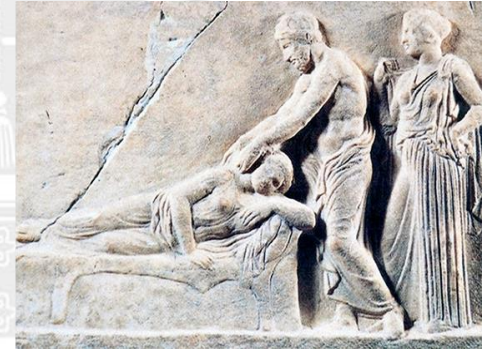
<http://cnddcm.msmps.gov.md/>





Brief History

- Use of natural physical factors, massage and physical exercises was described in ancient and middle ages.
- Use of electric vectors for therapeutic purpose XVII-XIX century.
- The term of locomotor re-education appears in medical literature in the XVII century, and the term of rehabilitation was used for the first time.





Brief History

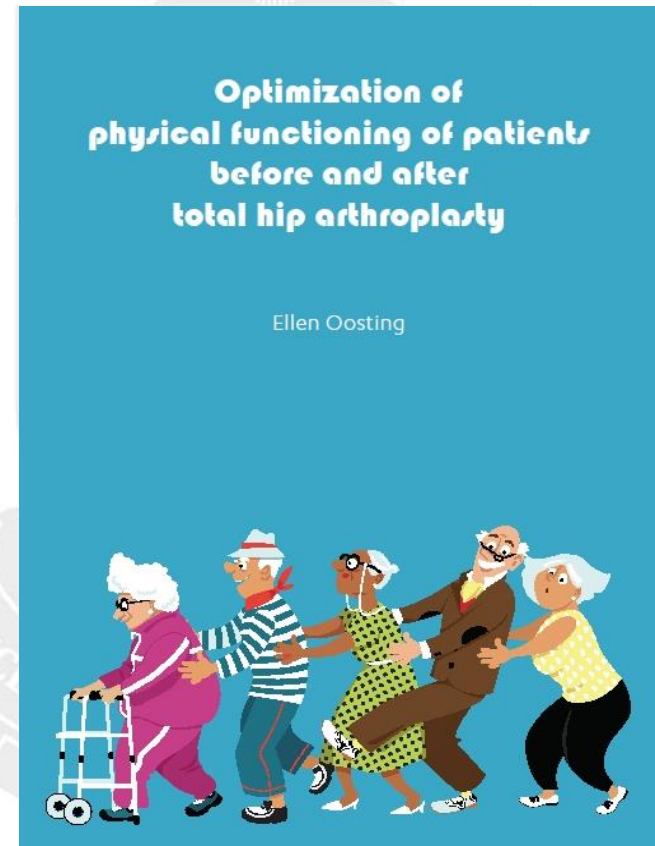
- Development of physical medicine speciality was different from country to country, being combined with other specialties (for example Rheumatology) in 20th century.
- It became independent specialty after World War II and the polio epidemics





Rehabilitation

- Rehabilitation may needed by anyone with a health conditions who experiences difficulties in
 - ✓ mobility,
 - ✓ vision,
 - ✓ hearing,
 - ✓ speech,
 - ✓ swallow or cognition,for example.





Rehabilitation

- ✓ Health conditions can include diseases (acute or chronic), disorders, injuries or trauma.
- ✓ Health conditions may also include other circumstances such as pregnancy, aging, stress, congenital anomalies or genetic predisposition

WHO 2018 Access to rehabilitation in primary health care: an ongoing challenge



Definition

The World Health Organisation's (WHO)
definition of rehabilitation is:

“The use of all means aimed at reducing the impact of disabling and handicapping conditions and at enabling people with disabilities to achieve optimal social integration”.



World Health
Organization



Rehabilitation

- Rehabilitation is a set of interventions to optimize ***functioning*** and reduce ***disability*** in individuals with health conditions in interaction with their ***environment***.



World health organization 2018. Access to rehabilitation in primary health care: an ongoing challenge.



Rehabilitation

- **Functioning** is a basic concept of physical and rehabilitation medicine that represents *all the actions that people need take during their activity.*





Functioning

Seeing





Functioning

Communicating Relationships





Functioning

Hand and arm use Eating





Functioning

Work





Strategies for health care systems

Strategy	Scope	Indicator
Prevention	Prevention of diseases	Morbidity
Promotion	Optimal biological health	ICF personal capacity
Curative	Diseases control	Mortality
Rehabilitation	Optimal functioning	ICF Capacity and performance
Suport	Optimal conditions of living	ICF Performance
Paliative	Quality of life and well-being	Personal satisfaction

Stucki G, Bickenbach J. Functioning: the third health indicator in the health system and the key indicator for rehabilitation. Eur J Phys Rehabil Med. 2017;53:134-8.



Functioning

- ✓ **Functioning** is a general term for definition of body functions, body structures, activities and participation.
- ✓ This denotes the positive aspects of the interaction between an individual and the contextual factors.
- International Classification of Functioning, Disability and Health (ICF)
- <http://www.who.int/classifications/icf/en/>



Disability

- ✓ **Disability** is a term for impairment, activity limitations and participation restrictions.

Examples: limitation (or loss) of

- mobility (walking),
- ability of communication (speech),
- personal hygiene and al.



- ✓ **Disability** denotes the negative aspects of the interaction between an individual (with a state of health) and the contextual factors of the individual.



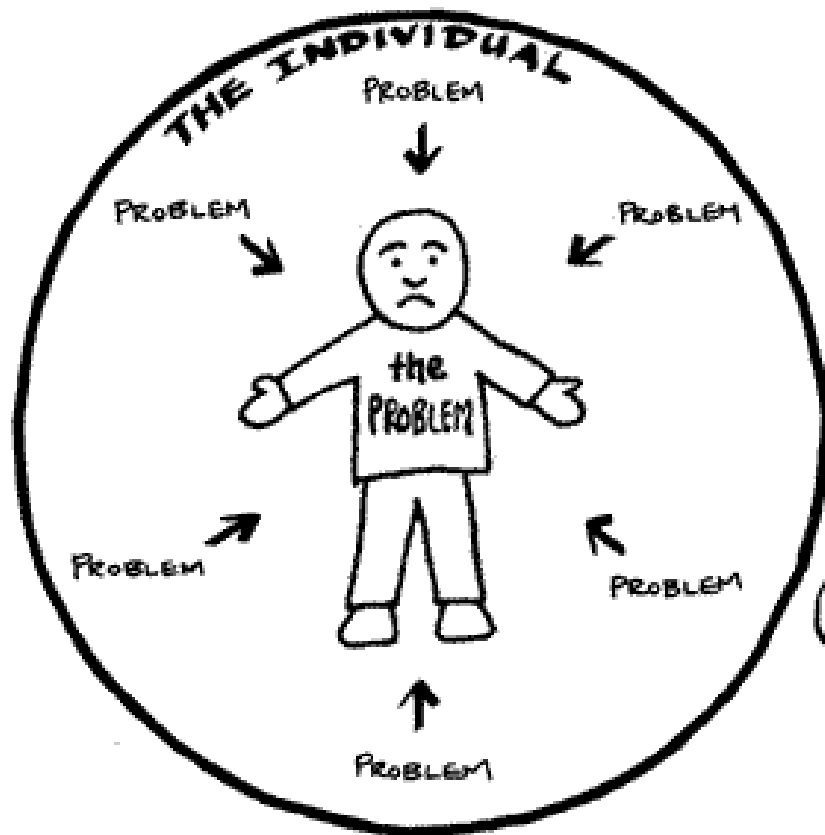
Medical model of Disability

- Considers disability as a problem of the person, caused directly by the ***illness / trauma***.
- Needs medical care, offered as an ***individual*** treatment.
- Aims at ***healing*** or adapting and changing the behavior of the individual.
- The main answer is to change or reform the ***health care policy***.

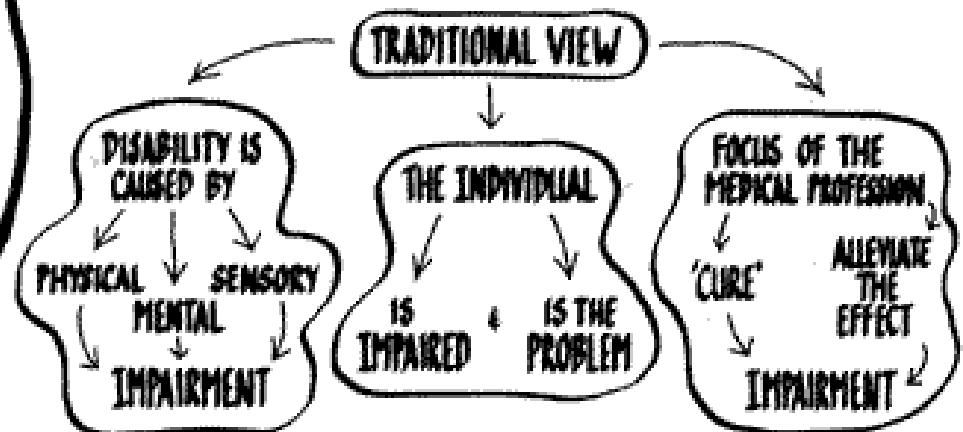


Medical model of Disability

THE MEDICAL MODEL OF DISABILITY



IMPAIRMENTS AND CHRONIC ILLNESS
OFTEN POSE REAL DIFFICULTIES BUT
- THEY ARE NOT THE MAIN PROBLEMS





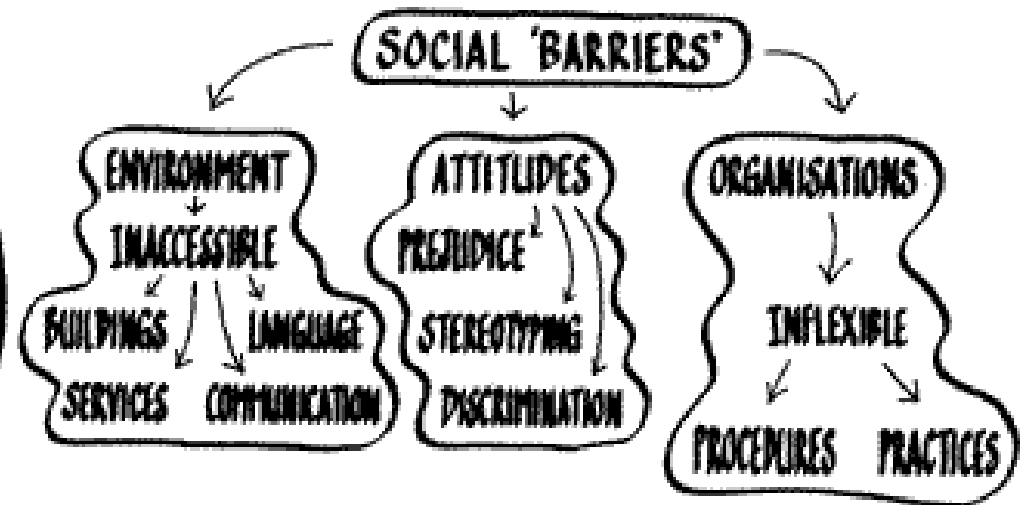
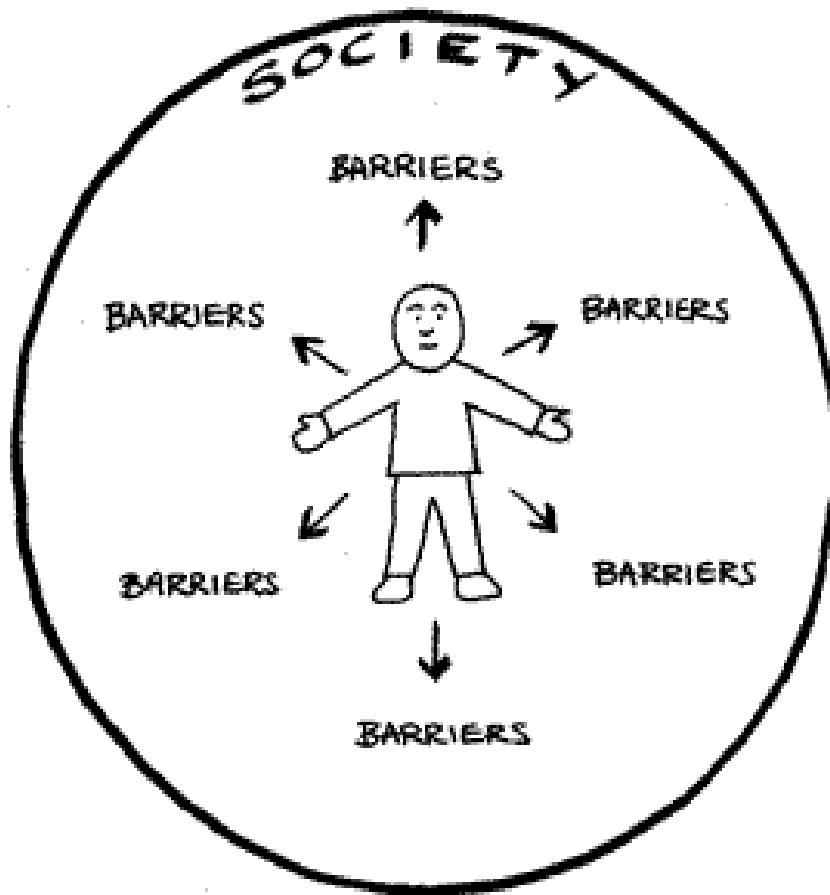
Social model of Disability

- Views disability mainly as a problem of complete integration of the individual into ***society***.
- Disability is a complex of conditions, many of which are created by the ***social environment***.
- Environmental changes are needed to ensure ***full participation*** of people.
- It requires ***social action*** and is the shared responsibility of the whole society



Social model of Disability

THE SOCIAL MODEL OF DISABILITY





Rehabilitation model (liniar)

- In 1980, within the WHO, it was proposed to complete the International Classification of Diseases (ICD) with the ICDIH International Classification of Disability, Disability and Handicap.
- The disease is regarded as the main element causing deterioration, disability and handicap



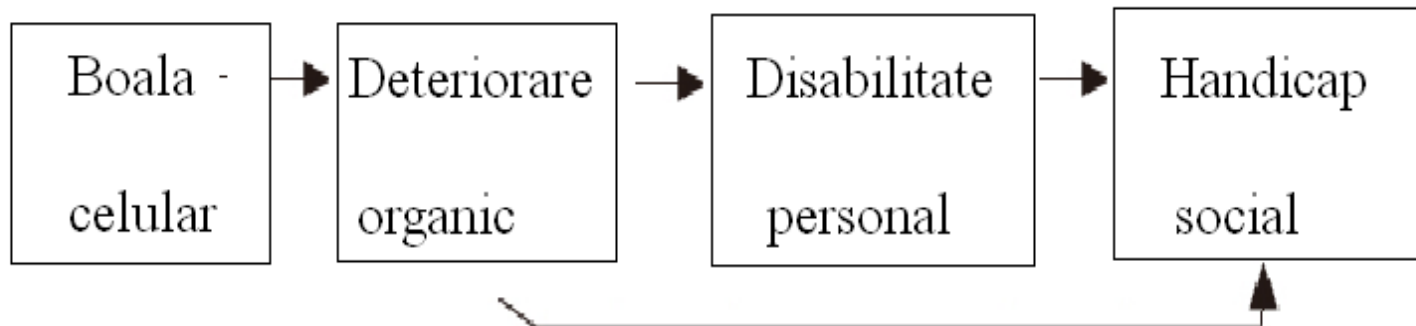
International classification of disabilities impairments and handicap
http://apps.who.int/iris/bitstream/handle/10665/41003/9241541261_eng.pdf?sequence=1



Rehabilitation model (1980)

Impairment –Disability- Handicap

- One of the first models for addressing disability ICIDH was re-evaluated and is considered incomplete.





Rehabilitation Models

- The development of the clinical sciences has forced a change of focus and refocusing attention from the sequelae (caused by a disease) towards optimal functioning.
- Thus, in 2001, the WHO accepts another model - **International Classification of Functioning Disability and Health (CIF)** classification focused more on health components rather than disease (positive aspect).



ICF Models

- ICF is based on the integration of two opposite models (medical and social).
- In order to reproduce the essence of integrating the various perspectives of functioning, a "biopsychosocial" model is used.
- A coherent vision on the different perspectives of health: from biological, individual and social point of view.

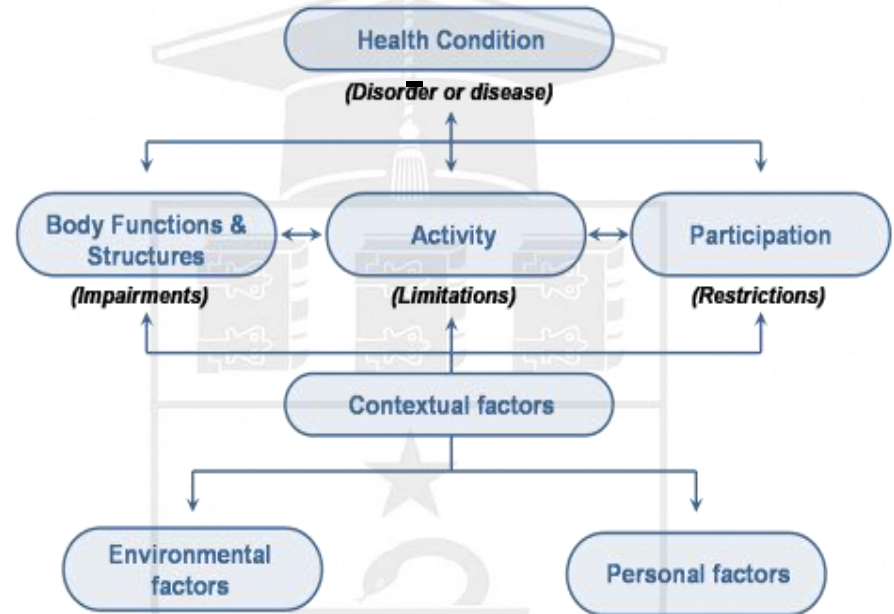




Rehabilitation

Rehabilitation addresses

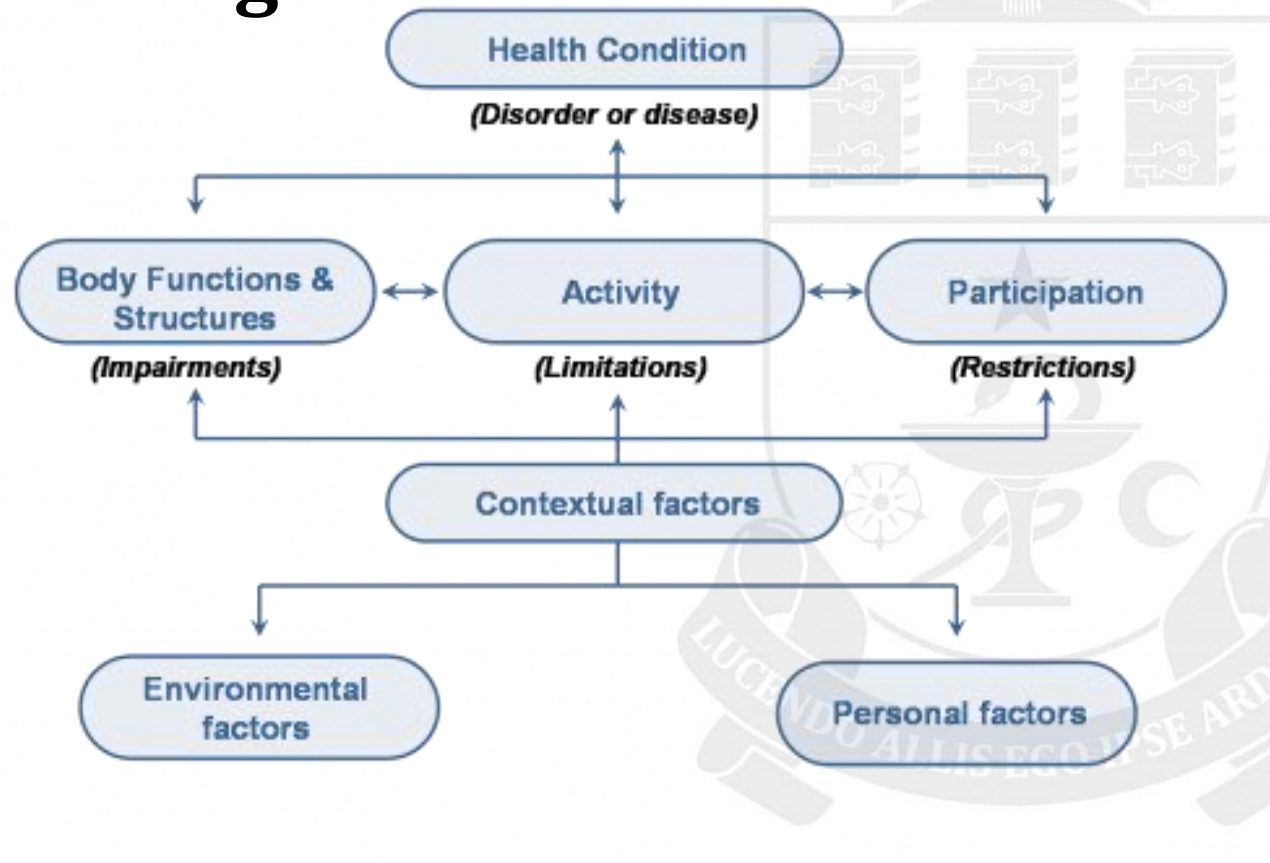
- ✓ impairments,
- ✓ activity limitations
- ✓ participation restrictions,
- ✓ personal and
- ✓ environmental factors
(including assistive technology) that impact on **functioning**.





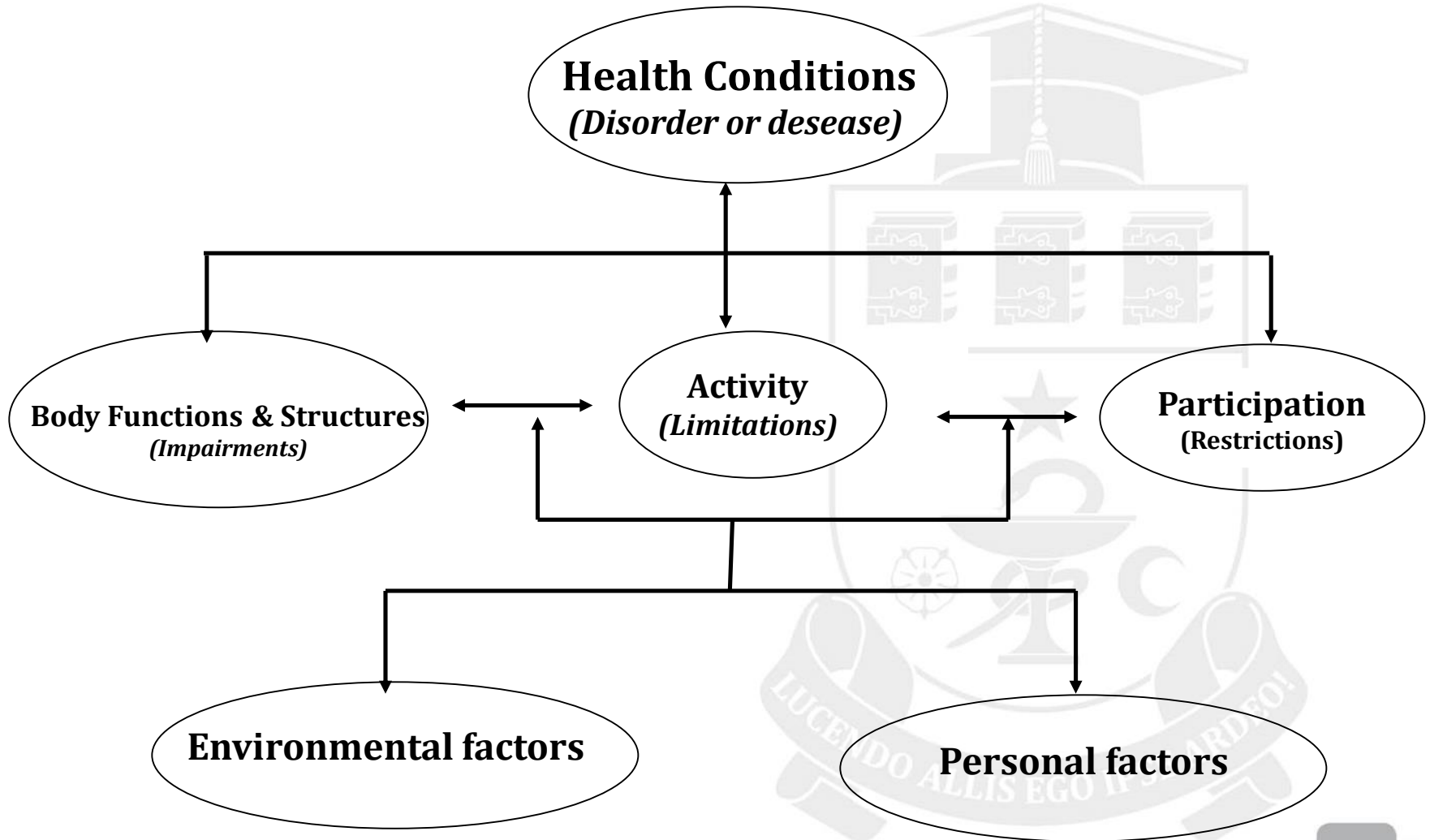
ICF. International classification of functioning, disabilities and health

- **ICF emphasizes and has as main concept – functioning.**



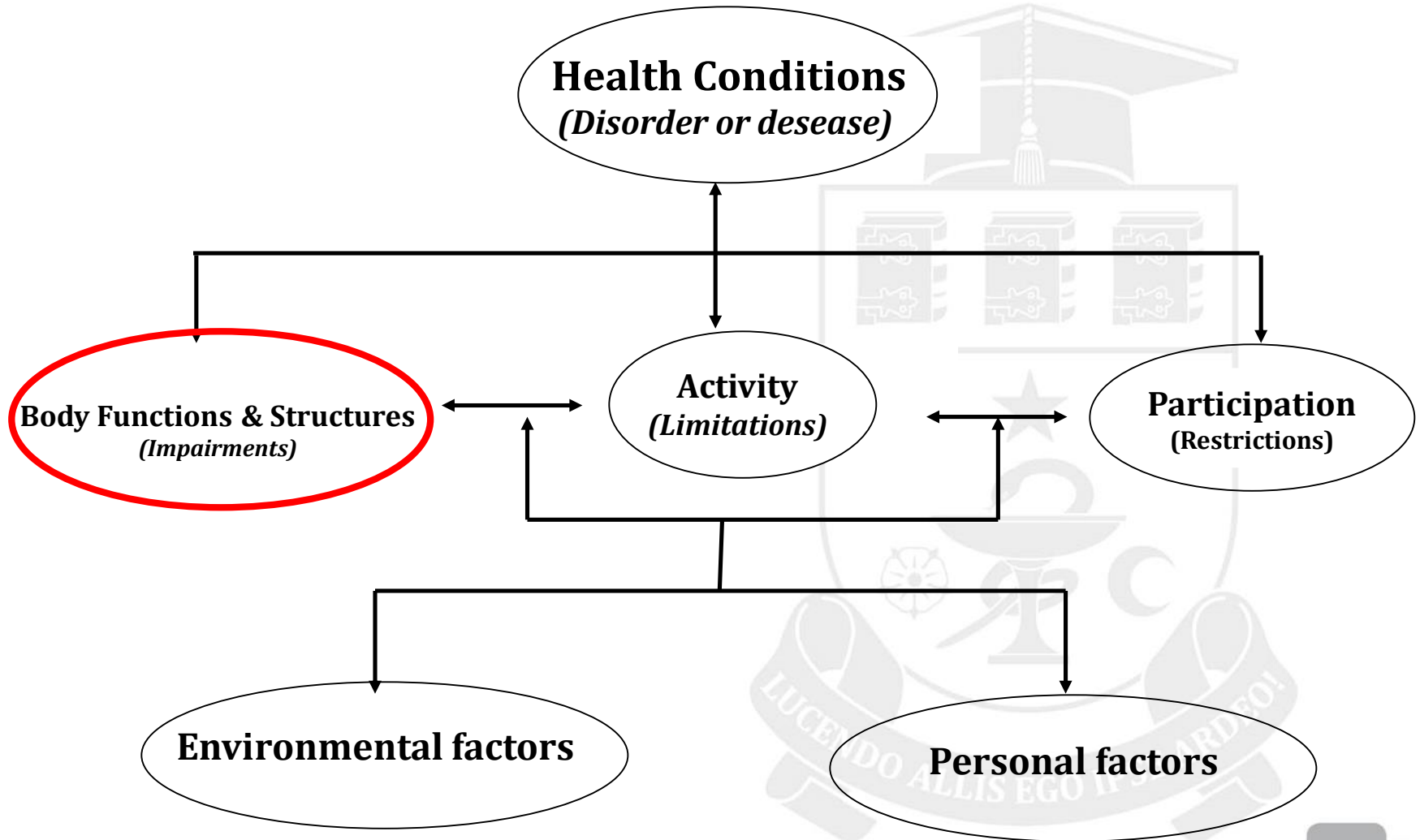


International classification of functioning disability and health (ICF)





International classification of functioning disability and health (ICF)





Definitions (ICF)

- **Body Structures** are anatomical parts of the body such as organs, limbs and their components.
- **Body functions** are the physiological functions of body systems (including psychological functions).
- **Impairments** are problems in body function or structure such as a significant deviation or loss.

Muscles

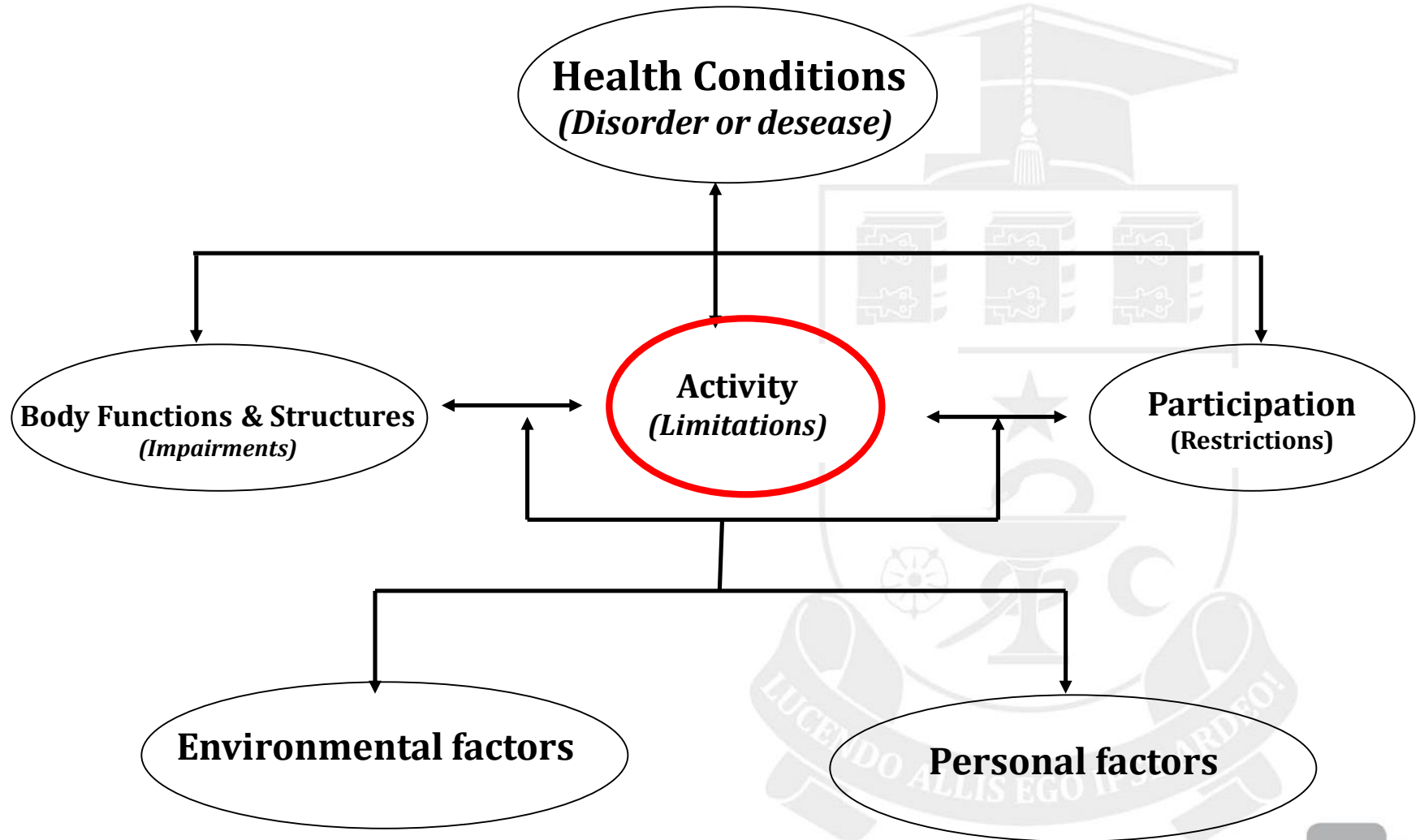
Muscle
Contraction

Muscle
rupture





International classification of functioning disability and health (ICF)





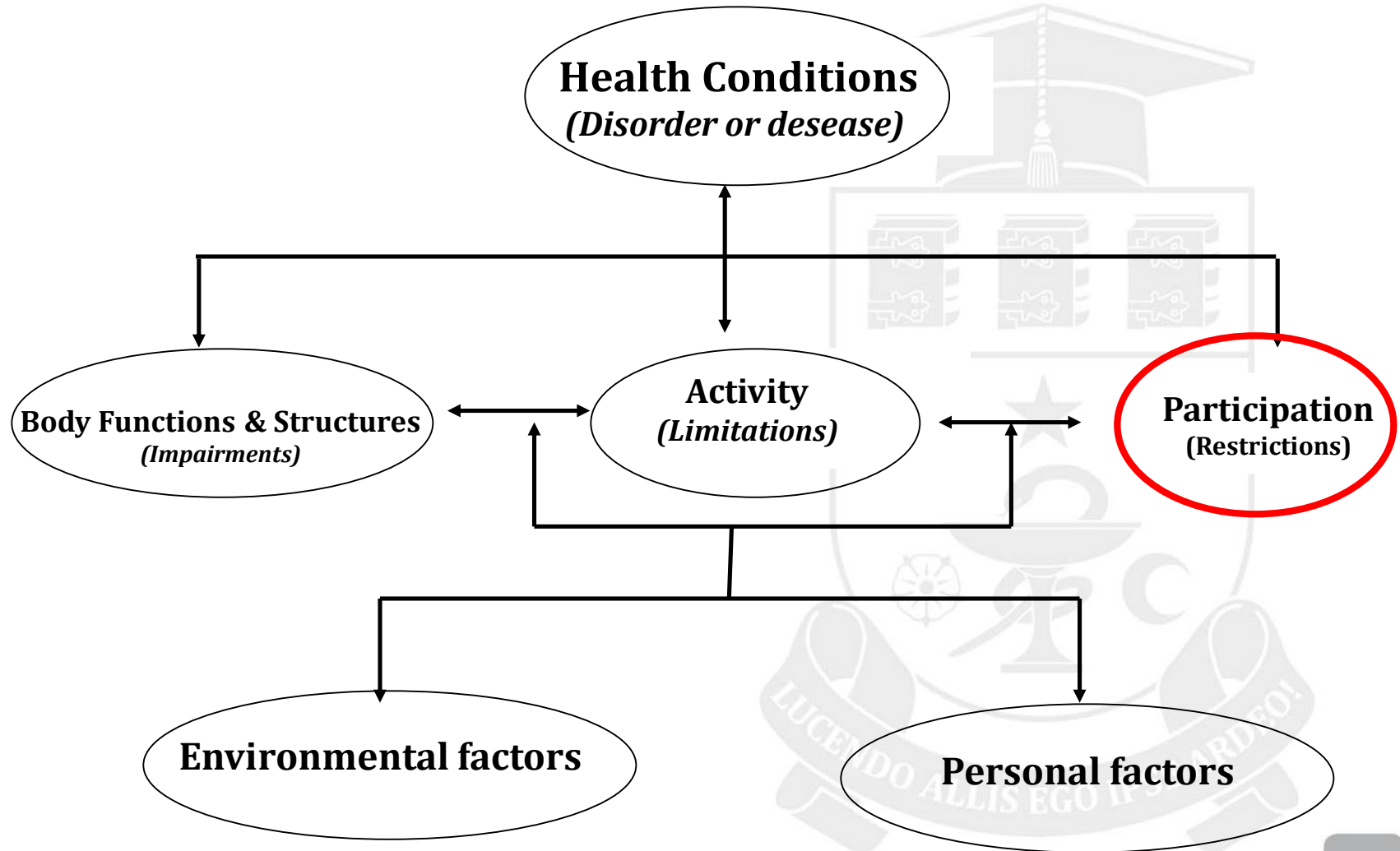
Definitions (ICF)

- **Activity** is the execution of a task or action by an individual.
- **Activity limitations (disability)** are difficulties an individual may have in executing activities.





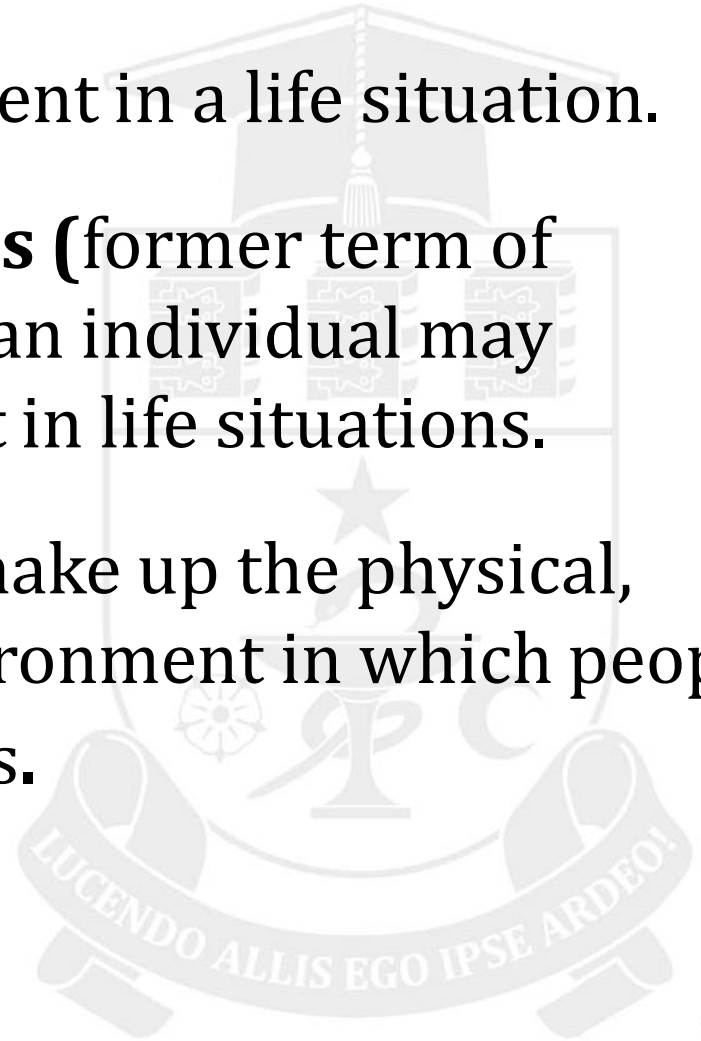
International classification of functioning disability and health (ICF)





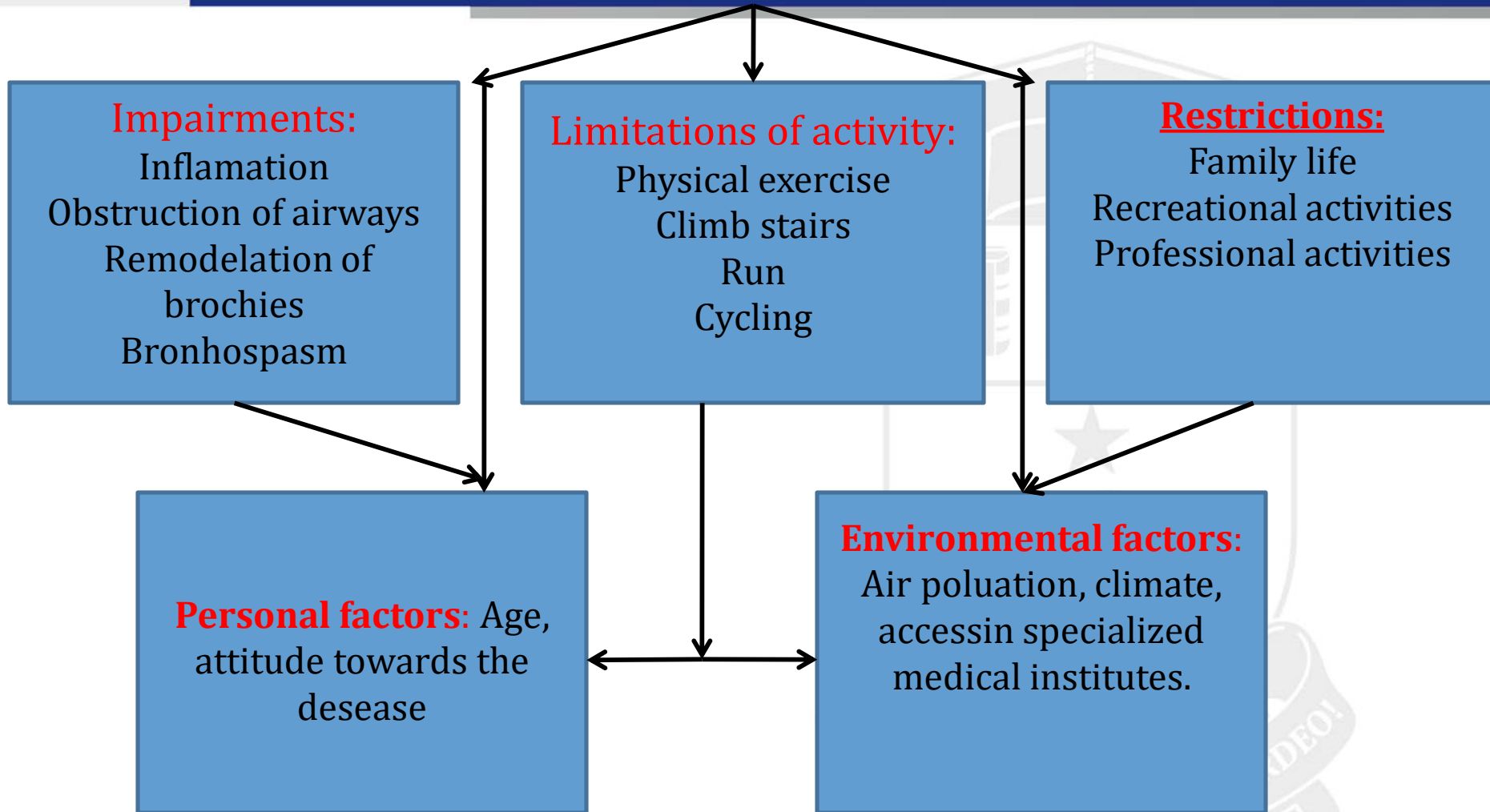
Definitions (ICF)

- **Participation** is involvement in a life situation.
- **Participation restrictions** (former term of **handicap**) are problems an individual may experience in involvement in life situations.
- **Environmental factors** make up the physical, social and attitudinal environment in which people live and conduct their lives.





Examples Bronchial asthma





Examples

Spinal cord injury

- **Impairment**

- ✓ body structure – spinal cord lesion,
- ✓ body function – paraplegia.

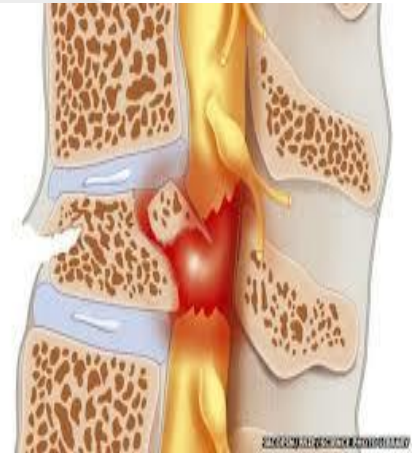
- **Disability (activity limitation)**

- ✓ Limitation of walk or climb stairs .

- **Participation**

- ✓ Restriction to go to school or continue a job in the current environment

- **Environmental factors** make up the physical, social and attitudinal environment in which people live and conduct their lives.





ICF applications

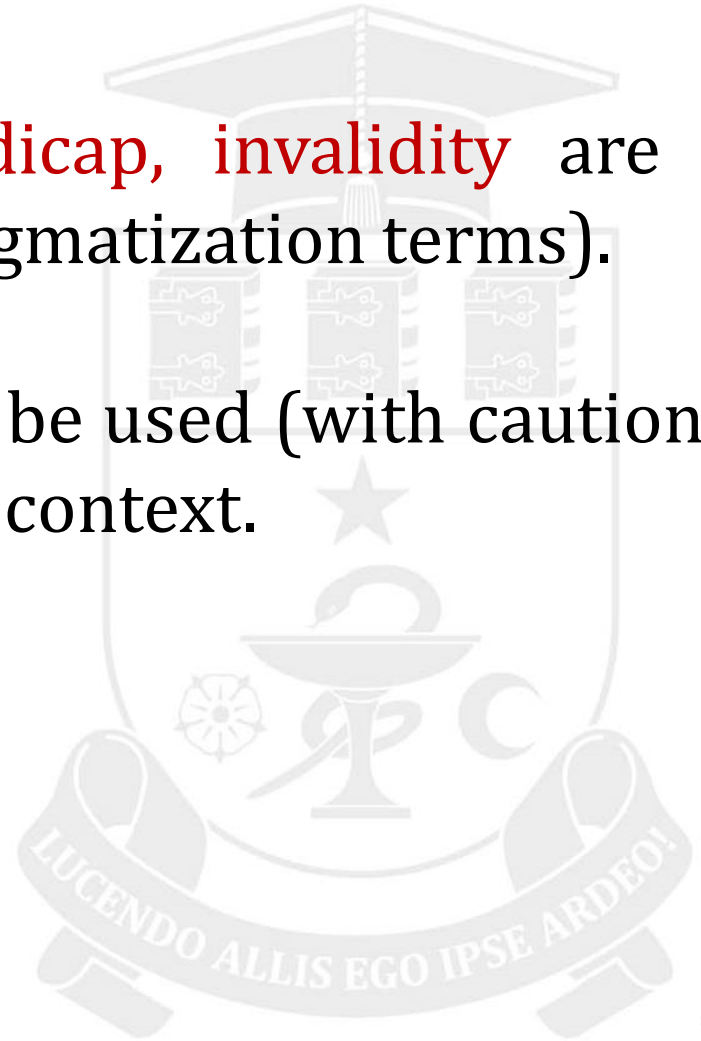
- Statistical tool
- Research tool
- Clinical investigation tool
- Policy tool
- Educational tool





Terminology

- Nowadays terms of **handicap, invalidity** are not accepted (they represent stigmatization terms).
- The term of disability can be used (with caution) in the clinical and professional context.





Positive and negative aspects

Positive	Negative
Body Functions	Impairment
Activity	Limitation of activity
Participation	Restriction of participation



Model disability survey

Health Condition



Limitations in
functioning



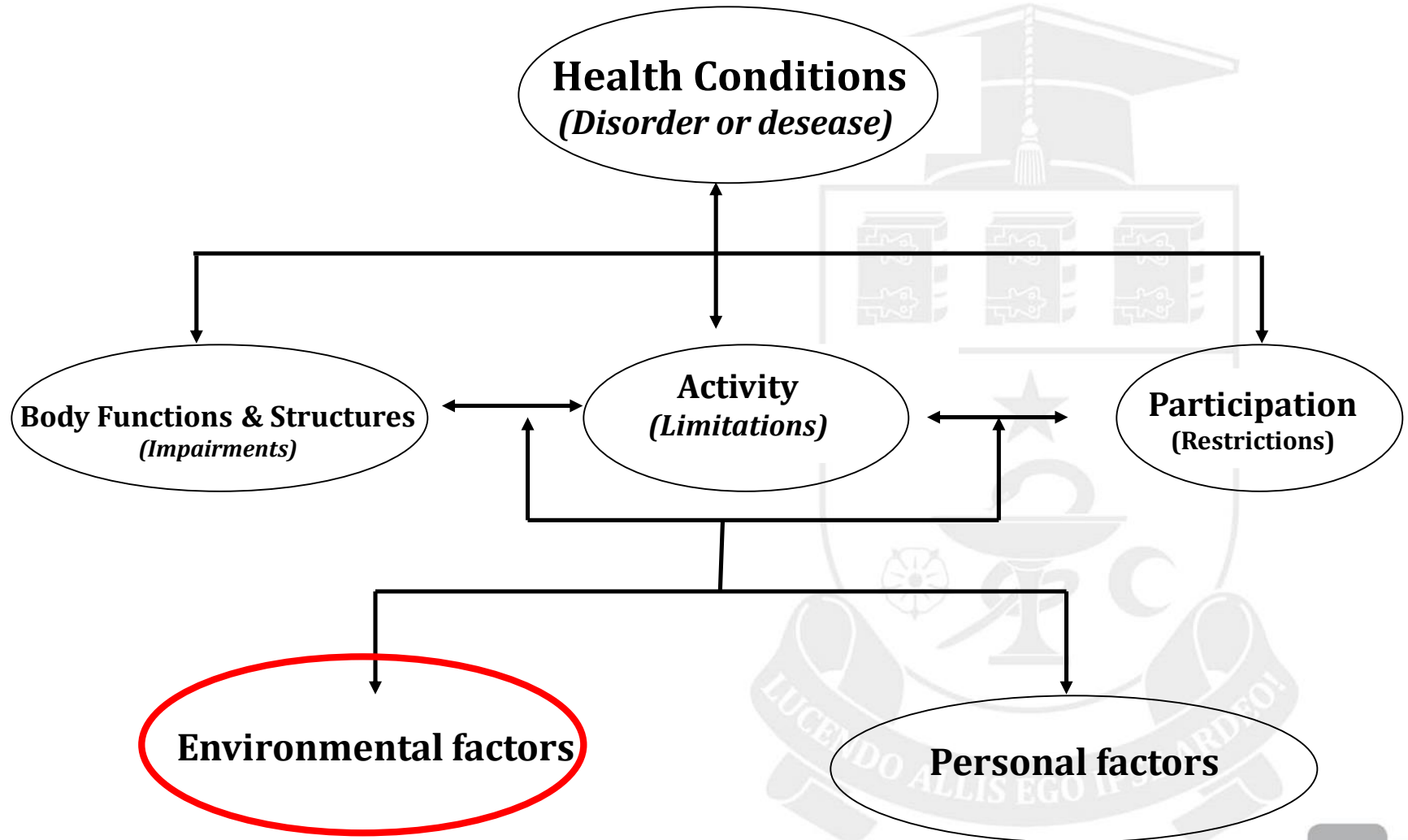
Environmental Factors



World Health
Organization



International classification of functioning disability and health (ICF)

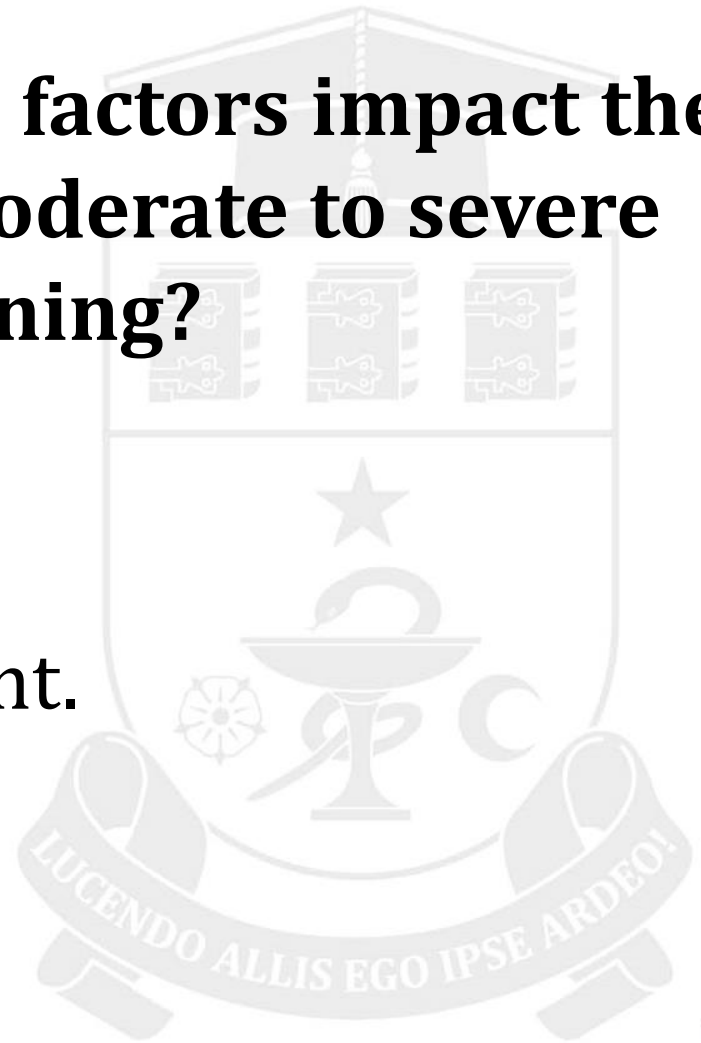




Environmental factors

Which environmental factors impact the most persons with moderate to severe limitations in functioning?

1. Physical environment.
2. Social support.
3. Attitudinal environment.
4. Assistive devices.
5. Personal assistance.





Disability



“Disability should not be an obstacle to success. I have suffered all my adult life from a motor neuron disease.

However, that has not prevented me from having a wonderful career in astrophysics and having a happy family life.”

*professor Stephen W, Hawking
Nobel Laureate*



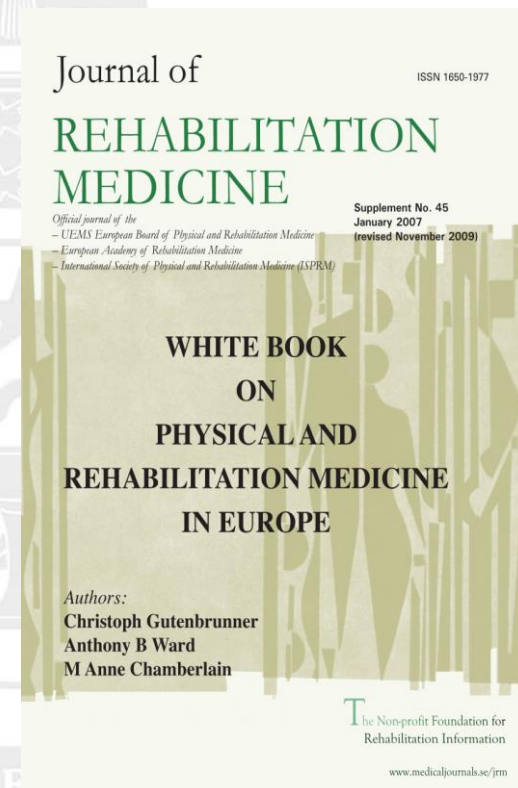
White Book

This book sets out the position of Physical and Rehabilitation Medicine in Europe, it defines:

- ✓ the specialty and its work,
- ✓ the competencies of its practitioners,
- ✓ its relationships to other medical disciplines and professions allied to health,
- ✓ training and skills of PRM specialists in detail.

J Rehabil Med. 2007 Jan;(45 Suppl):6-47.

White book on Physical and Rehabilitation Medicine in Europe.
<http://www.whitebookprm.eu>



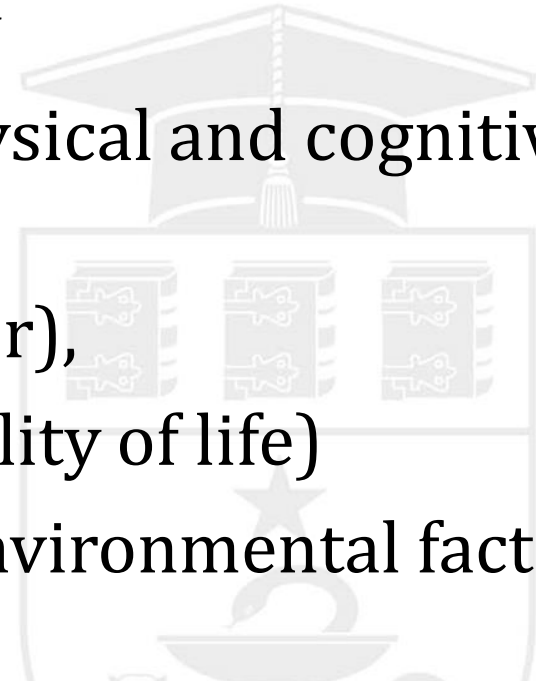
The Non-profit Foundation for
Rehabilitation Information

www.medicaljournals.se/jrm



Definition UEMS

- Independent medical specialty
- ✓ concerned with promoting physical and cognitive functioning,
- ✓ of activities (including behavior),
- ✓ of participation (including quality of life)
- ✓ and modifying personal and environmental factors.



Uniunea
Europeană a
Medicilor
Specialiști





PMR Doctor (UEMS)

PMR specialists holistically approach people with acute or chronic conditions.

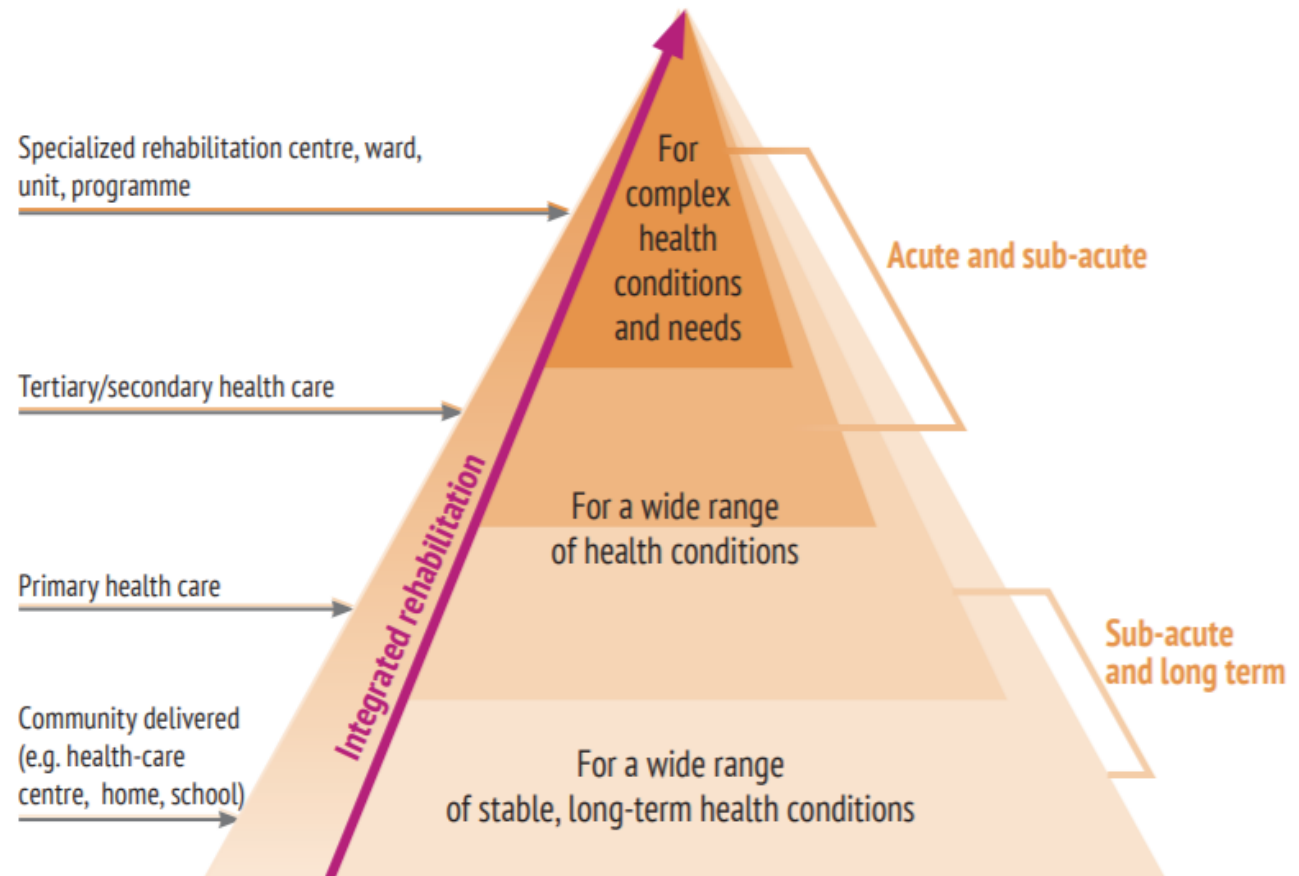


The word of “**holism**” states that PRM is focused on the whole person. This word perfectly paints the specialty focused on “functioning” and “disability” (that are “holistic” by definition).



PMR Doctor (UEMS)

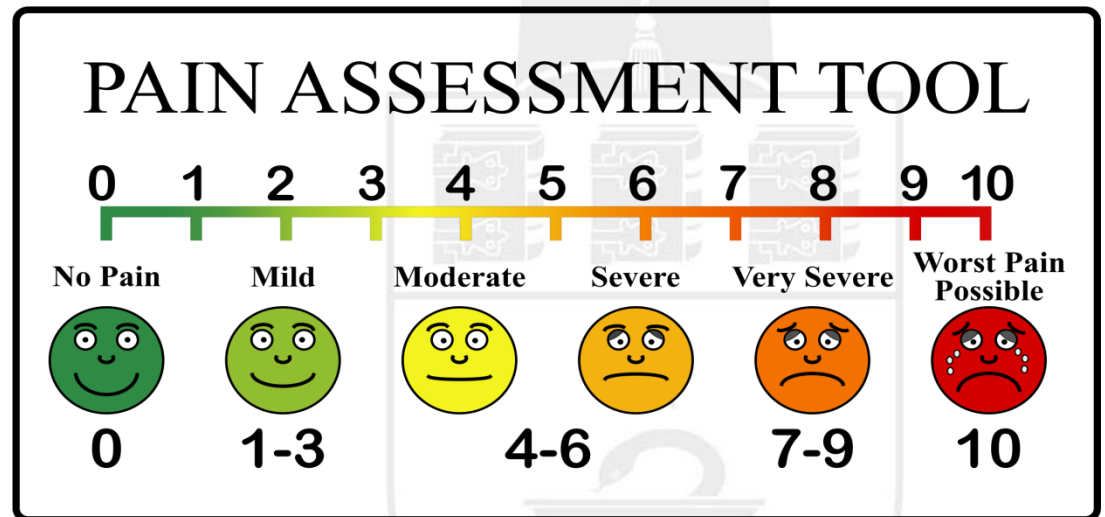
- Works in different units from emergency services to community locations.





PMR Doctor (UEMS)

- Use a specific tools for evaluation, diagnosis and treatment.





PMR Doctor

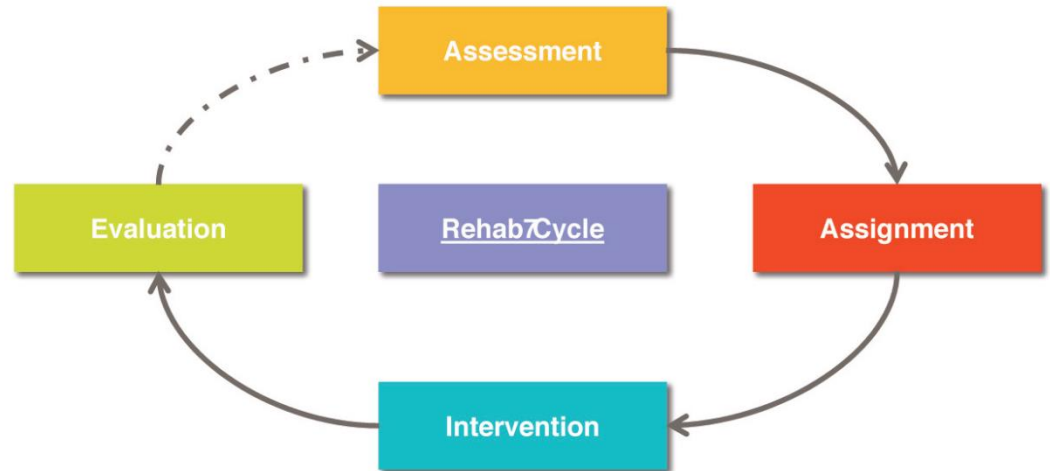
- Perform treatments, including
 - ✓ pharmacological,
 - ✓ physical,
 - ✓ technical,
 - ✓ educational
 - ✓ professional interventions.
- Due to the complex training, they are responsible for the activities of the multi-professional teams in achieving optimal results.





Rehabilitation process

- The rehabilitation process regularly comprises 4 stages:
 - ✓ assessment;
 - ✓ goal-setting;
 - ✓ intervention;
 - ✓ evaluation



The rehabilitation cycle (modified from Stucki *et al.*12 and Rauch *et al.*14).



Objectives of rehabilitation

- Treating the underlying pathology;
- Preventing and treating complications;
- Reducing the impairment and/or disability;
- Improving functioning and activity;
- Enabling participation.





Basic principals of rehabilitation

Early initiation

Continuity

Stages,
levels

Complexity
Multidisciplinary
approach

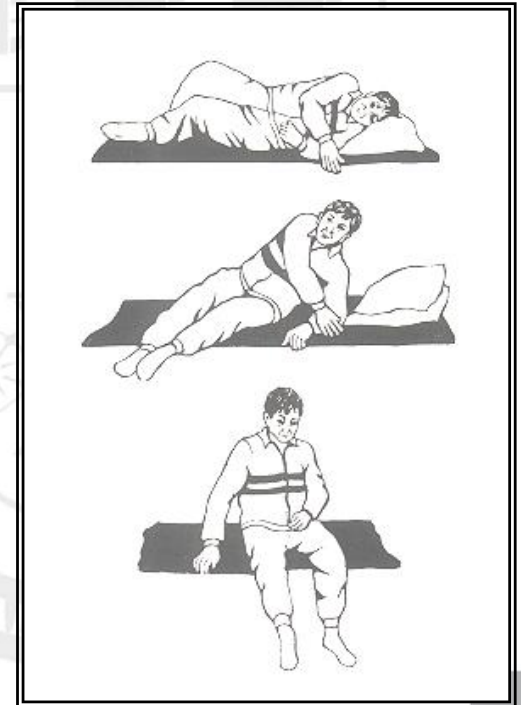
Centered on
the patient





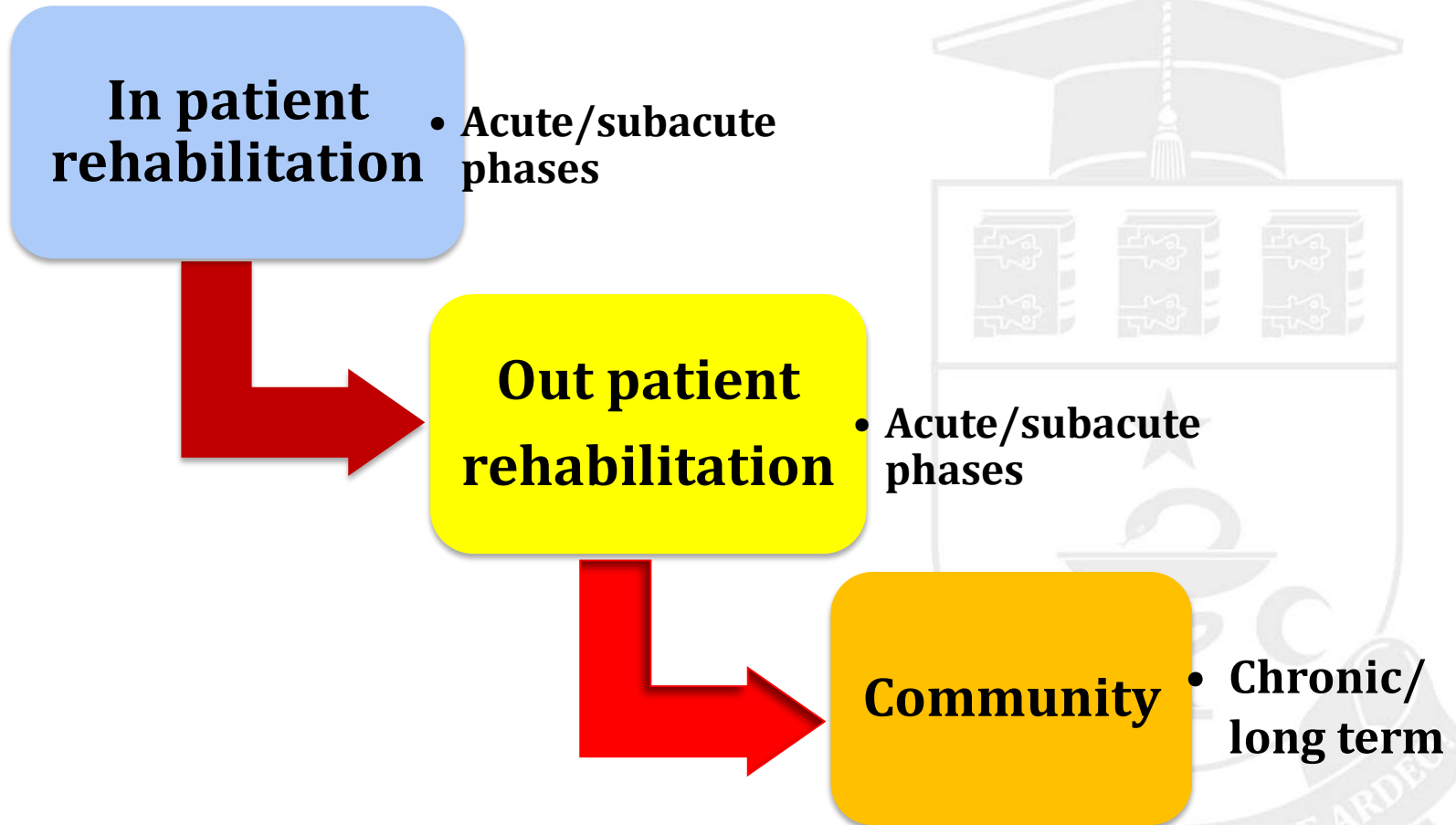
Principles of rehabilitation

1. **Early initiation** (as early as possible)
2. **Continuity** with respect to
 - ✓ illness phases (acute, post-acute, chronic)
 - ✓ level of rehabilitation assistance



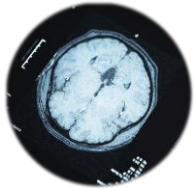


Levels, stages



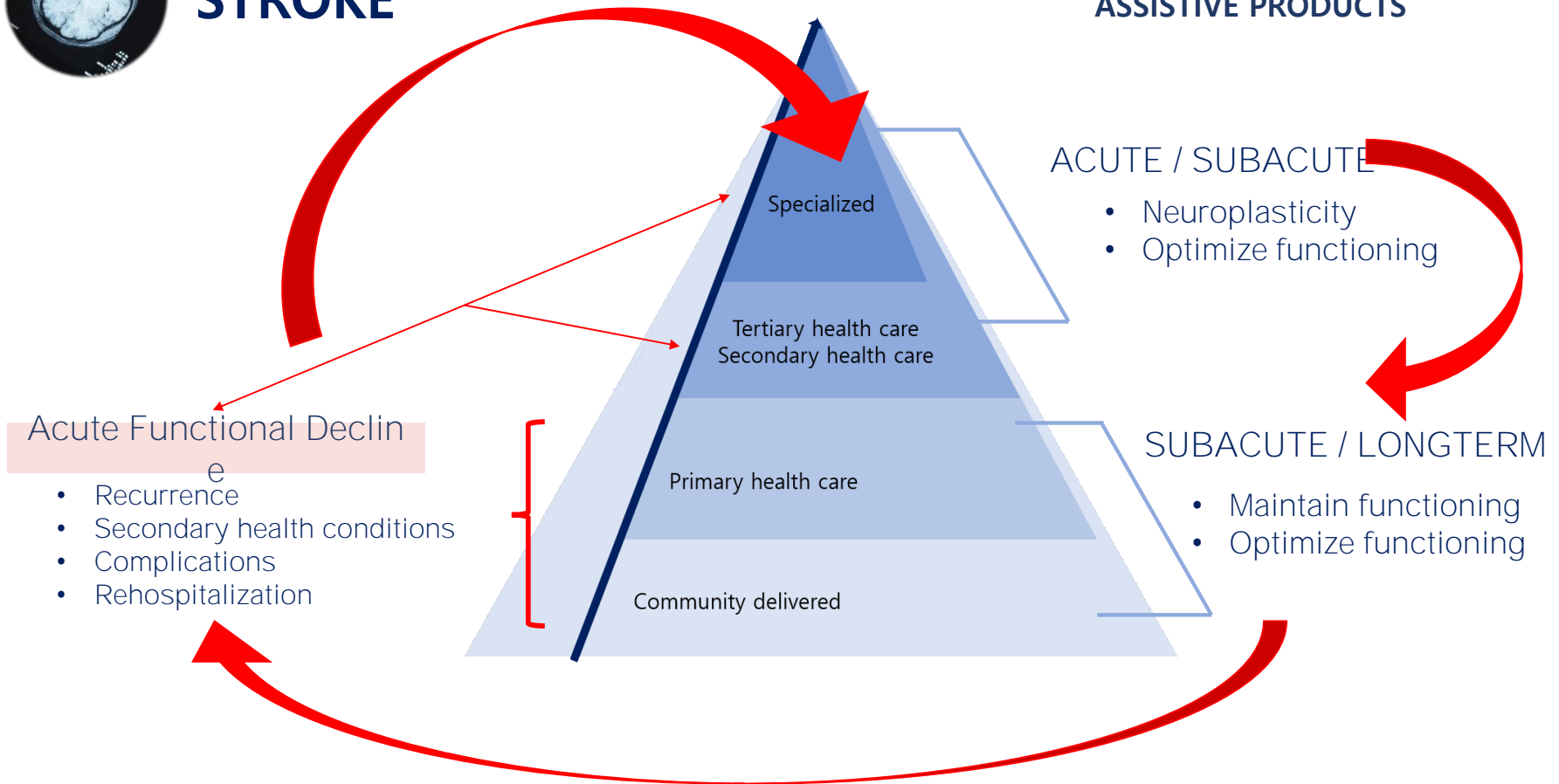


Levels, stages



STROKE

ASSISTIVE PRODUCTS



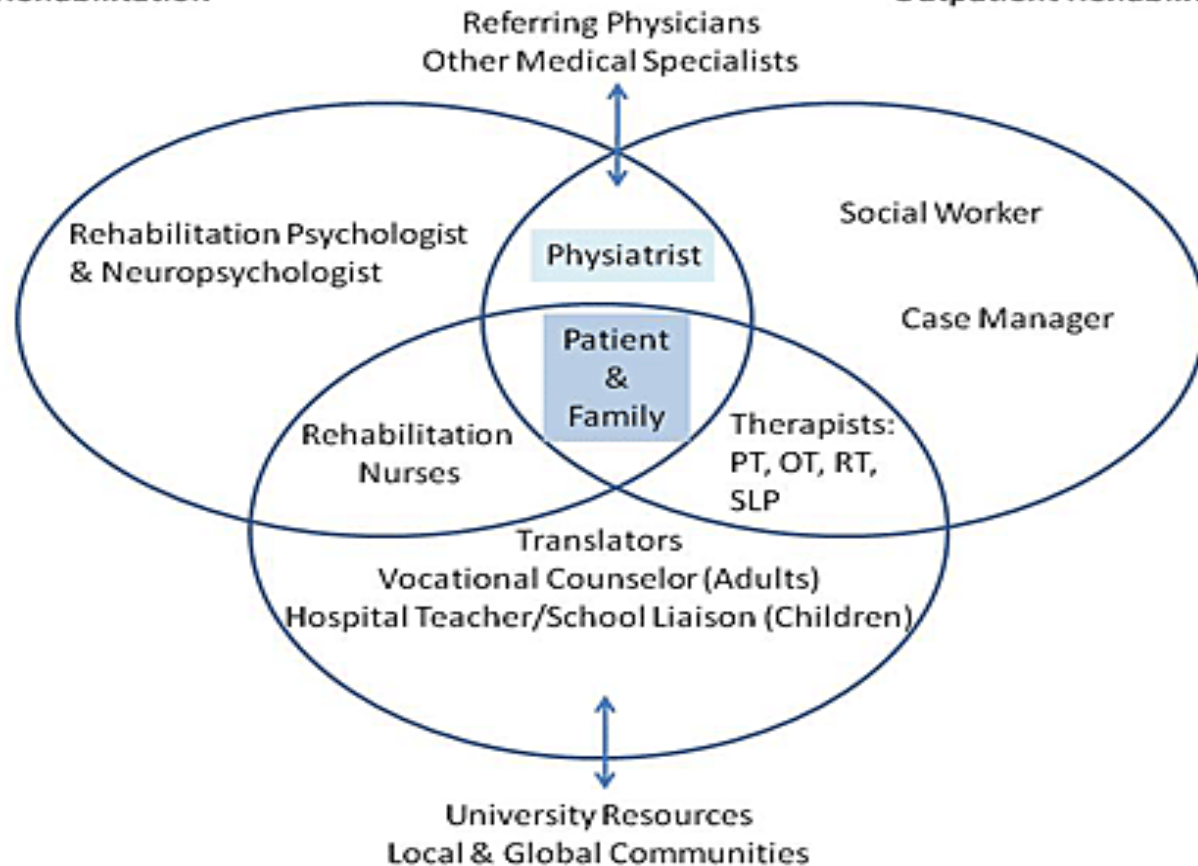


Principles of rehabilitation

3. Multidisciplinary team work

Inpatient Rehabilitation

Outpatient Rehabilitation



Subacute Rehabilitation

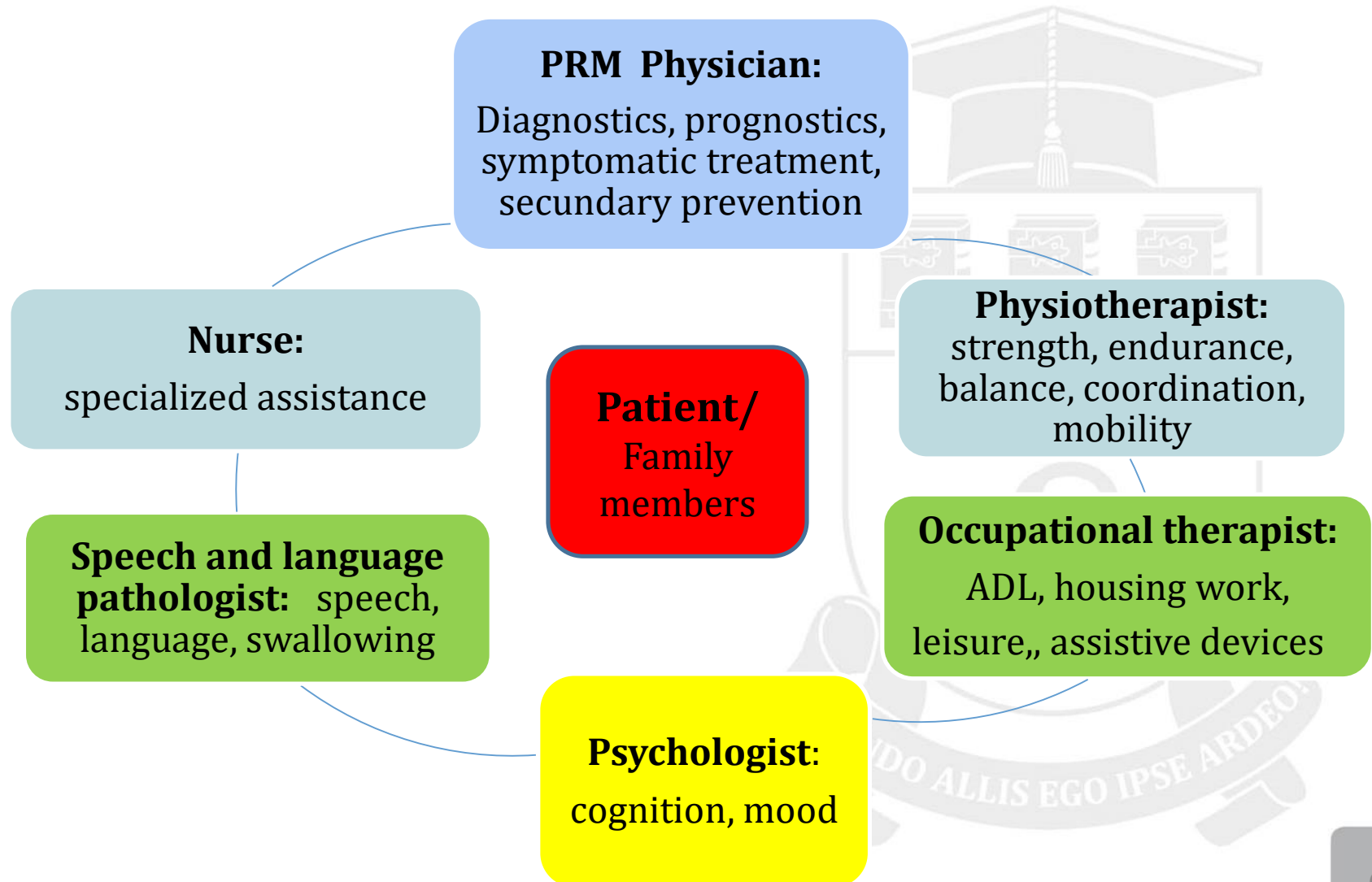
Long Term Acute/Care

J Rehabil Med. 2012 Nov;44(11):901-12.

Multidisciplinary team care in rehabilitation: an overview of reviews.



Multidisciplinary team





Multidisciplinary approach/team

- The objective of multidisciplinary team meeting is to set common goals, strategy and plan of rehabilitation.





Competences of multidisciplinary team

- Select patients who follow complex rehabilitation program,
- complete initial evaluation,
- setting the objectives and goals of the rehabilitation program,
- ensuring a progressive recovery program, adapted to each stage of the disease,
- evaluation of results, and long-term monitoring of the recovery program.

J Rehabil Med. 2012 Nov;44(11):901-12. doi: 10.2340/16501977-1040.
Multidisciplinary team care in rehabilitation: an overview of reviews.





The rehabilitation goal

Must be:

- Centered on the patient
- Patient-conscious
- Accepted by the patient and family members





The rehabilitation goal

Setting goals - SMART principle:



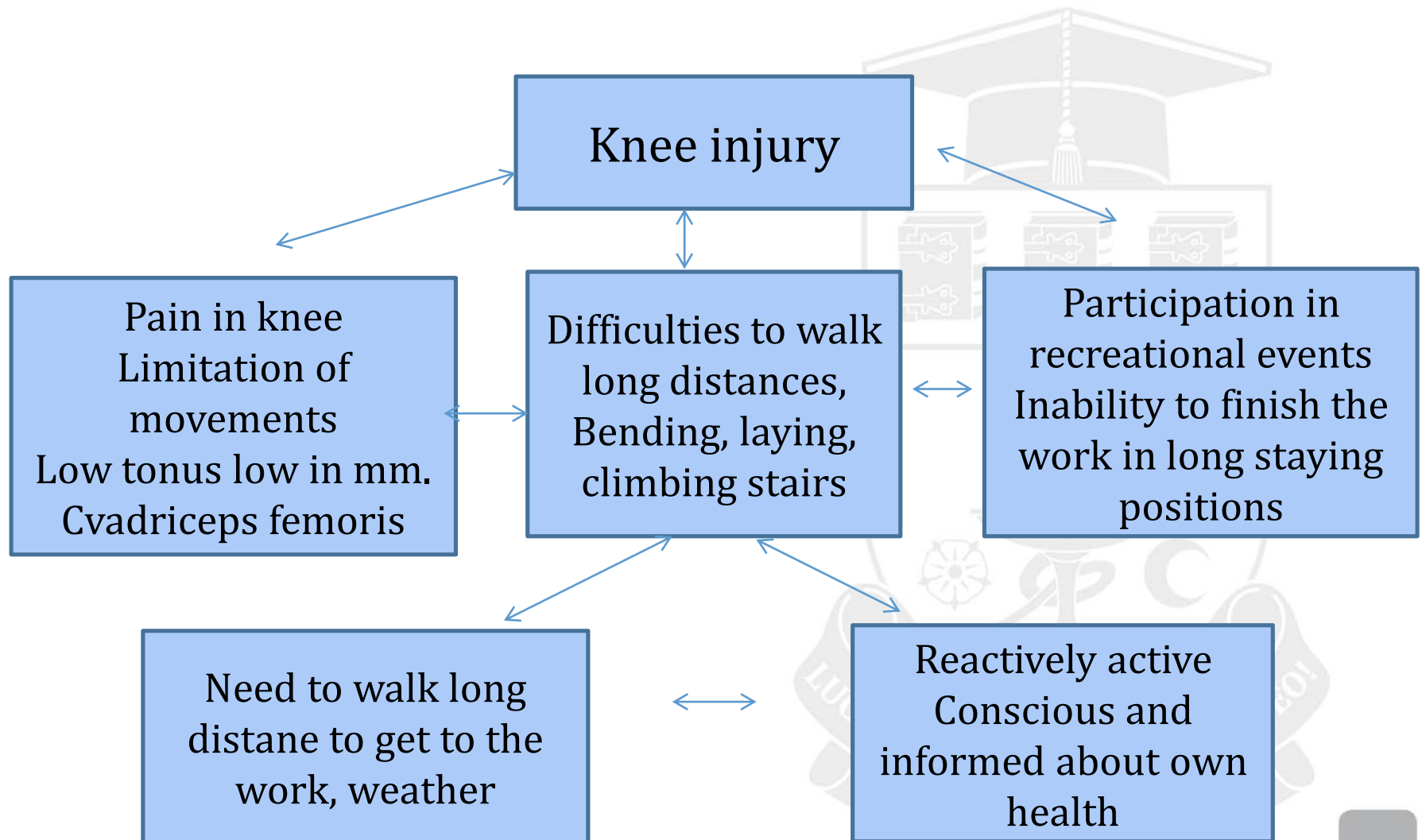


Case presentation

- Patient 23 years, trauma (sport) of the knee joint
- Sprain of the medial, and lateral collateral ligaments and patello-femoral instability
- Evaluated by the multi-disciplinary team at 4 weeks after trauma
- Applied ICF Model and interventions



ICF model





Interventions :

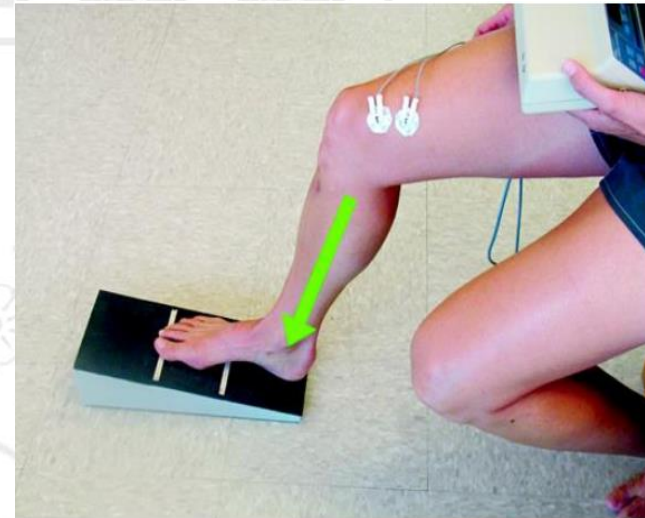
- The patient should go for daily snow and ice) was encouraged to wear a knee pad (neoprene cuff) and to wear appropriate footwear when walking outside.
- Personal factors - active in recreational activities - informed about restrictions and precautions.





Interventions:

- Isometric contractions of the quadriceps femoral muscle group with the knee in extended positions were facilitated with the use of auditory and visual biofeedback.
- Progression of the exercise with the knee at 45 degrees and the right leg resting on the floor. Co-contraction of the tibial muscles and thigh extensors (press the heel down on an inclined platform)





Interventions:

- Cryotherapy (cold), massage.
- Progressive treatment (progressive extension) - 4 weeks with gradual increase of tasks and intensity.
- Patient reassessed, continued 9-week physical therapy with functional improvement.
- 76 p from 80 points on the Lower-Extremity Function Scale.
- Active patient and optimal functionality.





REHABILITATION

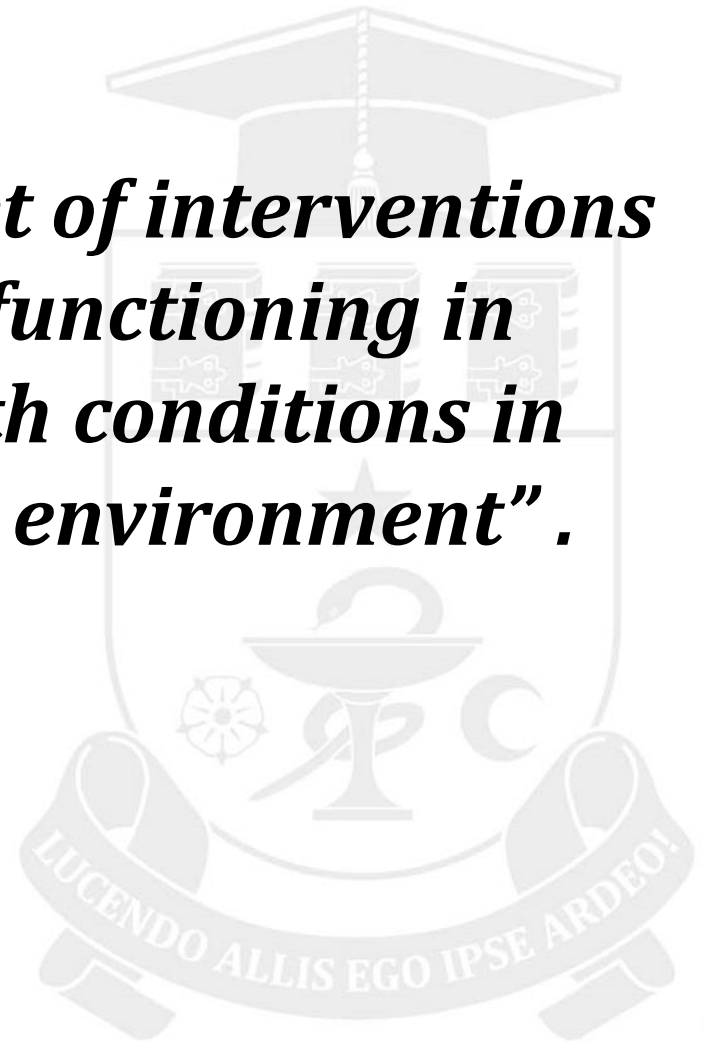
- *What is Rehabilitation ?*





REHABILITATION

“Rehabilitation is a set of interventions designed to optimize functioning in individuals with health conditions in interaction with their environment”.





Rehabilitation

- What do we deal with?
- What solutions do we had ?





Pain



Cold/ Ice / Heat

Hidro-terapie



TENS



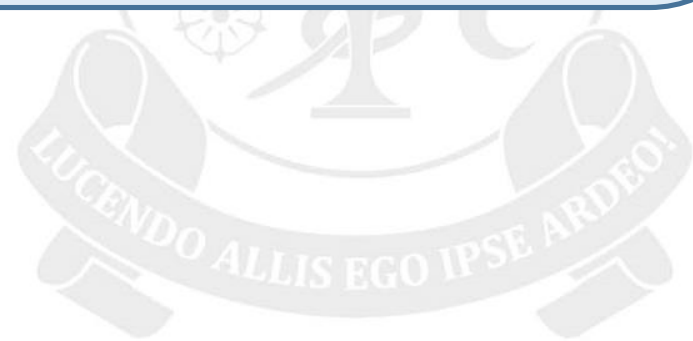
Spasticity

Baclofen/
Pump



Manual
Therapy

Botox





Disfagia

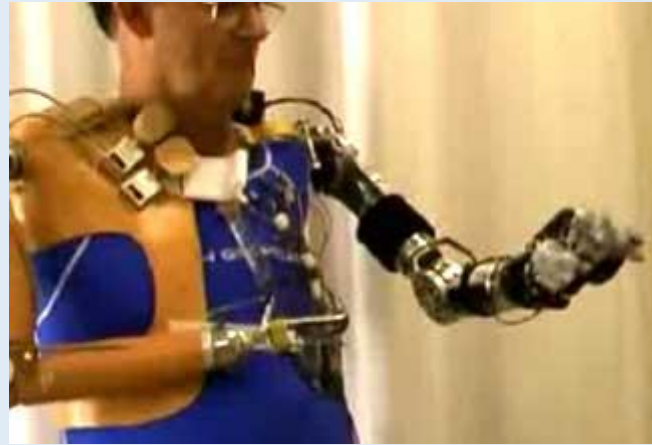
Electrical
Stimulation



Thickening powder



Amputations



Prosthesis





Rehabilitation

- ✗ Is rehabilitation only for persons with disability?
- ✓ Rehabilitation is needed for anyone with a health conditions, impairment or injury, acute or chronic, that limits functioning, including persons with disability .
- ✗ Is rehabilitation is a highly specialized service for athletes or post-injury return for work service?
- ✓ Rehabilitation address a needs for broad scope a people across for lifespan.
- ✗ Is rehabilitation a luxury health service that could be ignored?
- ✓ Rehabilitation is a core component of health care.



Conclusions

- ✓ ***Medical rehabilitation*** is an independent medical specialty
- ✓ ***Medical rehabilitation*** has its own defined methods, principles and objectives of application
- ✓ ***The ICF model*** is a fundamental pillar of the specialty that emphasizes functioning
- ✓ ***The ultimate goal***: to reduce the degree of disability, increase the level of participation and increase the quality of life.



Discussions / Questions ?





Feedback

Today I found out...	It was difficult to understand ...	I would like to know more about ...

