

# ICF assessment

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# Why it ought to change?

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## ICIDH, 1981

▶ Impairment



▶ Disability



▶ Handicap



## ICF, 2001

▶ Body function/Body structure Impairment

▶ Activity limitation

▶ Participation restriction



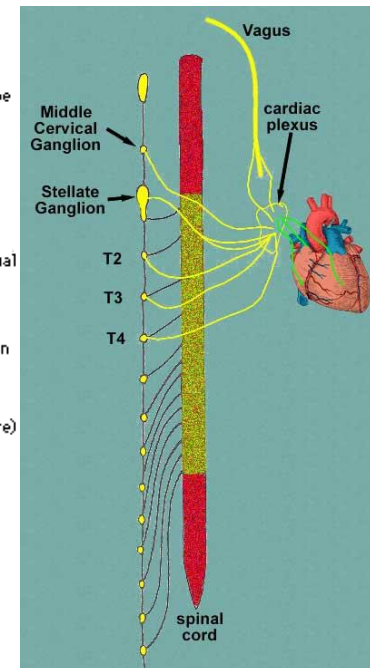
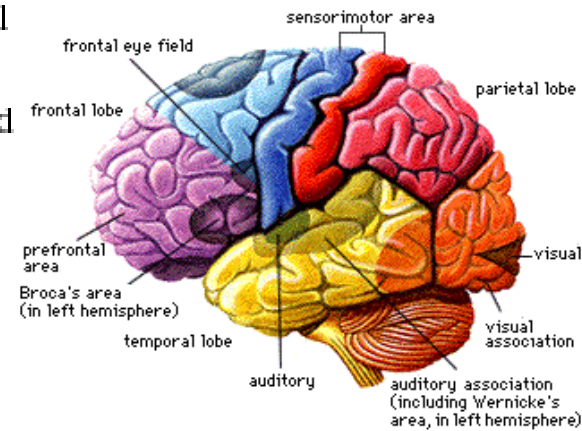
# Body structure

## Body structures

Chapter 1	Structures of the nervous system
Chapter 2	The eye, ear and related structures
Chapter 3	Structures involved in voice and speech
Chapter 4	Structures of the cardiovascular, immunological and respiratory systems
Chapter 5	Structures related to the digestive, metabolic and endocrine systems
Chapter 6	Structures related to the genitourinary and reproductive systems
Chapter 7	Structures related to movement
Chapter 8	Skin and related structures

### Chapter 1 Structures of the nervous system

- s110 Structure of brain
- s120 Spinal cord and related structures
- s130 Structure of meninges
- s140 Structure of sympathetic nervous system
- s150 Structure of parasympathetic nervous system



# Body function

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## Body functions

Chapter 1	Mental functions	<i>Functions of the cardiovascular system (b410-b429)</i>
Chapter 2	Sensory functions and pain	b410 Heart functions
Chapter 3	Voice and speech functions	b415 Blood vessel functions
Chapter 4	Functions of the cardiovascular, haematological, immunological and respiratory systems	b420 Blood pressure functions
Chapter 5	Functions of the digestive, metabolic and endocrine systems	<i>Functions of the haematological and immunological systems (b430-b435)</i>
Chapter 6	Genitourinary and reproductive functions	b430 Haematological system functions
Chapter 7	Neuromusculoskeletal and movement-related functions	b435 Immunological system functions
Chapter 8	Functions of the skin and related structures	<i>Functions of the respiratory system (b440-b449)</i>
		b440 Respiration functions
		b445 Respiratory muscle functions



# Body function

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## Body functions

Chapter 1	Mental functions
Chapter 2	Sensory functions and pain
Chapter 3	Voice and speech functions
Chapter 4	Functions of the cardiovascular, haematological, immunological and respiratory systems
Chapter 5	Functions of the digestive, metabolic and endocrine systems
Chapter 6	Genitourinary and reproductive functions
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Chapter 8	Functions of the skin and related structures

### *Functions of the joints and bones (b710-b729)*

b710	Mobility of joint functions
b715	Stability of joint functions
b720	Mobility of bone functions

### *Muscle functions (b730-b749)*

b730	Muscle power functions
b735	Muscle tone functions
b740	Muscle endurance functions

### *Movement functions (b750-b789)*

b750	Motor reflex functions
b755	Involuntary movement reaction functions
b760	Control of voluntary movement functions
b765	Involuntary movement functions
b770	Gait pattern functions
b780	Sensations related to muscles and movement functions



# Activities and participation

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## Activities and participation

Chapter 1	Learning and applying knowledge
Chapter 2	General tasks and demands
Chapter 3	Communication
Chapter 4	Mobility
Chapter 5	Self-care
Chapter 6	Domestic life
Chapter 7	Interpersonal interactions and relationships
Chapter 8	Major life areas
Chapter 9	Community, social and civic life

### Self care

- Eating
- Drinking
- Caring body part
- Brushing
- Washing
- Dressing
- Toileting



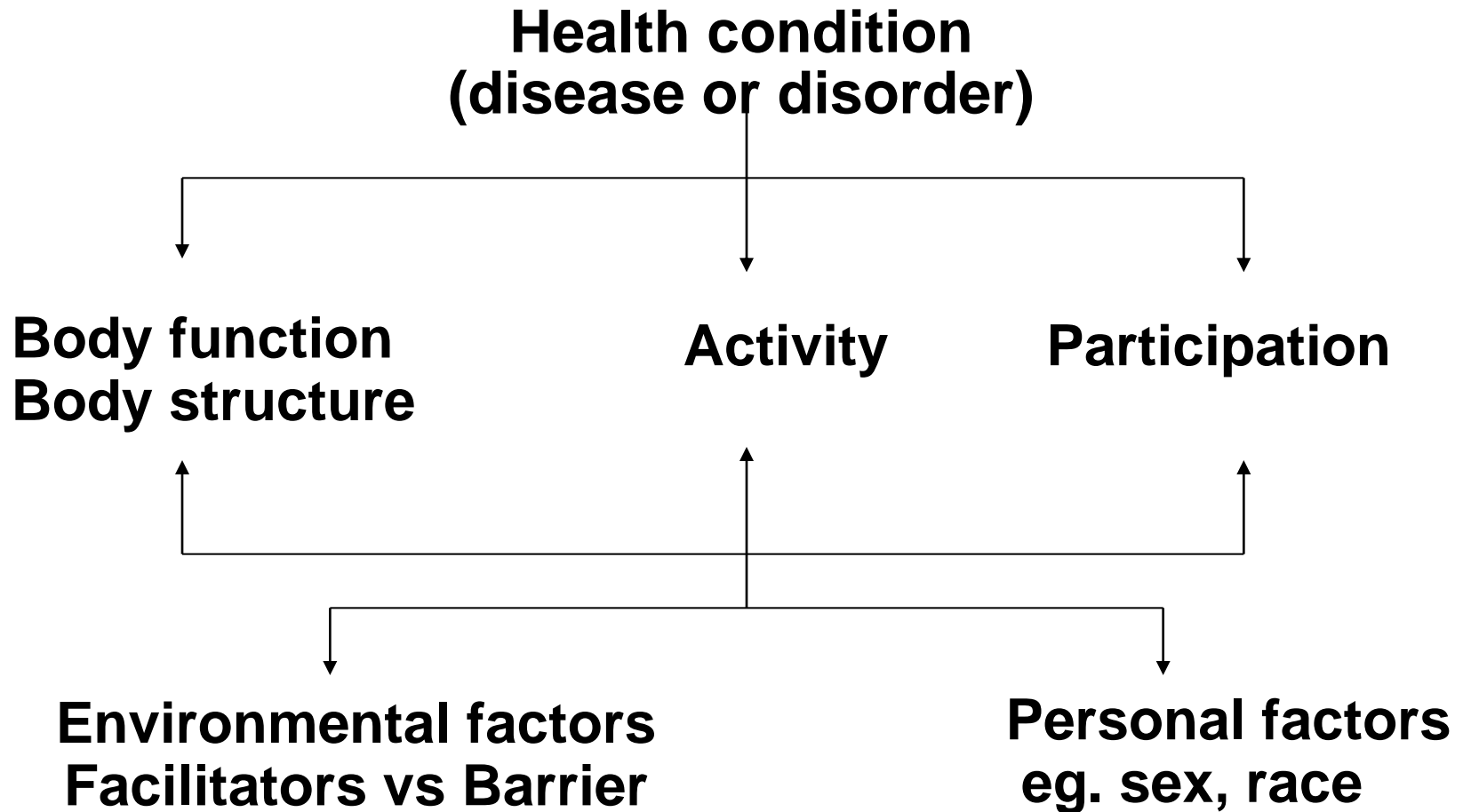
# Environmental factors

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Chapter 1	Products and technology
Chapter 2	Natural environment and human-made changes to environment
Chapter 3	Support and relationships
Chapter 4	Attitudes
Chapter 5	Services, systems and policies



# ICF Framework: interaction between components of ICF



Discussion case เดิม: Complete cord injury with spastic paraplegia



Wheelchair propeller?  
or  
Ambulator?

# การประเมินกำลังกล้ามเนื้อ

## Manual muscle testing

### Upper limb

- ▶ C5 – biceps
- ▶ C6 – wrist extensors
- ▶ C7 – triceps
- ▶ C8 – FDP of middle finger
- ▶ T1 – ADM

### Lower limb

- ▶ L2 – hip flexor
- ▶ L3 – Knee extensor
- ▶ L4 – Ankle dorsiflexor
- ▶ L5 – EHL
- ▶ S1 – Ankle plantarflexors

เอกสารประกอบการสอน

-แบบประเมิน ASIA/ISCOS Standards for Neurological Assessment

### Trick movements

- ▶ Tendon action, tenodesis action
- ▶ By gravity
- ▶ Rebound effect
- ▶ Direct substitution by synergist
- ▶ Accessory insertion

# การประเมินความรู้สึกที่ผิวหนัง และ ความรู้สึกเจ็บปวด

## **SCI**

- ▶ 0 = loss
- ▶ 1 = impaired
- ▶ 2 = normal
  
- ▶ Pinprick – safety pin
- ▶ Light touch – cotton ball or tissue paper
  
- ▶ Perianal + Deep anal sense

## **CVA**

- ▶ Light touch
  - ▶ Double simultaneous extinction
- ▶ Joint position sense
- ▶ Special senses

## **DM**

- ▶ Protective sense – monofilament

# แบบ form ASIA

**ASIA**

## STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY

**MOTOR**  
KEY MUSCLES

	R	L
C0		
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4-S5		

Elbow flexors  
Wrist extensors  
Elbow extensors  
Finger flexors (distal phalanx of middle finger)  
Finger abductors (little finger)

0 = total paralysis  
1 = palpable or visible contraction  
2 = active movement, gravity eliminated  
3 = active movement, against gravity  
4 = active movement, against some resistance  
5 = active movement, against full resistance  
NT = not testable

Hip flexors  
Knee extensors  
Ankle dorsiflexors  
Long toe extensors  
Ankle plantar flexors

Voluntary anal contraction (Yes/No)

**SENSORY**  
KEY SENSORY POINTS

	R	L
C0		
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4-S5		

Any anal sensation (Yes/No)

**LIGHT TOUCH**

	R	L
C0		
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4-S5		

**PIN PRICK**

	R	L
C0		
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4-S5		

Any anal sensation (Yes/No)

**TOTALS**  +  =  **MOTOR SCORE** (maximum) (00) (00) (100)

**TOTALS**  +  =  **PIN PRICK SCORE** (maximum) (00) (00) (00) (00) (110)

**TOTALS**  +  =  **LIGHT TOUCH SCORE** (maximum) (00) (00) (00) (00) (110)

<b>NEUROLOGICAL LEVEL</b> <small>The most caudal segment with normal function:</small>		<b>R</b>	<b>L</b>	<b>COMPLETE OR INCOMPLETE?</b> <input type="checkbox"/> <small>Incomplete = Any sensory or motor function in S&amp;M</small>	<b>ZONE OF PARTIAL PRESERVATION</b> <small>Caudal extent of partially preserved segments</small>	<b>R</b>	<b>L</b>
<b>SENSORY MOTOR</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>ASIA IMPAIRMENT SCALE</b> <input type="checkbox"/>	<b>SENSORY MOTOR</b>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

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# ASIA group

- ▶ ตามแบบประเมิน  
ASIA/ISCOS Neurological  
Standards
- ▶ Paraplegia, (paraparesis)
- ▶ Tetraplegia, (tetraparesis)
  
- ▶ Hemiplegia, hemiparesis

## SCI

- ▶ A – complete cord
  - ▶ No sacral sparing
- ▶ B – sensory spared only
- ▶ C – motor useless
- ▶ D – motor useful
- ▶ E – complete recovery
  
- ▶ Identify to most lowest intact  
level

# ASIA scale

Motor		
	Rt.	Lt.
C5	5	5
C6	5	5
C7	5	5
C8	5	5
T1	5	5
T2-L1	...	...
L2	5	5
L3	5	5
L4	5	5
L5	5	5
SI	5	5

PPS		LTS	
Rt.	Lt.	Rt.	Lt.
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2



# ASIA scale

Motor		
	Rt.	Lt.
C5	5	5
C6	5	5
C7	5	5
C8	0	0
T1	0	0
T2-L1	...	...
L2	0	0
L3	0	0
L4	0	0
L5	0	0
S1	0	0

Motor level

Sensory level

PPS		LTS	
Rt.	Lt.	Rt.	Lt.
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0



# C7A

Motor				PPS		LTS	
	Rt.	Lt.		Rt.	Lt.	Rt.	Lt.
C5	5	5		2	2	2	2
C6	5	5		2	2	2	2
C7	5	5		2	2	2	2
C8	0	0	Neurological level	2	2	2	2
T1	0	0		0	0	0	0
T2-L1	...	...		0	0	0	0
L2	0	0		0	0	0	0
L3	0	0		0	0	0	0
L4	0	0		0	0	0	0
L5	0	0		0	0	0	0
SI	0	0		0	0	0	0





# C7B

Motor		
	Rt.	Lt.
C5	5	5
C6	5	5
<b>C7</b>	<b>5</b>	<b>5</b>
C8	0	0
T1	0	0
T2-L1	...	...
L2	0	0
L3	0	0
L4	0	0
L5	0	0
SI	0	0

PPS		LTS	
Rt.	Lt.	Rt.	Lt.
2	2	2	2
2	2	2	2
<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
2	2	2	2
1	1	1	0
1	1	1	1
1	1	2	0
1	0	0	1
1	1	0	0
0	0	0	0
0	0	0	0

▶ T2B and T10B ประเมินแยกกันอย่างไร เพื่อประโยชน์อะไร

# C7C

Motor		
	Rt.	Lt.
C5	5	5
C6	5	5
<b>C7</b>	<b>5</b>	<b>5</b>
C8	2	2
TI	3	2
T2-LI	...	...
L2	1	2
L3	2	1
L4	1	0
L5	0	0
SI	0	0

PPS		LTS	
Rt.	Lt.	Rt.	Lt.
2	2	2	2
2	2	2	2
<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
2	2	2	2
1	1	1	0
1	1	1	1
1	1	2	0
1	0	0	1
1	1	0	0
0	0	0	0
0	0	0	0



# C7D

Motor		
	Rt.	Lt.
C5	5	5
C6	5	5
<b>C7</b>	<b>5</b>	<b>5</b>
C8	<b>5</b>	<b>4</b>
TI	<b>4</b>	<b>3</b>
T2-L1	...	...
L2	<b>3</b>	<b>4</b>
L3	<b>3</b>	<b>5</b>
L4	2	<b>3</b>
L5	1	2
SI	1	1

PPS		LTS	
Rt.	Lt.	Rt.	Lt.
2	2	2	2
2	2	2	2
<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
2	2	2	2
1	1	1	0
1	1	1	1
1	1	2	0
1	0	0	1
1	1	0	0
0	0	0	0
0	0	0	0





## คำถาม

- ▶ Muscle power → functions and activities
  - ▶ LEMS > 20 at one month post injury  
→ walk in one year
  - ▶ UEMS > 30 at one month post injury  
→ useful arm and hand use
- ▶ Does a tetraplegic person drive a car?
- ▶ How can a tetraplegic C5 eat by himself?
- ▶ How could a tetraplegic C7 transfer himself?

# การประเมิน การทำงานของจิตใจ(สมอง) ด้วย MMSE-Thai หรือ TMSE

## Based on ICF

### ▶ **Global mental functions**

- ▶ Consciousness
- ▶ Orientation
- ▶ Intellectual
- ▶ Global psychosocial
- ▶ Temperament & personality
- ▶ Energy and drive
- ▶ Sleep

### ▶ **Specific mental functions**

## Based on TMSE

- ▶ Orientation
- ▶ Registration
- ▶ Attention
- ▶ Calculation
- ▶ Language
- ▶ Recall

**Reception  
Expression**



# การประเมินการทำงานของปอด และ ภาวะการหายใจบกพร่อง

## **Based on ICF**

- ▶ Respiratory rate
- ▶ Respiratory rhythm
- ▶ Depth of respiration
- ▶ **Respiratory muscles**
  - Diaphragm
  - Intercostal
  - Scalenei
  - Sternocleido-mastoid
  - Pectoralis
  - Abdominal

## ▶ **Additional respiratory function**

- ▶ **Coughing**, sneezing, yawning
- ▶ **Exercise tolerance**
  - ▶ General physical endurance
  - ▶ Aerobic capacity
  - ▶ Fatiguability

# การประเมิน ความสามารถ

Functional assessment

▶ **แบบประเมิน** Barthel Index



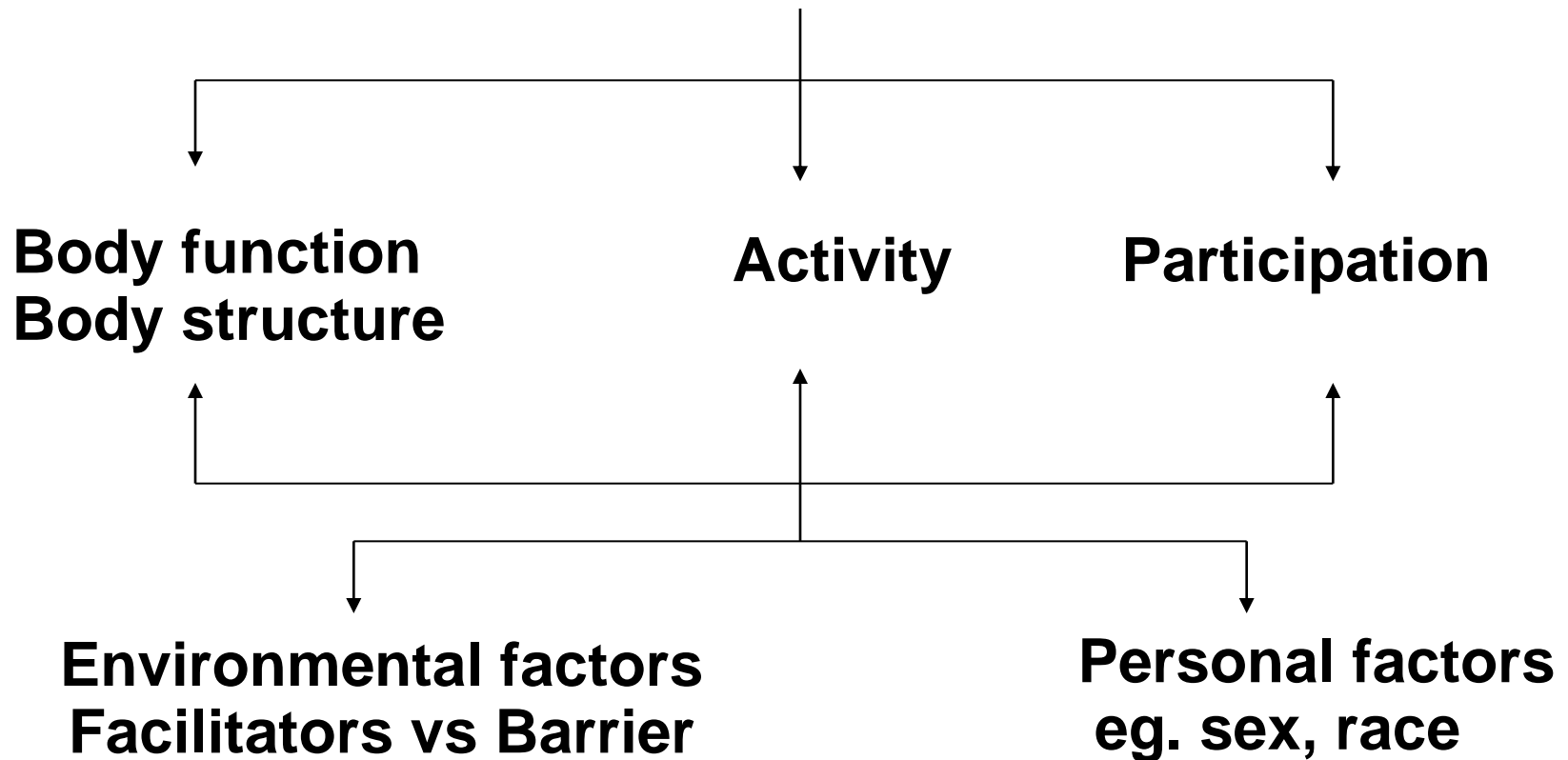
# การประเมินความพิการ

- ▶ พระราชบัญญัติการฟื้นฟูสมรรถภาพคนพิการ พ.ศ. ๒๕๓๔
- ▶ พระราชบัญญัติส่งเสริมและพัฒนาคุณภาพชีวิตคนพิการ พ.ศ. ๒๕๕๐
- ▶ ประเภทคนพิการ
- ▶ ประเภทความพิการ
- ▶ ความพิการที่เห็นประจักษ์
- ▶ ประเมินและออกเอกสารรับรองความพิการ

Take home message

# ICF Framework: interaction between components of ICF

**Health condition  
(disease or disorder)**



# การประเมินกำลังกล้ามเนื้อ

## Manual muscle testing

(๖๐ นาที)

### Upper limb

- ▶ C5 – biceps
- ▶ C6 – wrist extensors
- ▶ C7 – triceps
- ▶ C8 – FPD of middle finger
- ▶ T1 – ADM

### Lower limb

- ▶ L2 – hip flexor
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- ▶ L4 – Ankle dorsiflexor
- ▶ L5 – EHL
- ▶ S1 – Ankle plantarflexors

เอกสารประกอบการสอน

-แบบประเมิน ASIA/ISCOS Standards for Neurological Assessment

### Trick movements

- ▶ Tendon action, tenodesis action
- ▶ By gravity
- ▶ Rebound effect
- ▶ Direct substitution by synergist
- ▶ Accessory insertion

# การตรวจกำลังกล้ามเนื้อ

- ▶ ตามแบบประเมิน ASIA/ISCOS Neurological Standards
- ▶ Tetraplegia, (tetraparesis)
- ▶ Paraplegia, (paraparesis)
  
- ▶ Hemiplegia, hemiparesis

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THANK YOU