TRANSFORMING REHABILITATION • CONNECTING WORLDS

ISPRM2026

20th International Society of Physical and Rehabilitation Medicine World Congress

VANCOUVER, CANADA | MAY 17-21, 2026

in conjunction with the 74th Annual Scientific Meeting of CAPM&R

Canadian Association of Physical Medicine & Rehabilitation
Association canadienne de médecine physique et de réadaptation

ClinFIT in Action: from Functioning Data to Global Impact

Julia Patrick Engkasan, Xiaolei Hu, Melissa Selb, Fary Khan, Bhasker Amatya,

Adrian Martinez-De la Torre, Masahiko Mukaino, Gerold Stucki

on behalf of the ClinFIT Special Interest Group

#ISPRM26

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CAPM&R

AGENDA

Titel	Speaker	Time
Introduction to the session	Xiaolei Hu	5 min
Functional Assessment in Clinical Settings	Fary Khan	10 min
Understanding ClinFIT - From Data to Meaning		
— From ICF to Clinical Practice	Melissa Selb	15 min
— Embedding ClinFIT Across Cancer Care Continuum: Closing the Gap	Bhasker Amatya	15 min
— Rasch Analysis and development of interval scales	Masahiko Mukaino	15 min
— Minimal Clinically Important Differences (MCIDs) in ClinFIT	Adrian Martinez-De la Torre	15 min
Global ClinFIT Study – A Incoming ClinFIT Project with a International Initiative	Xiaolei Hu	25 min
Q & A & Becoming a Collaborator	Xiaolei Hu & Melissa Selb	20 min

Learning Objectives

- Understand the role of functioning data in modern rehabilitation practice, research, and health-system decision-making
- Explain the structure and content of ClinFIT based on the ICF framework
- Understand the methodological approach and clinical implementation
- Appreciate the potential applications of ClinFIT data
- Describe the design of the global ClinFIT study
- Engage as collaborators

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Let’s get started…

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Qatar Rehabilitation Institute
عضو في مؤسسة حمد الطبية
A Member of Hamad Medical Corporation

Functional Assessment in Clinical Settings

Fary Khan

Department of Physical Medicine and Rehabilitation
Qatar Rehabilitation Institute, Doha, Qatar
ISPRM & AOCNR

Why Measure Outcomes?

- To demonstrate **effectiveness** of rehabilitation
  - Individual or population level
- Audit /contract **monitoring**
  - Cost-effectiveness of service
- Research
  - Comparison of techniques
  - **Longer-term outcomes** for rehabilitation

Types of Outcome Measures

- **Disease-specific:** Functional Assessment of MS, Asthma Quality of Life Questionnaire, Arthritis Impact Measurement Scales
- **Site or region-specific:** Oxford Hip Score, the Shoulder Disability Questionnaire
- **Dimension-specific:** Beck Depression Inventory, McGill Pain Questionnaire
- **Generic:** SF-36, Functional Limitations Profile
- **Summary items:** General Household Survey (question about limiting longstanding illness), Health Survey items
- **Individualised:** McMaster-Toronto Arthritis Patient Preference Disability Questionnaire, Schedule for the Evaluation of Individual Quality of Life
- **Utility**: EuroQoL EQ-5D, Health Utility Index (HUI)

[Fitzpatrick R et al 1998]

Range of Dimensions

[Fitzpatrick R et al 1998]

I Physical function
Mobility, dexterity, range of movement, physical activity
Activities of daily living: ability to eat, wash dress

II Symptoms
Pain
Nausea
Appetite
Energy, vitality, fatigue
Sleep and rest

III Global judgements of health

IV Psychological well-being
Psychological illness: anxiety, depression
Coping, positive well-being and adjustment, sense of control, self-esteem

V Social well-being
Family and intimate relations
Social contact, integration, and social opportunities
Leisure activities
Sexual activity and satisfaction

VI Cognitive functioning

Cognition
Alertness
Concentration
Memory
Confusion
Ability to communicate

VII Role activities
Employment
Household management
Financial concerns

VIII Personal constructs
Satisfaction with bodily appearance
Stigma and stigmatising conditions
Life satisfaction
Spirituality

IX Satisfaction with care

Outcome Measurement in Rehab

- **When & how to measure** patient outcomes - fundamental to the debate
- **Little consensus** on how various health domains should be measured
- Various outcome measures & increase in number of new measures - **objective (physician based) & subjective (patient-reported)**
- Currently used outcome measures **vary in scope/mode** of measurement
- Concepts of **health & functional status** often applied interchangeably
- No standardized and/or generic information on relevance, coverage & **clinical applicability of many measures**
- Many proprietary instruments **not affordable** for routine clinical practice, (especially in LMICs)
- Selecting **appropriate/affordable outcome measures** in routine clinical settings/research - a priority

[Frontera et al 2019, Prodinger 2016. Wade 2001, Khan et al 2013]

Criteria - Outcome Measure

Scientifically sound (psychometric properties)

- Valid, Reliable, Responsive to change

Feasible for routine clinical use

Timely, clinically relevant

Provides comparable information

- Over time
- Between raters
- Between different centres

Consistent application

(Turne-stokes 2015, Wade et al 2003, Imbriani et al 2004]

Complexity Rehabilitation Outcomes

- Broader and focus on **multiple factors**
- **Multiple & multidimensional**, due to the involvement of multidisciplinary teams in the rehabilitation process
- Represent a **wider spectrum** of care continuum
- Need **long-term evaluation** - extends beyond acute/subacute care to social/community reintegration
- **Difficult to measure** - majority patient-centred outcomes
- No **'absolute'** measures
- **Not confined to individual patients -** extends to the entire network: care givers, families, healthcare facilities, etc.

Service Provision Gaps

- Limited **standardised method of assessing patient 'function'** &/or measurement system
- ? identify issues/barriers that require **referral for appropriate treatment**
- Rehabilitation/sub-acute care **not prioritized**
- **Survivorship issues:** personal costs/resources, health care utilization, readmission, work/family impact

Measurement of ‘Function’

- After M&M- ‘**Function**’ key indicator for clinical outcomes for better **patient health outcomes**
  - Provide a benchmark for assessing improvement or **clinical deterioration in functional capacity** (limiting factor for discharge home)
  - Improve **care coordination**, timely access to services (reduce healthcare utilization, readmission)
  - Enable fast-tracking of **referrals** for rehabilitation/sub-acute care/community
- Improved **recording of information** (systematic consistent clinical documentation in EMR) of function of patients for timely intervention (mobility, self care, continence, pain, etc.)
- Reduce **variation in practice**, support research & workforce education, training & performance

(WHO, Stucki 2019)

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Thank you

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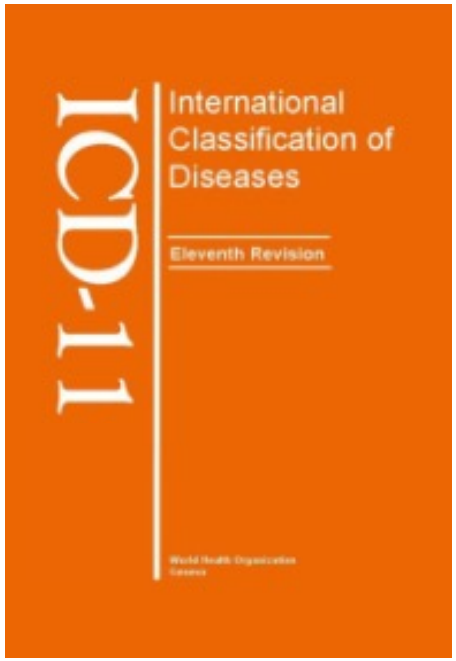
Understanding ClinFIT -
From the ICF to Clinical Practice

Melissa Selb, PhD
Swiss Paraplegic Research
Nottwil, Switzerland

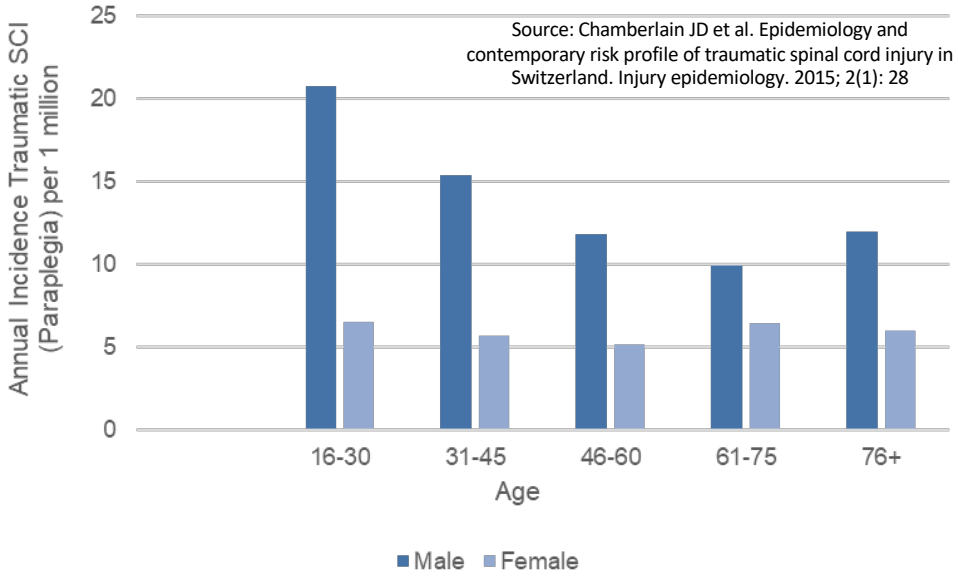
I have no financial conflict to disclose

Diagnosis is not enough



Source: WHO[i]

Source: WHO[ii]



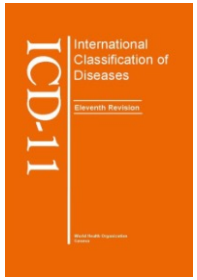
- Problems
- Needs
- Resources and other contextual factors

Functioning – The lived experience

Ida, 54 years old

Start of rehab: *I don't think I'll ever live without pain…*

End of rehab: *For the first time since my accident, I feel like I can deal with my pain…and enjoy life and friends again.*



NA91 Certain specified injuries of thoracic spinal cord

XA6Z51 Thoracic spinal cord
- **XA17G6** T1 level
- **XA6GU9** T2 level
- **XA7U15** T3 level
- **XA5UF4** T4 level
- **XA0D58** T5 level
- **XA5Q83** T6 level
- **XA79E1** T7 level
- **XA0N76** T8 level
- **XA5T86** T9 level
- **XA4QU1** T10 level
- **XA9DV3** T11 level
- **XA6FB9** T12 level

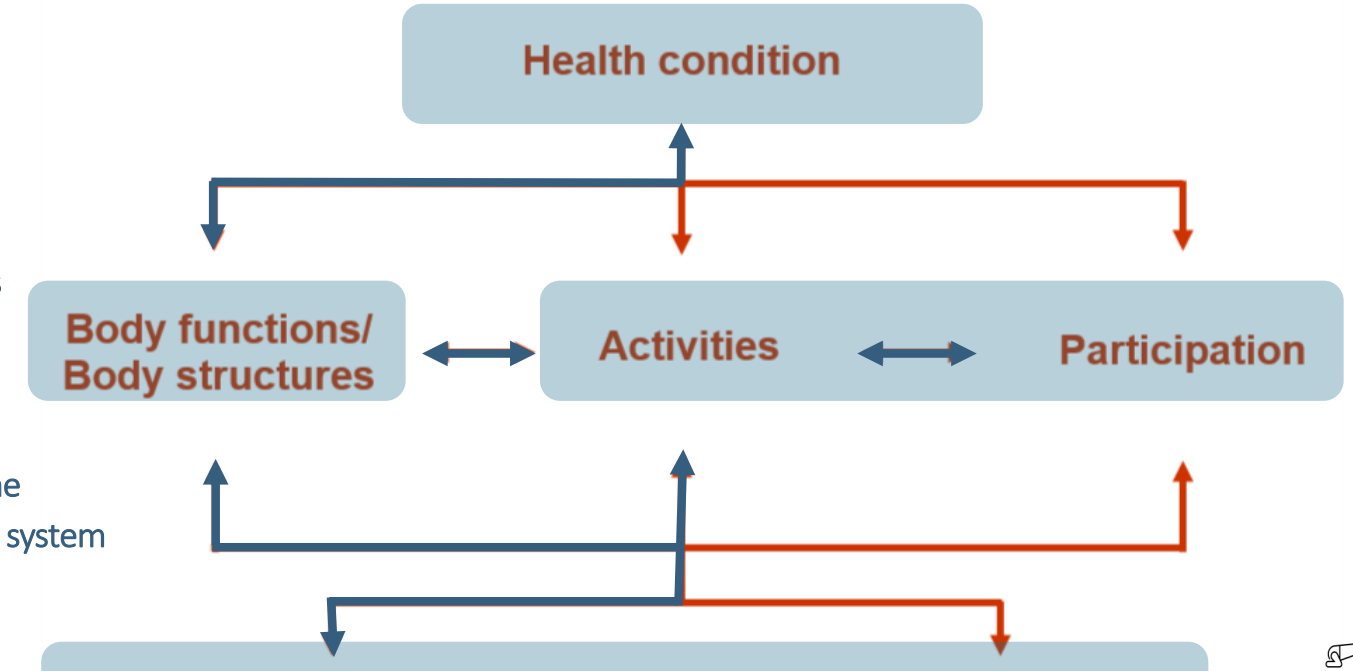
Martin, 26 years old

The most important thing for me right now is to find a new profession and find work after discharge.

Source: WHO[iii]
Source: ICF-based Case Studies[iv]

Biopsychosocial model of functioning

NA91 Certain specified injuries of thoracic spinal cord



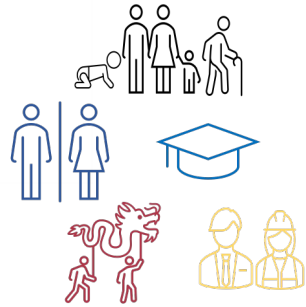
b280 Pain
b134 Sleep functions
b130 Energy & drive
b152 Emotional functions
b525 Defection functions
b620 Urinary functions

s540 Structure of intestine
s610 Structure of urinary system

b2401 Handling stress,
d220 Undertaking multiple tasks
b247 Driving
d850 Paid employment
d9202 Socializing

Medication (+), Immediate family (+)
Accessibility of private buildings (+)

Coping (-)



Source: WHO[ii]

https://www.icf-elearning.com/

Source: WHO[iv]

Česky, Dansk, Nederlands, Suoma, Polski, Svenska

In progress: Deutsch, 日本語, 한국인

Strengthening rehab through the ICF

Rehabilitation 2030


World Health Organization

SEVENTY-SIXTH WORLD HEALTH ASSEMBLY
Agenda item 13.4

WHA76.6
30 May 2023

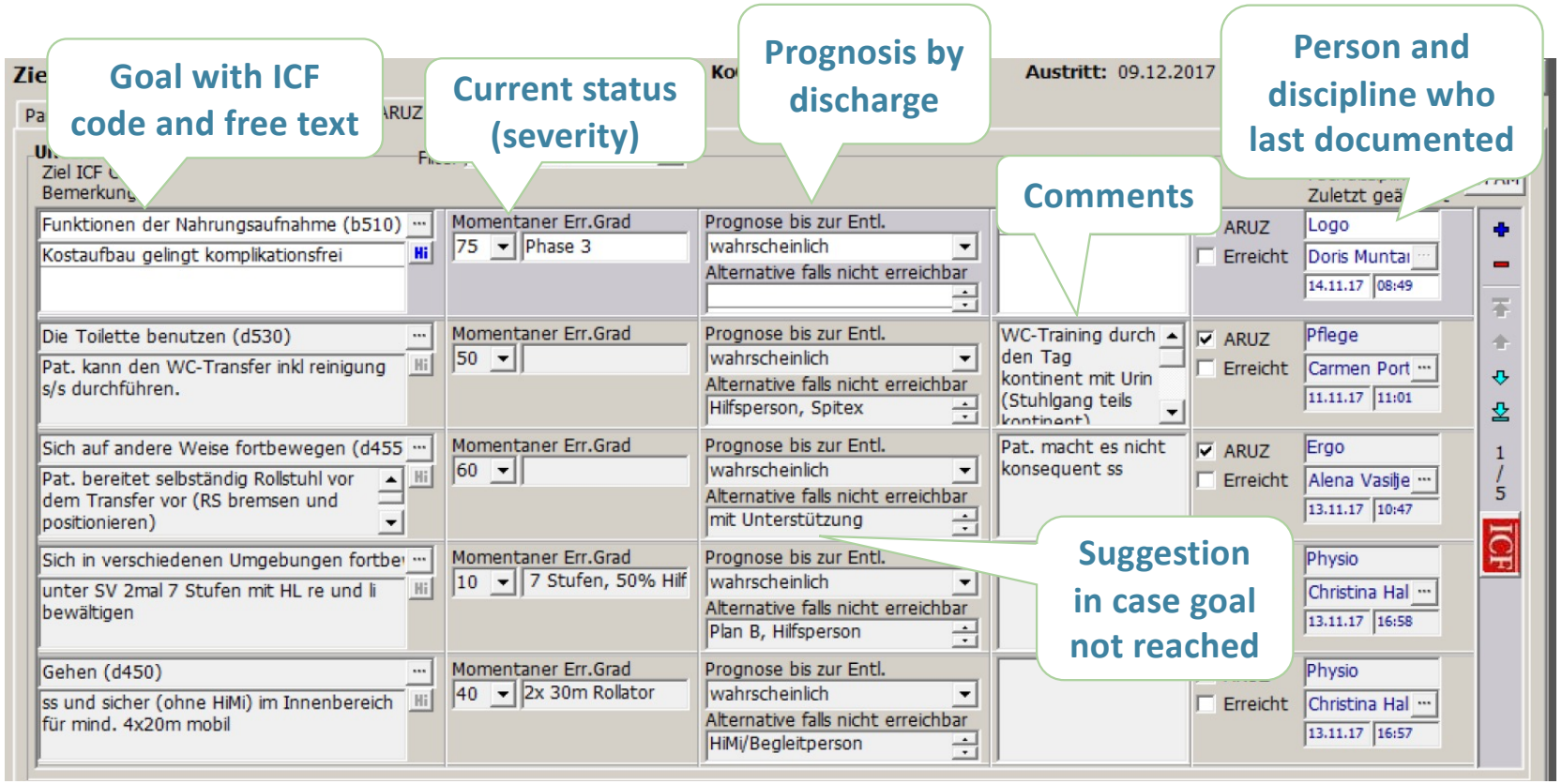
Strengthening rehabilitation in health systems

…the ***International Classification of Functioning, Disability and Health***, which provides a ***standard language and a conceptual basis*** for the definition and measurement of health, functioning and disability…

…to enhance health information systems to ***collect information relevant to rehabilitation***, including …***information on functioning, utilizing the [ICF]***

Klinik Adelheid
Rehazentrum Zentralschweiz

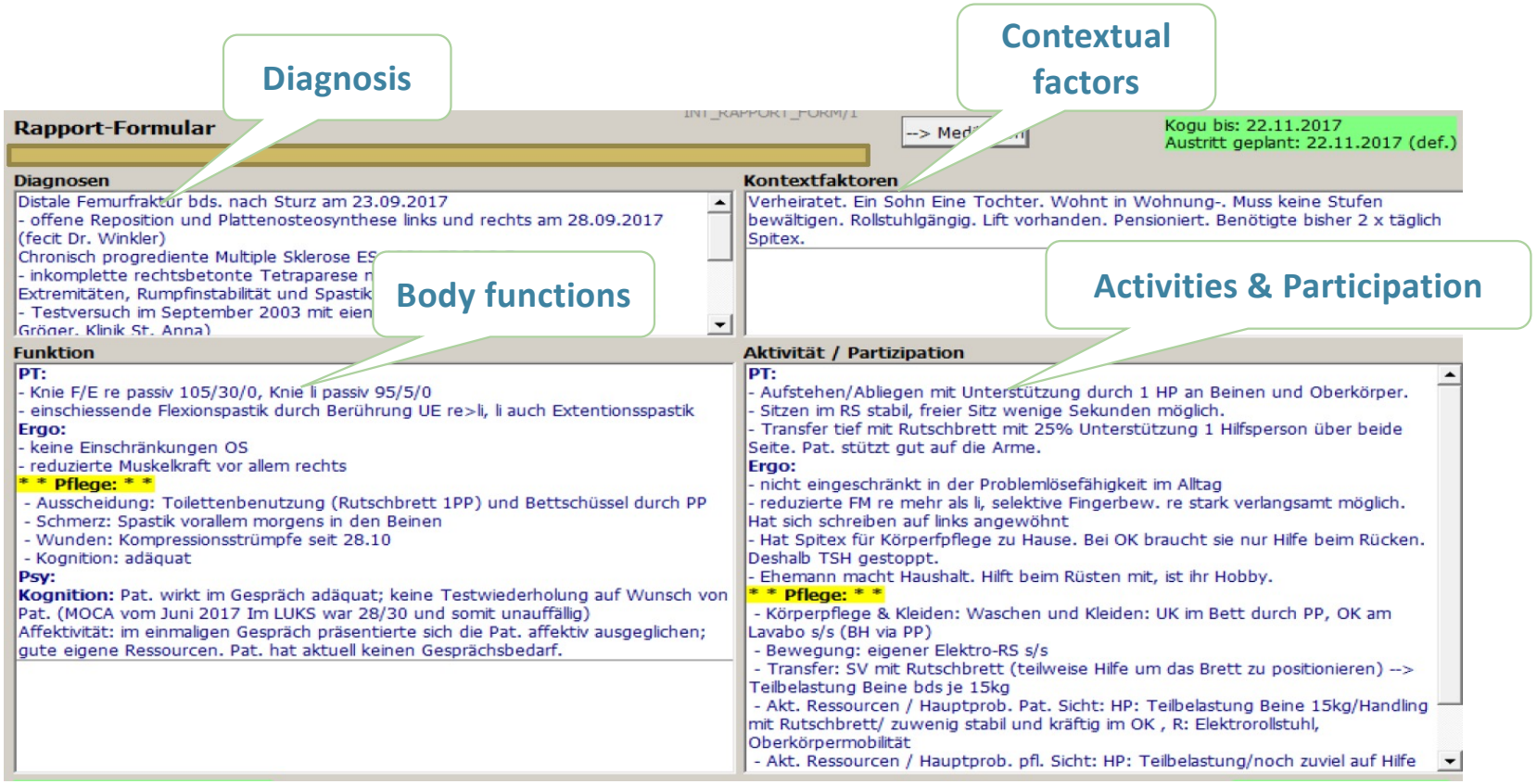
For goal-setting



Presentation Christian de Boitte, Head Neurorehabilitation Ward, Adelheid-Klinik Rehazentrum Zentralschweiz,
http://www.anq.ch/fileadmin/redaktion/deutsch/20180124_ANQ_Gs_Praesentation_de_Boitte_Christian.pdf

Klinik Adelheid
Rehazentrum Zentralschweiz

For goal-setting



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http://www.anq.ch/fileadmin/redaktion/deutsch/20180124_ANQ_Gs_Praesentation_de_Boitte_Christian.pdf

Clinical Functioning Information Tool (ClinFIT)

Special Report

ClinFIT: ISPRM's Universal Functioning Information Tool based on the WHO's ICF

Rehabilitation is the health strategy that aims to optimize functioning of persons with a health condition experiencing or likely to experience disability.[1,2] Accordingly, physical and rehabilitation medicine (PRM) can be defined as the "medicine of functioning."[3] The assessment of functioning that involves taking a patient's history, conducting a clinical examination, and interpreting clinical tests, imaging, and laboratory investigations, is therefore essential for both rehabilitation and the medical specialty of PRM.

Currently, rehabilitation and PRM can rely on a wide range of

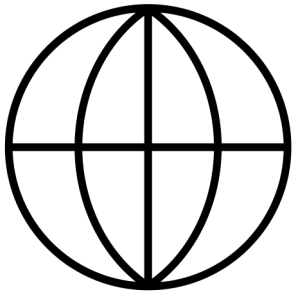
rehabilitation and health care at large.[11] An overview of the most recent efforts worldwide has been published in *JISPRM*, the new electronic journal of *ISPRM* (http://www.jisprm.org).[11] In light of these efforts, ISPRM's leadership sees a unique opportunity to embark upon an initiative to develop, implement, and maintain an ICF-based clinical tool for the assessment of functioning referred to as ClinFIT.

With this editorial, *ISPRM* is establishing its copyright for

respective acronym "ClinFIT." The combination of "clinical

"ISPRM's leadership sees a unique opportunity to embark upon an initiative to develop, implement, and maintain an ICF-based clinical tool for the assessment of functioning referred to as ClinFIT."

Clinical Functioning Information Tool (ClinFIT)



Universal, ICF-based clinical tool applicable in…

- rehabilitation service types along the continuum of care
- assessing functioning of different patient populations
- low-, middle-, and high-income countries

Generic versions

- Generic-30 Set
- Generic-6 and 7 Sets

Condition-specific versions

ClinFIT COVID-19

Mukaino M, Aguiar Branco C, Alghwiri A, Amato S, Kontaxakis A, Berteanu M, Bölük Şenlikci H, Borman P, Diouane S, Fourtassi M, Gimigliano F, Hajjioui A, Hu X, Kambou S, Lin CI, I Mabrouk M, Mitsiokapa E, Nica RI, Rapidi CA, Serlenga G, Silvestri A, Tarvonen-Schröder S, Ursescu C, Viinanen A, Vorniotakis P, Selb M. *J Rehabil Med.* 2025;57:jrm4322

ClinFIT-MSK

Mariotti M, Selb M, Imamura M, Alghwiri A, Amatya B, Ceravolo MG, Gimigliano F, Giraldo-Prieto M, Hu X, Kambou S, Kiekens C, Li J, Liu S, Mukaino M, Oral A, Stucki G, van de Velde D, Perret C. *Am J Phys Med Rehabil.* 2026;105(4):321-329

ClinFIT Generic-7

Patient:	Clinician:	□ Admission: (Date)_____ □ Mid-term: (Date)_____ □ Discharge: (Date)_____

Please rate the patient's functioning from 0 (no problem) to 10 (complete problem).

		RATING SCALE											
			0	1	2	3	4	5	6	7	8	9	10	
1	b130 Energy and drive functions *Psychological energy and motivational drive to move towards goals, satisfy needs*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
2	b152 Emotional functions *Mental functions for the modulation of the expression of feelings and emotions*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
3	b280 Sensation of pain *Unpleasant sensation indicating potential or actual damage of some body structure*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
4	d230 Carrying out daily routine *Plan, manage and complete routine daily life activities*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
5	d450 Walking *Moving in an upright position, step by step, always maintaining a support on the*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
6	d455 Moving around *Moving around differently from walking (for example running, going up and down*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**
7	d850 Remunerative employment *Properly performing remunerative employment (full or part time or self-employed) in*	**No problem**	□	□	□	□	□	□	□	□	□	□	□	**Complete Problem**

ClinFIT rating options

0-4 Scale

1	b130 Energy and drive functions *Psychological energy and motivational drive to move towards goals, satisfy needs and control*	No problem ☐	Mild ☐	Moderate ☐	Severe ☐	Complete problem ☐	☐ Need more info	N/A ☐
2	b134 Sleep functions *Cycle, quality and amount of sleep*	No problem ☐	Mild ☐	Moderate ☐	Severe ☐	Complete problem ☐	☐ Need more info	N/A ☐
3	b152 Emotional functions *Mental functions for the modulation of the expression of feelings and emotions*	No problem ☐	Mild ☐	Moderate ☐	Severe ☐	Complete problem ☐	☐ Need more info	N/A ☐
4	b280 Sensation of pain *Unpleasant sensation indicating potential or actual damage of some body structure*	No problem ☐	Mild ☐	Moderate ☐	Severe ☐	Complete problem ☐	☐ Need more info	N/A ☐

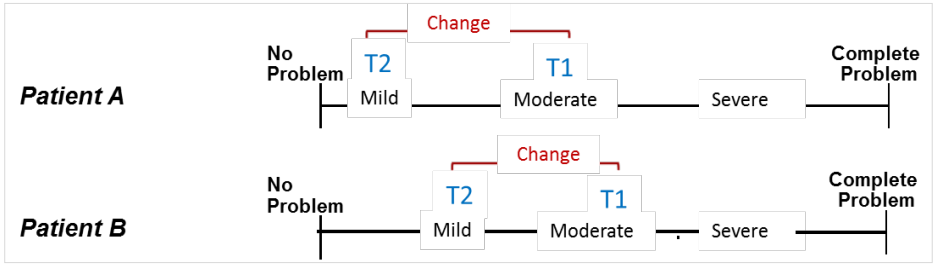
0-4 Scale with specifications for each response item

1	b130 Energy and drive functions *Psychological energy and motivational drive to move towards goals, satisfy needs and control impulses*	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	N/A ☐	**0:** No problem **1:** Mild problem: Patient has a problem but does not affect the patient's daily activities **2:** Moderate problem: Patient has a problem that exceeds 1, but remains a relatively minor problem (<50%)
2	b134 Sleep functions *Cycle, quality and amount of sleep*	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	N/A ☐	
3	b152 Emotional functions *Mental functions for the modulation of the expression of feelings and emotions*	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	N/A ☐	
4	b280 Sensation of pain *Unpleasant sensation indicating potential or actual damage of some body*	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	N/A ☐	

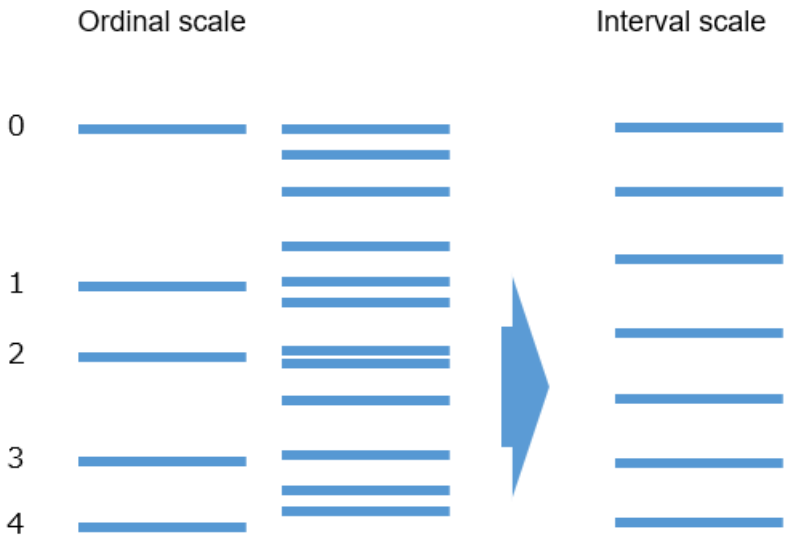
0-10 Numeric Rating Scale

1	b130 Energy and drive functions *Psychological energy and motivational drive to move towards goals, satisfy needs and control*	No problem ☐	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete Problem ☐	☐ Need more info	N/A ☐
2	b134 Sleep functions *Cycle, quality and amount of sleep*	No problem ☐	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete Problem ☐	☐ Need more info	N/A ☐
3	b152 Emotional functions *Mental functions for the modulation of the expression of feelings and emotions*	No problem ☐	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete Problem ☐	☐ Need more info	N/A ☐
4	b280 Sensation of pain *Unpleasant sensation indicating potential or actual damage of some body structure*	No problem ☐	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete Problem ☐	☐ Need more info	N/A ☐

ICF qualifiers and ClinFIT - An ordinal rating scale



⇨ Transform into an **interval rating scale**



Prodinger B, et al. Standardized reporting of functioning information on ICF-based common metrics. Eur J Phys Rehabil Med. 2018;54(1):110-7;

Maritz R, et al. Creating a common metric based on existing activities of daily living tools to enable standardized reporting of functioning outcomes achieved during rehabilitation. J Rehabil Med. 2020;52(7):jrm00085

No	Items	EBI 0–64 Categories	EBI 0–50 Categories
1	Feeding	0	0
		2	1
		3	2
		4	3
2	Grooming	0	0
		1	1
		2	2
		3	3
		4	4
3	Dressing	0	0
		1	1
		2	2
		4	3
4	Bathing	0	0
		1	1
		2	2
		3	3
		4	4
5	Transfer	0	0
		1	1
		2	2
		4	3

▶ **Table 4** EBI Total Score Transformation Table – adapted 0–50 EBI raw Scores to EBI Interval Scores.

Adapted raw Score	Rasch Estimate	Transformed interval Score
0	−5.358	0.0
1	−4.621	3.4
2	−4.075	6.0
3	−3.670	7.8
4	−3.340	9.4
5	−3.063	10.7
6	−2.823	11.8
7	−2.611	12.8
8	−2.416	13.7
9	−2.235	14.5
10	−2.064	15.3
11	−1.901	16.0
12	−1.745	16.8
13	−1.594	17.5
14	−1.449	18.1
15	−1.309	18.8
16	−1.173	19.4
17	−1.041	20.0
18	−0.912	20.6
19	−0.786	21.2
20	−0.662	21.8

Maritz R, et al. The Extended Barthel Index (EBI) can be reported as a unidimensional interval-scaled metric – A psychometric study. Phys Med Rehab Kuror. 2019; 29(4): 224-32.

ClinFIT COVID-19

	Rasch estimate	Transformed interval score
18	−6.279	18.0
19	−5.686	23.3
20	−5.281	26.9
21	−5.005	29.4
22	−4.784	31.4
23	−4.594	33.1
24	−4.423	34.6
25	−4.263	[illegible]
26	−4.11[illegible]	37.4
27	−3.[illegible]6	38.7
28	−3.824	[illegible]0
29	−3.6[illegible]	41.2
30	−3.552	42.4
31	−3.420	43.6
32	−3.291	44.8
33	−3.166	45.9
34	−3.043	47.0

Mukaino M, et al. Clinical functioning information tool - coronavirus disease 2019 (ClinFIT COVID-19): psychometric evaluation and development of an interval-scaled functioning score across the care continuum. J Rehabil Med. 2025;57:jrm43227

Facilitating clinical use of ClinFIT


ORIGINAL REPORT

RESPONSIVENESS OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) CLINICAL FUNCTIONING INFORMATION TOOL (ClinFIT) IN ROUTINE CLINICAL PRACTICE IN AN AUSTRALIAN INPATIENT REHABILITATION SETTING

Bhasker AMATYA, DMedSc, MPH, MD[1,2,3*], Alaeldin ELMALIK, MBBS, FAFRM (RACP)[1,2,3], Krystal SONG PHD, MBBS, FAFRM (RACP)[1,2,3], Su Yi LEE, PHD, MBBS, FAFRM (RACP)[1,2,3], Mary P. GALEA, PHD, BAPPSCI (PHYSIO), BA, GRAD DIP PHYSIO, Grad Dip NEUROSCI[1,2,3] and Fary KHAN, MBBS, MD, FAFRM (RACP)[1,2,3,4*]


1 of 9

ORIGINAL REPORT

OPTIMIZING THE CLINICAL FUNCTIONING INFORMATION TOOL (ClinFIT) IN ROUTINE CLINICAL PRACTICE: DEVELOPMENT OF FUNCTIONAL STAGING CUTOFF SCORES FOR REHABILITATION PROVISION AND INTENSITY

Bhasker AMATYA, DMedSc, MPH, MD[1–4#], Adrian MARTINEZ-DE LA TORRE, PhD[5,6#], Masahiko MUKAINO, MD, PhD[7], Krystal SONG, PhD, MBBS, FAFRM (RACP)[1–3], Melissa SELB, MSc[6,8], Gerold STUCKI, MD, MS[5,6,8,9] and Fary KHAN, AM, MBBS, MD, FAFRM (RACP)[1–4] ON BEHALF OF THE ISPRM ClinFIT COMMITTEE


Original Article

Feasibility of the International Classification of Functioning, Disability and Health Rehabilitation Set for inpatient rehabilitation: Selection and validity of a set of categories for inpatients in a convalescent rehabilitation ward

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ORIGINAL ARTICLE

Use of the International Classification of Functioning, Disability and Health Generic-30 Set for the characterization of outpatients: Italian Society of Physical and Rehabilitative Medicine Residents Section Project

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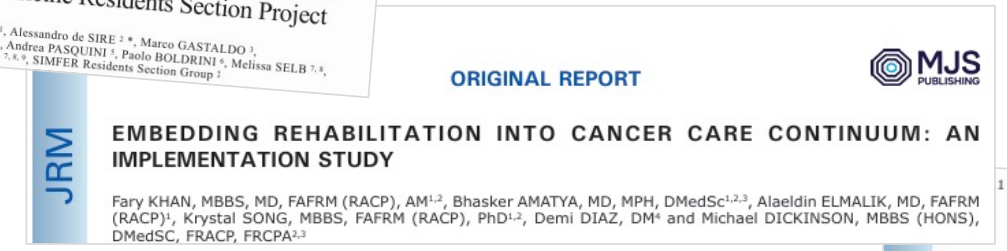
ORIGINAL REPORT

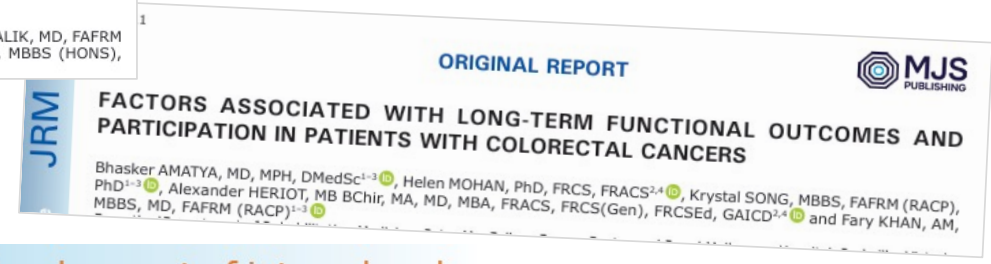
CHARACTERIZATION OF AN ITALIAN POPULATION WITH NEUROLOGICAL DISORDERS IN A REHABILITATION SETTING USING CLINFIT

Sara LIGUORI, MD, PhDs[1*], Melissa SELB, MSc[2,3], Antimo MORETTI, MD[1], Marco PAOLETTA, MD[1], Marco INVERNIZZI, MD, PhD[4,5], Pietro FIORE, MD[6], Giovanni IOLASCON, MD[1], Francesca GIMIGLIANO, MD, PhD[7] and The Italian Society of NeuroRehabilitation (SIRN) Residents Section Group


ORIGINAL REPORT

EMBEDDING REHABILITATION INTO CANCER CARE CONTINUUM: AN IMPLEMENTATION STUDY

Fary KHAN, MBBS, MD, FAFRM (RACP), AM[1,2], Bhasker AMATYA, MD, MPH, DMedSc[1,2,3], Alaeldin ELMALIK, MD, FAFRM (RACP)[1], Krystal SONG, MBBS, FAFRM (RACP), PhD[1,2], Demi DIAZ, DM[4] and Michael DICKINSON, MBBS (HONS), DMedSC, FRACP, FRCPA[2,3]


1

ORIGINAL REPORT

FACTORS ASSOCIATED WITH LONG-TERM FUNCTIONAL OUTCOMES AND PARTICIPATION IN PATIENTS WITH COLORECTAL CANCERS

Bhasker AMATYA, MD, MPH, DMedSc[1–3], Helen MOHAN, PhD, FRCS, FRACS[2,4], Krystal SONG, MBBS, FAFRM (RACP), PhD[1–3], Alexander HERIOT, MB BChir, MA, MD, MBA, FRACS, FRCS(Gen), FRCSEd, GAICD[2,4] and Fary KHAN, AM, MBBS, MD, FAFRM (RACP)[1–3]

Minimal Clinically Important Differences (MCIDs) in ClinFIT

Adrian Martinez de la Torre, PhD

Rasch Analysis and development of interval scales

Masahiko Mukaino, MD, PhD

Sources of visuals

i) International Statistical Classification of Diseases and Related Health Conditions 11th Revision (ICD-11). Available at: https://icd.who.int/dev11/l-m/en. World Health Organization (WHO). Licence: CC BY-NC-SA 3.0 IGO

ii) International Classification of Functioning, Disability and Health. Geneva (Switzerland): WHO; 2001

iii) ICD-11 for Mortality and Morbidity Statistics; Version 02/2022. Available at: https://icd.who.int/browse11/l-m/en (Accessed June 2022). WHO. Licence: CC BY-NC-SA 3.0 IGO

iv) Swiss Paraplegic Research and Swiss Paraplegic Centre. ICF case studies: Translating interventions into real-life gains – A Rehab-Cycle approach. [Internet] 2015. Available at: https://www.icf-casestudies.org/case-studies

v) WHO. ICF e-learning tool. [Internet] 2020. Available: https://www.icf-elearning.com/. Written permission via e-mail by Coenen M, Project Lead ICF e-Learning Tool, Pettenkofer School of Public Health, Munich, Ludwig-Maximilians-University Munich, 3 June 2022

*Some slides and parts of selected slides are also presented in the Massive Open Online Course "Introduction to Standardized Assessment and Reporting Systems for functioning information (StARS) based on the ICF".

TRANSFORMING REHABILITATION • CONNECTING WORLDS

ISPRM2026

20th International Society of Physical and Rehabilitation Medicine World Congress

Melissa Selb (melissa.selb@paraplegie.ch)

Embedding ClinFIT Across Cancer Care Continuum: Closing the Gap

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Qatar Rehabilitation Institute, Doha, Qatar
University of Melbourne (Roual Melbourne Hospital), Melbourne, Australia

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74th Annual Scientific Meeting

MAY 17-21, 2026
Vancouver, BC

Presenters' Disclosure

None

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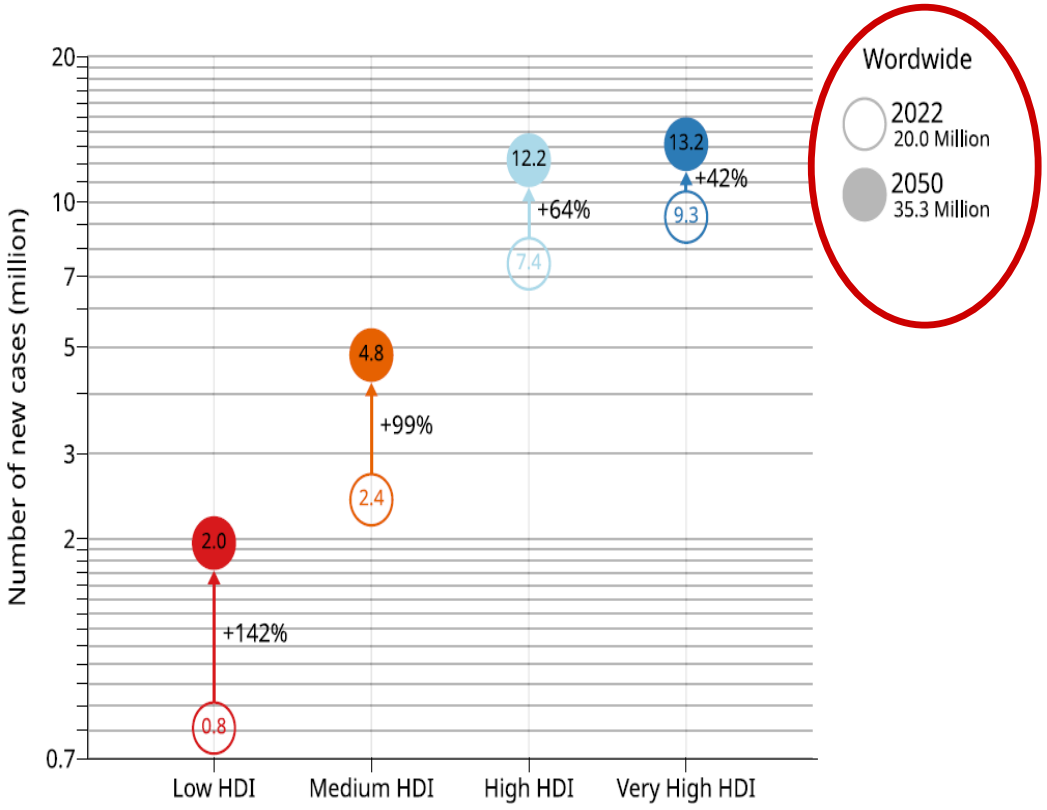
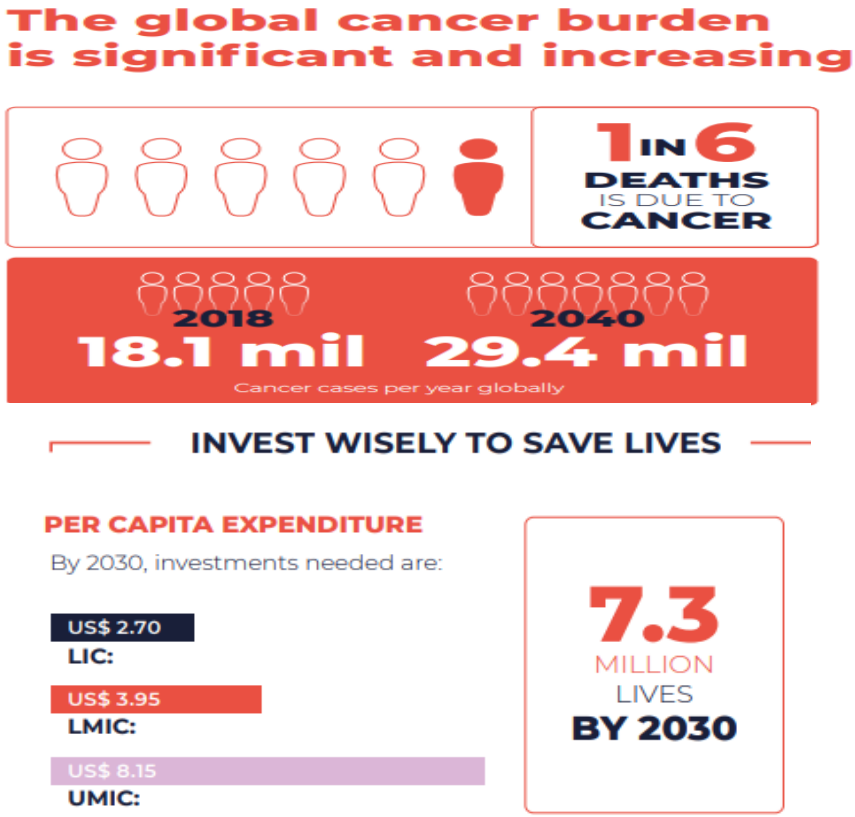
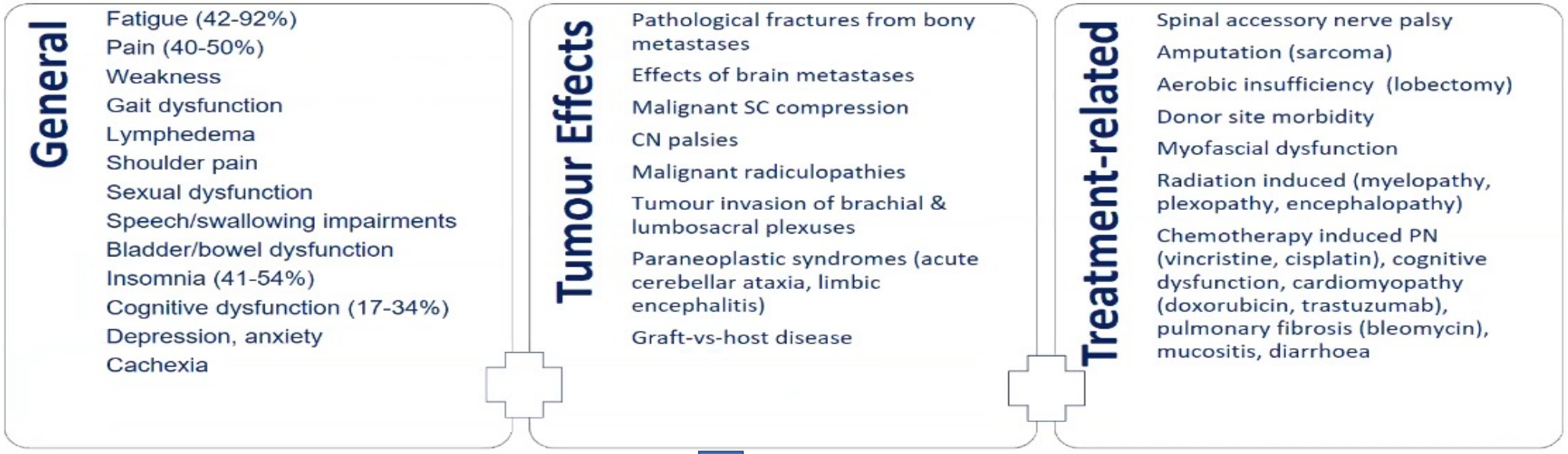
Cancer – Global Facts

(Bray et al 2024, Source: GLOBOCAN 2022; WHO, 2020)





Impact- Range of Impairments



- **Vocational: ↓ return/maintain work, driving, transport**
- **Avocational: ↓ participation in leisure & societal activities**

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Study setting

- Conducted at the **Peter McCallum Cancer Centre** (PMCC)
- Provides **acute inpatient**, **ambulatory cancer care**, including **home services & palliative care**
- **160** IP beds, **110** same-day beds & **42** bed ICU capacity

- No structured **post acute care pathway**
- Lack of **consistent standardized methods** for assessing & reporting function
- No systematic approach for **documenting** rehabilitation needs

- Delays in referrals
- Gaps within complex discharge planning
- Minimal patient-centric goal setting

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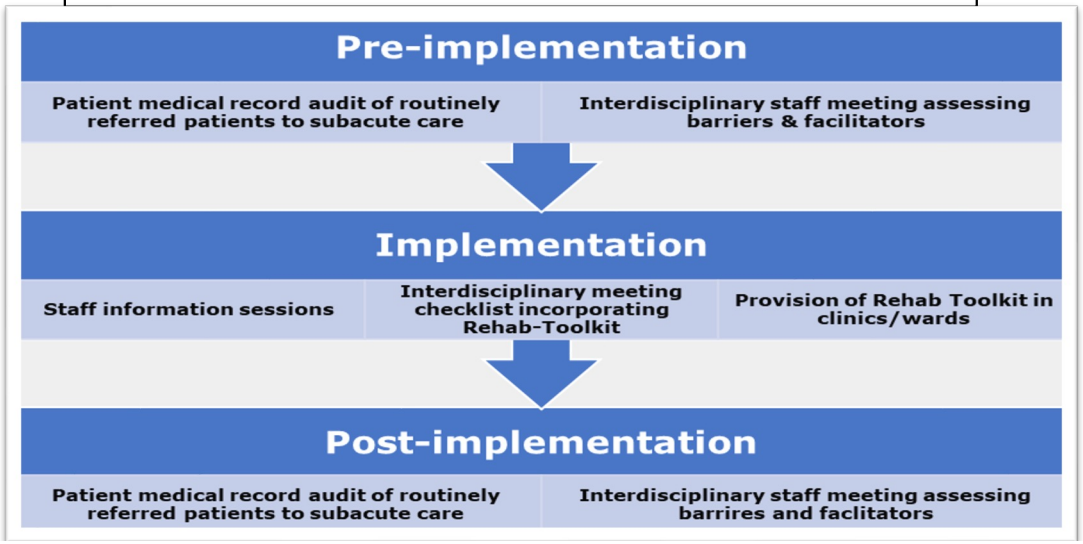
Study 1.

Implementing 'Rehab-Toolkit' into the continuum of care at the Tertiary Cancer Centre

Objective: To implement the '*Rehabilitation Toolkit*' – a set of *standardised validated measurement tools to measure patient's function, participation & QoL* in routine clinical practice

- identify deficits in function on admission & discharge (**ClinFIT**)
- timely referrals to rehabilitation/sub-acute services & monitor change over time (in functional status)
- identify survivorship needs for function in community

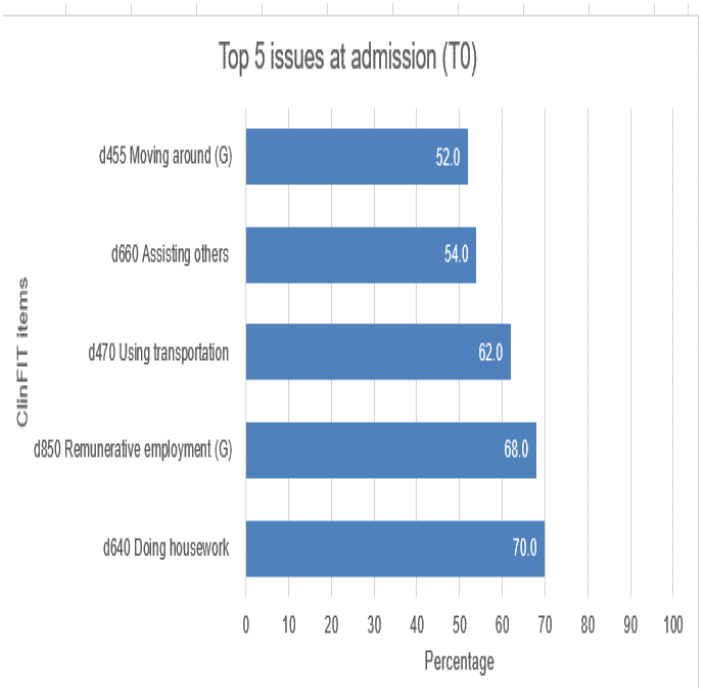
Prospective multi-modal study, N = 86

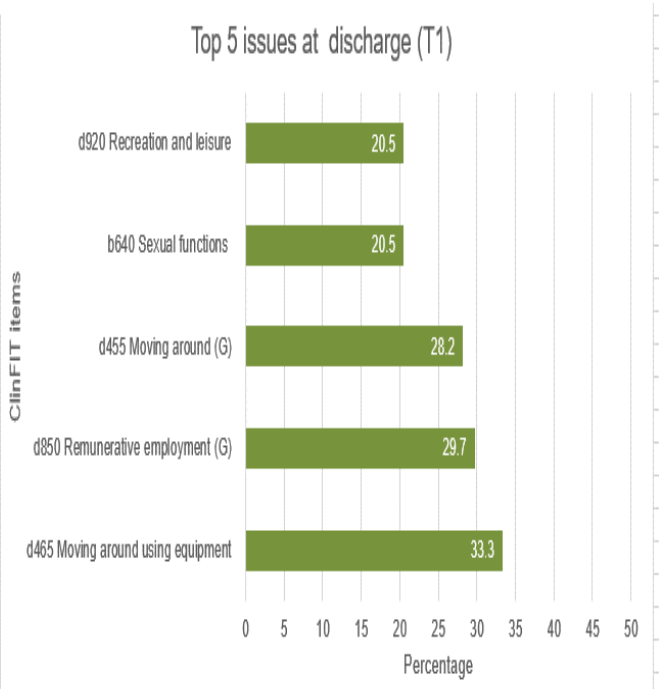


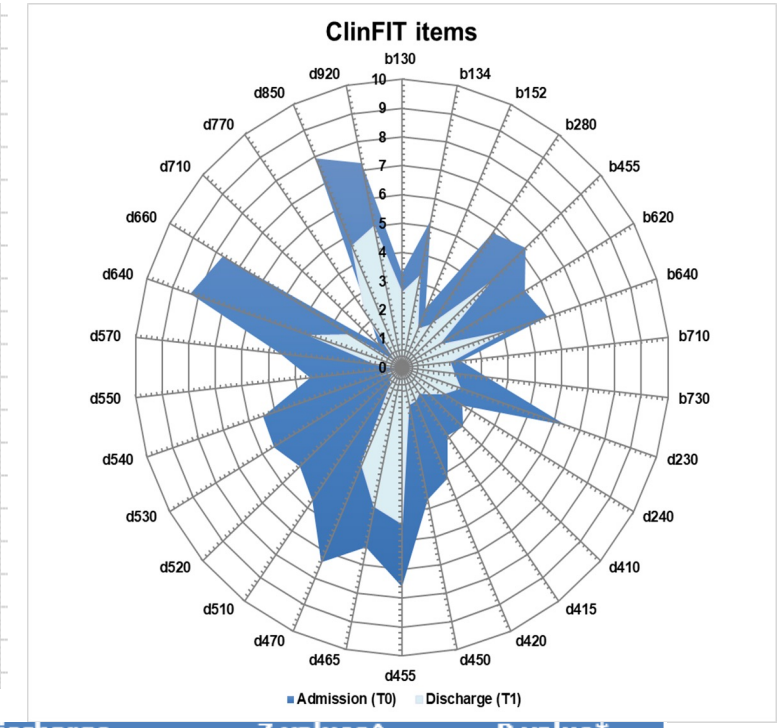
Socio-demographic characteristics

Characteristics	n (%) (unless stated different)
Age (years) [Mean±SD (range)]	59.5±14.8 (25.4-93.6)
Male	28 (56.0%)
Employed Full time/PT	21 (42%)
Transfer – independent	16 (32%)
Mobility- independent	15 (30%)
PADLs – independent	14 (28%)
Driving	43 (86%)
Length of hospital stay (days) [Mean±SD]	17.8±10.7 (5 – 62)
Discharge destination Home/primary residence	31 (62%)
Diagnosis GI cancer	36 (72%)
Time since diagnosis (years) [Mean±SD, range]	1.5±2.4
Impairments/symptoms	
Cognitive impairment	2 (4%)
Dietary issues	28 (56%)
Speech	2 (4%)
Falls risk	1 (2%)
DVT risk	3 (6%)
Pain	48 (96%)
Fatigue	42 (84%)
Bladder issues	24 (48%)
Bowel issues	15 (30%)
Inpatient rehabilitation	18 (36%)
Rehab referral	20 (40%)

Results







Scales	T0 Admission Md (IQR) n = 50	T1 Discharge Md (IQR) n = 39	Z values^	P value*
ClinFIT (Total raw score) (0-300)	158 (102.5,195)	72 (28,93)	-5.17	<0.001

Results [contd.]

Results:

- **Pre-implementation barriers:**
  - Absence of routine standardized functional assessment tools,
  - Limited coordination amongst acute and subacute care providers
  - Low awareness of rehabilitation medicine amongst patients and professionals
  - Insufficient engagement of subacute care with
  - Interdisciplinary stakeholders in clinical decision-making.
- **Post-implementation:**
  - Notable increase in awareness, improved **patient flow**
  - **Value-add role** of subacute rehabilitation services
  - Rehabilitation "needs" assessment, & **streamlined referral pathways**
- **Recommendations for process change:**
  - Development of clinical pathways
  - Establishment of subacute referral systems & discharge coordinator roles
  - Inclusion of subacute rehabilitation services in acute interdisciplinary team meetings

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ORIGINAL REPORT

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EMBEDDING REHABILITATION INTO CANCER CARE CONTINUUM: AN IMPLEMENTATION STUDY

Fary KHAN, MBBS, MD, FAFRM (RACP), AM[1,2], Bhasker AMATYA, MD, MPH, DMedSc[1,2,3], Alaeldin ELMALIK, MD, FAFRM (RACP)[1], Krystal SONG, MBBS, FAFRM (RACP), PhD[1,2], Demi DIAZ, DM[4] and Michael DICKINSON, MBBS (HONS), DMedSC, FRACP, FRCPA[1,3]

From the [1]Department of Rehabilitation, Royal Melbourne Hospital and Peter MacCallum Cancer Centre, Parkville, Victoria, [2]Department of Medicine (Royal Melbourne Hospital), University of Melbourne, Parkville, Victoria, [3]Department of Clinical Haematology, Peter MacCallum Cancer Centre, and Royal Melbourne Hospital, Parkville, Victoria, and [4]Patient Access & Flow, Peter MacCallum Cancer Centre, Parkville, Victoria, Australia

Objectives: **To implement and evaluate a rehabilitation-inclusive service delivery model at a tertiary cancer hospital.**

Methods: **The "Rehab-Toolkit", a structured assessment tool comprising validated functional measures, was introduced in an inpatient cancer service. Consecutive inpatients were enrolled, and a Reach, Effectiveness, Adoption, Implementation, and Maintenance framework guided the analysis of barriers and facilitators for subacute care at clinic and system levels.**

Results: **The implementation of the Rehab-Toolkit was incorporated into routine inpatient care. Major pre-implementation barriers included: absence of routine standardized functional assessment tools, limited coordination amongst acute and subacute care providers, low awareness of rehabilitation medicine amongst patients and professionals, and insufficient engagement of subacute care with interdisciplinary stakeholders in clinical decision-making. Following the intervention, there was a notable increase in awareness and the contributory role of subacute rehabilitation services, rehabilitation "needs" assessment, and referral pathways. Recommendations for process change included: development of clinical pathways, establishment of subacute referral systems and discharge coordinator roles, inclusion of subacute rehabilitation services in acute interdisciplinary team meetings, enhanced staff education and knowledge.**

Conclusion: **Integration of rehabilitation services into cancer care can proactively manage functional morbidity. While the implementation process proved feasible and effective, robust process evaluation and longer term follow-up are necessary for sustained success.**

Key words: cancer; rehabilitation; implementation; barriers; facilitators.

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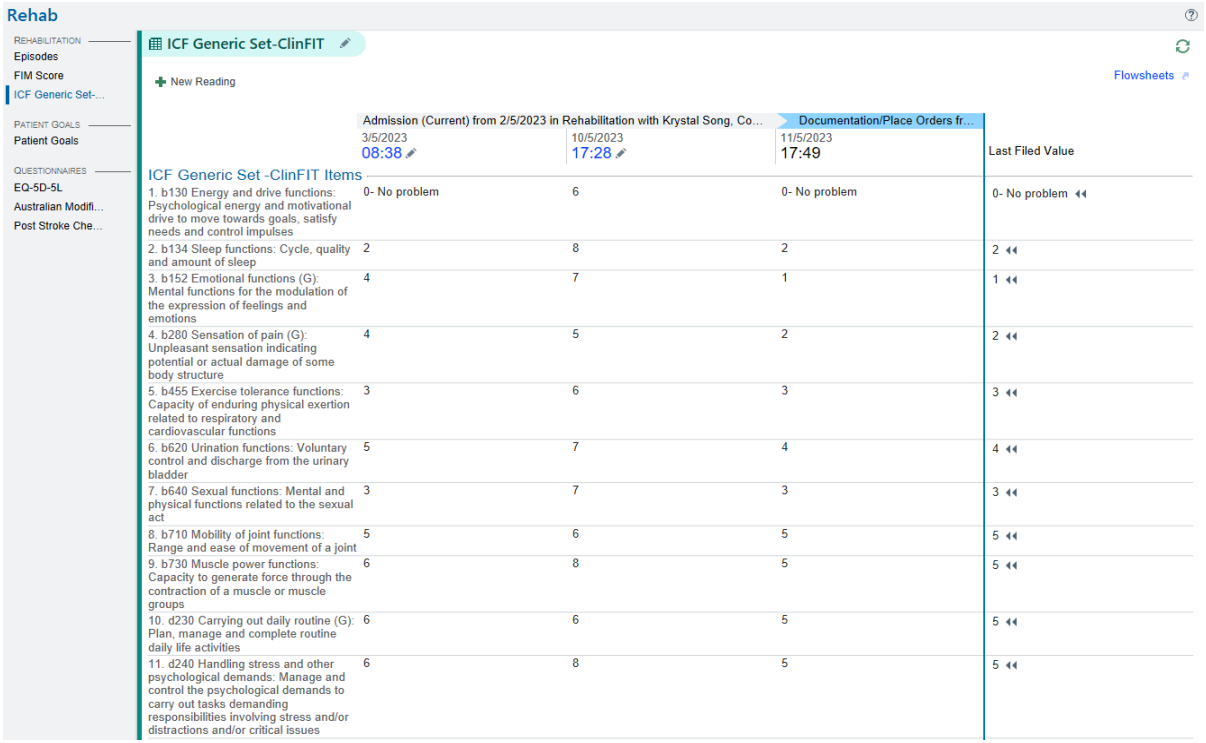
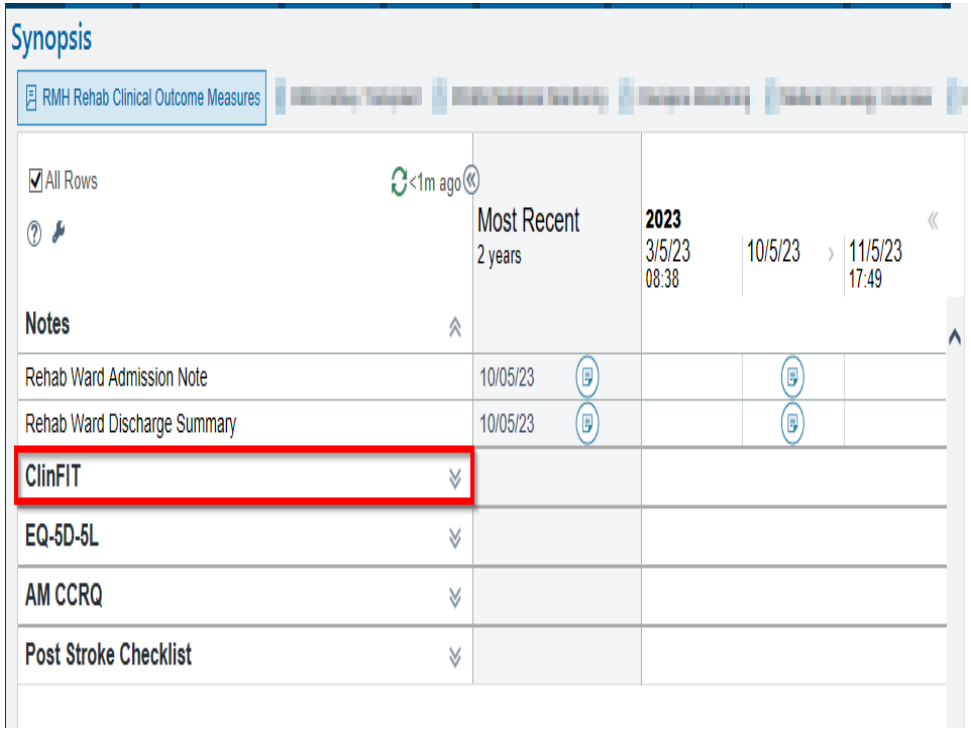
LAY ABSTRACT

A rehabilitation-focused care model using a structured assessment tool called the "Rehab-Toolkit" was introduced in the inpatient cancer service at a tertiary cancer hospital following analysis of institutional barriers and facilitators to subacute care. Initial challenges identified were: the lack of standard assessment tools for function, poor coordination between acute and subacute care providers, low awareness of the role of rehabilitation medicine, and limited involvement of subacute care in clinical decisions for complex discharge planning. Following the implementation of the toolkit, there was a significant increase in the awareness of input of rehabilitation services for complex survivorship issues, improved patient assessment, and usage of new referral pathways. Several process improvements were recommended, including: inclusion of clinical referrals and pathways in the electronic medical record, the new role of ward discharge coordinators, integration of rehabilitation physicians in interdisciplinary team meetings, and enhanced staff education. Overall, the incorporation of rehabilitation services into cancer care significantly enhanced patient functional health and overall management.

Cancer remains a global health challenge, characterized by complexity, high mortality rates, progressive nature, and uncertain prognosis (1). In 2020, an estimated 19.3 million new cases of cancer were diagnosed globally (2), with over 9.9 million cancer-related deaths (2). In Australia, the burden of cancer is significant, with 151,000 new cases and 49,000 cancer-related deaths recorded in 2021 (3). Lung and colorectal cancers are most prevalent, contributing to the overall cancer burden. There is a projected doubling of cancer incidence by 2040 (3). Treatments and supportive care requirements are resource-intensive, with substantial financial and productivity losses (6). Current therapeutic advances and improved cancer detection/diagnosis have enhanced the survival rates of patients. In Australia, the age-standardized 5-year relative survival of all cancers combined was 70.6%

ClinFIT- EMR


Rehab
REHABILITATION
Episodes
FIM Score
ICF Generic Set-...
PATIENT GOALS
Patient Goals
QUESTIONNAIRES
EQ-5D-5L
Australian Modifi...
Post Stroke Che...
ICF Generic Set-ClinFIT
New Reading
Flowsheets
Admission (Current) from 2/5/2023 in Rehabilitation with Krystal Song, Co...
Documentation/Place Orders fr...
3/5/2023 08:38
10/5/2023 17:28
11/5/2023 17:49
Last Filed Value
ICF Generic Set -ClinFIT Items
1. b130 Energy and drive functions: Psychological energy and motivational drive to move towards goals, satisfy needs and control impulses
0- No problem
6
0- No problem
0- No problem
2. b134 Sleep functions: Cycle, quality and amount of sleep
2
8
2
2
3. b152 Emotional functions (G): Mental functions for the modulation of the expression of feelings and emotions
4
7
1
1
4. b280 Sensation of pain (G): Unpleasant sensation indicating potential or actual damage of some body structure
4
5
2
2
5. b455 Exercise tolerance functions: Capacity of enduring physical exertion related to respiratory and cardiovascular functions
3
6
3
3
6. b620 Urination functions: Voluntary control and discharge from the urinary bladder
5
7
4
4
7. b640 Sexual functions: Mental and physical functions related to the sexual act
3
7
3
3
8. b710 Mobility of joint functions: Range and ease of movement of a joint
5
6
5
5
9. b730 Muscle power functions: Capacity to generate force through the contraction of a muscle or muscle groups
6
8
5
5
10. d230 Carrying out daily routine (G): Plan, manage and complete routine daily life activities
6
6
5
5
11. d240 Handling stress and other psychological demands: Manage and control the psychological demands to carry out tasks demanding responsibilities involving stress and/or distractions and/or critical issues
6
8
5
5


Synopsis
RMH Rehab Clinical Outcome Measures
All Rows
<1m ago
Most Recent
2 years
2023
3/5/23 08:38
10/5/23
11/5/23 17:49
Notes
Rehab Ward Admission Note
10/05/23
Rehab Ward Discharge Summary
10/05/23
ClinFIT
EQ-5D-5L
AM CCRQ
Post Stroke Checklist

Study 2

Factors associated with functional outcomes, psychological sequelae & QoL life in CRC patients

Objectives: To examine factors associated with residual disability & restriction in participation, including **functional outcomes**, **psychosocial sequelae & QoL** of CRC patients

Aim*:* to better **understand the issues, experiences & needs** from the patients' perspective; patterns of care in the post-treatment phase in the community

Methods:

- **Prospective cross-sectional study**
- **N = 100**
- ***Measures*:**
  - Activity & function: **ClinFIT**
  - Participation: DASS- 21; EQ-5D-5L; CIQ, FACT-C
  - Supportive care needs: Cancer Survivor Unmet Needs Measure (CaSUN)
  - Qualitative data: 10 most important problems

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ORIGINAL REPORT

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FACTORS ASSOCIATED WITH LONG-TERM FUNCTIONAL OUTCOMES AND PARTICIPATION IN PATIENTS WITH COLORECTAL CANCERS

Bhasker AMATYA, MD, MPH, DMedSci[1-3], Helen MOHAN, PhD, FRCS, FRACS[3,4], Krystal SONG, MBBS, FAFRM (RACP), PhD[1-3], Alexandar HERIOT, MB BChir, MA, MD, MBA, FRACS, FRCS(Gen), FRCSEd, GAICD[3,4] and Fary KHAN, AM, MBBS, MD, FAFRM (RACP)[1-3]

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Objective: **To assess the longer-term functional, psychosocial, and participation outcomes in colorectal cancer (CRC) survivors.**

Methods: **Adult CRC survivors ($n = 100$) living in the community completed validated questionnaires. Descriptive statistics summarized participant characteristics, while multivariate linear regression ($p < 0.05$) identified predictors of functional and psychosocial outcomes, and a binary logistic regression model was applied to identify factors associated with poorer QoL.**

Results: **Participants (mean age: 62.2±12.7 years, 53% male, 64% with grade III–IV CRC, mean time since diagnosis of 2.4±1.6 years), reported persistent challenges, including fatigue (77%), bowel dysfunction (50%), sleep disturbances (49%), fear of recurrence (48%), and pain (42%). Despite this, functional recovery was good (Clinical Functioning Information Tool (Mean): 50.3±42.4), with minimal mental health impact (Depression Anxiety Stress Scale: 11.3±17.2). CRC-specific quality of life was poor (Functional Assessment of Cancer Therapy-Colorectal: 97.4±14.5). Community integration was fair (Community Integration Questionnaire: 18.4±6.5), with moderate satisfaction in overall health (Euro Quality of Life: 71.5±18.6). Regression analysis identified age >60 years, female gender, fatigue, pain, radiotherapy, and time since diagnosis >3 years as significant predictors of poorer outcomes.**

Conclusion: **Persistent challenges faced by CRC survivors underscore the need for personalized, interdisciplinary rehabilitation-inclusive survivorship care addressing ongoing disabilities, psychosocial issues, and unmet needs.**

Key words: colorectal cancer; rehabilitation; impairment; function; quality of life.

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LAY ABSTRACT

Colorectal cancer (CRC) survivors can face long-term challenges after completing treatment. This study looked at the experiences of 100 Australian CRC survivors living in the community. Many participants reported ongoing issues such as fatigue, bowel problems, sleep disturbances, and fear of cancer returning. Despite these difficulties, most regained good physical function and maintained stable mental health. However, their overall quality of life remained low, and their ability to reintegrate into the community was only moderate. Factors like older age, being female, fatigue, and pain made recovery more difficult. These findings highlight the need for a more personalized and team-based approach to rehabilitation-inclusive survivorship care, which addresses not just physical recovery but also emotional and social well-being to improve long-term outcomes for CRC survivors.

Colorectal cancer (CRC) is the third most common cancer, representing 10% of all cancers, with over 1.9 million new cases diagnosed globally in 2020 alone (1). It is the second leading cause of cancer mortality, with 9.4% of all cancer deaths worldwide (over 935,000 deaths) in 2020 (1). The global burden of CRC continues to rise and is projected to reach approximately 3.2 million new cases and 1.6 million deaths annually by 2040 (2). Incidence and mortality rates vary significantly, with higher rates observed in males, older adults (65–75 years), and in low- and middle-income countries (2, 3). The global economic burden of CRC remains unknown; however, it is resource-intensive and associated with a significant financial burden for patients/families and the healthcare system (4).

Therapeutic advancements have prolonged the age-standardized global 5-year net survival range from 62% to 78% (5). However, CRC survivors frequently experience long-term sequelae, including functional, neurological, and psychosocial impairments, which limit everyday activity and participation. Postoperative complications such as gastrointestinal symptoms (such as excessive flatulence, abdominal wall issues, pain,

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Key findings

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- **N = 100.**
- **Mean age** = 62.2±12.7 (range = 24.6–83.2)
- Majority male: (53%)
- Average time since CRC diagnosis: **2.5±1.6** (range = 1.0–7.2) years
- **Minimal changes** in physical Function: ClinFIT (Total): 50.3 ± 42.4 (0–175); ClinFIT-G7: 15.5 ± 13.7 (0–53)
- Older participants exhibited significantly **lower levels of functioning** (ClinFIT)
- Participants experiencing ongoing symptoms: **fatigue** & **pain** reported poorer outcomes across multiple domains, with lower functioning scores (ClinFIT)
- Receipt of **Radiotherapy** - associated with poorer outcomes, including poorer functioning (ClinFIT)

Table IV. Univariate statistics for the impact of demographic and clinical variables associated with the outcome measures

	Demographic and clinical characteristics variables[a]													
Outcome measures[†]	Age	Sex	Marital status	Employ-ment	Comor-bidity	Age at diagnosis	CRC type	CRC duration	Stoma	CT	RT	Pain	Fatigue	IPR
ClinFIT														
Total	*0.03*	0.11	0.51	*0.008*	*0.035*	0.32	0.14	0.26	0.38	0.41	**0.003**	**<0.001**	**<0.001**	0.77
Generic 7	0.15	0.06	0.36	*0.005*	0.10	0.87	0.72	0.22	0.37	0.28	*0.008*	**<0.001**	**<0.001**	0.56
DASS														
Total	0.51	0.10	0.16	0.053	0.46	0.70	0.47	0.27	0.61	0.62	0.17	*0.01*	**0.003**	0.19
Depression	0.43	0.13	0.12	0.09	0.87	0.70	0.50	0.66	0.80	0.58	0.12	*0.009*	**0.002**	0.40
Anxiety	0.45	0.26	0.35	*0.04*	0.27	0.65	0.78	0.24	0.30	0.89	0.40	0.16	0.10	0.56
Stress	0.83	0.80	0.31	0.12	0.32	0.83	0.42	0.12	0.70	0.65	0.33	*0.04*	*0.008*	0.06
EQ-5D-5L														
Health	0.99	0.17	*0.04*	0.84	0.94	0.91	0.70	0.82	0.81	0.66	0.63	*0.02*	**<0.001**	0.49
Mobility	0.42	0.54	0.97	0.06	0.16	0.82	0.26	0.10	0.67	0.18	**0.001**	*0.04*	0.81	*0.02*
Self-care	0.11	0.63	0.71	**0.004**	0.56	0.44	0.50	0.53	0.73	0.98	0.16	*0.01*	0.35	0.50
Daily activity	0.46	0.16	0.49	**0.003**	0.06	0.86	0.09	0.16	0.12	0.07	**<0.001**	**<0.001**	**<0.001**	0.24
Pain/discomfort	0.67	0.70	0.67	0.46	0.30	0.67	0.41	*0.04*	0.35	0.46	0.75	**<0.001**	0.07	0.90
Anxiety/depression	0.10	*0.04*	0.07	0.16	0.09	0.89	0.34	0.18	0.77	0.44	0.06	0.08	*0.007*	0.50
FACT-C														
Total	0.13	0.49	*0.02*	*0.007*	0.42	0.55	0.98	0.67	0.96	0.39	0.16	**<0.001**	**<0.001**	0.89
Physical wellbeing	0.89	0.48	0.48	*0.04*	0.44	0.36	0.83	0.68	0.61	0.26	0.08	**<0.001**	**<0.001**	0.94
Social well-being	*0.02*	0.67	**<0.001**	0.28	0.47	*0.01*	0.70	0.45	0.30	0.77	0.91	0.06	0.11	0.61
Emotional well-being	0.24	0.14	0.09	*0.03*	0.68	0.89	0.59	0.10	0.68	0.81	0.16	*0.02*	**0.001**	0.57
Functional well-being	0.13	0.40	0.27	*0.006*	0.72	0.85	0.30	0.55	0.47	0.10	*0.008*	**<0.001**	**<0.001**	0.09
CRC concerns	0.30	0.45	0.46	0.26	0.10	0.92	*0.05*	0.32	0.43	0.10	**<0.001**	*0.03*	**<0.001**	*0.02*
TOI	0.57	0.46	0.34	**0.004**	0.45	0.69	1.00	0.79	0.61	0.23	0.10	**<0.001**	**<0.001**	0.79
FACT-G														
Total	0.13	0.45	*0.03*	*0.012*	0.40	0.63	0.65	0.89	0.83	0.27	0.06	**<0.001**	**<0.001**	0.54
CIQ-R														
Total	**<0.001**	*0.02*	**<0.001**	**<0.001**	0.10	**<0.001**	0.43	0.42	*0.04*	0.91	*0.02*	0.58	*0.007*	0.10
Home integration	0.07	**0.003**	**<0.001**	0.10	0.69	0.21	0.42	0.26	*0.02*	0.97	*0.02*	0.81	0.32	0.91
Social integration	**0.002**	0.39	0.84	022	0.92	0.08	0.63	0.66	0.17	0.34	*0.01*	0.17	*0.03*	0.66
Productivity	**<0.001**	0.80	0.39	**<0.001**	0.10	**<0.001**	0.87	0.10	0.84	0.36	0.90	0.055	**<0.001**	0.65
E-social network	**<0.001**	*0.005*	0.19	0.33	0.32	**<0.001**	0.54	0.76	*0.04*	0.73	008	0.15	0.10	0.33

*Values significant after Bonferroni adjustment (set at 0.05/14 tests) $p < 0.004$ are shown in bold and those significant at 0.05 level are italicized. [a]Variables references: Gender: male vs female; Age groups: ≤ 60 vs >60 years; Marital status: married vs single; Employment status: employed vs unemployed; Comorbidity: present vs none; CRC type: colon vs rectal; CRC duration: ≤3 vs >3 years; Age at diagnosis: ≤ 60 vs > 60 years; Stoma: none or yes (present/reversed); Chemotherapy (CT): received vs none; Radiotherapy (RT): received vs none; Pain: present vs none; Fatigue: present vs none; Inpatient rehabilitation (IPR): received vs no.
CIQ-R: Community Integration Questionnaire-Revised, ClinFIT: Clinical Functioning Information Tool, CRC: colorectal cancer, CT: chemotherapy, DASS: Depression Anxiety Stress Scale, EQ-5D-5L: Euro Quality of Life Scale; FACT-G: Functional Assessment of Cancer Therapy – General, FACT-C: Functional Assessment of Cancer Therapy – Colorectal cancer; TOI: Trial Outcome Index.

Study 3

Functional and participation outcomes of CRC with peritoneal metastasis & pseudomyxoma peritonei following cytoreduction surgery and hyperthermic intraperitoneal chemotherapy (CRS-HIPEC)

[Yang M, Amatya B, Elmalik A et al 2026. Under review J Adv Rehabil Sci Pract]

Rationale: Approx. 10% of CRC survivors are living with metastatic disease - peritoneal metastasis. CRS-HIPEC surgery effective.

Objectives: To assess the longer-term functional and participation outcomes in survivors with CRC with peritoneal metastasis and PMP following CRS-HIPEC

Methods:

- **Prospective cross-sectional study**
- ***Measures*:**
  - Function: **ClinFIT**
  - Participation: DASS- 21; EQ-5D-5L; CIQ, FACT-C

Participants' inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
• **Aged 18 years and over** • **Ability to consent** • **Confirmed diagnosis (main) of CRC or PMP following CRS-HIPEC surgery and subsequently reviewed the Rehabilitation Medicine clinic at PMCC**	• Unable to communicate or limited by severe cognitive impairment • Patients with significant comorbidities, medically unstable or psychiatric disorders limiting participation in the study

Key findings

- N = 100.
- Mean age = 59.1±12.2 (range = 27.5–80.9) Majority male: (52%)
- Diagnosis: CRCPM = 59%; PMP = 41%
- **High prevalence of persistent symptom**: fatigue, pain, emotional distress, sleep disturbance, fear of cancer recurrence, & bowel dysfunction
- Despite these participants reported **favorable functional outcomes-** ClinFIT (Total): Median (IQR) = 28 (19.3)
- **Older age & unemployment** were strong predictors of poorer outcomes

? Responsive phenomenon

[Yang M, Amatya B, Elmalik A et al 2026]

Multivariate regression model independent demographic vs. clinical variables (n = 100)

Outcome measures†	Demographic and clinical characteristics variables§												
	Age	Sex	Marital status	Employ-ment	Comor-bidity	Time post surgery	Left colon surgery	Stoma	CT	RT	Pain	Fatigue	IPR
ClinFIT Total	NS	NS	NS	-0.32#	NS	NS	NS	NS	NS	NS	NS	NS	NS
DASS Total	-0.51^	NS	NS	-0.32#	NS	NS	NS	NS	NS	NS	0.21*	NS	NS
Depression	-0.32#	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anxiety	-0.45^	NS	NS	-0.24*	NS	NS	NS	NS	NS	0.28*	0.27*	NS	NS
Stress	-0.43^	NS	NS	-0.46^	0.25*	NS	NS	NS	NS	NS	NS	NS	NS
EQ-5D-5L Health	0.39^	NS	NS	0.33#	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mobility	NS	NS	NS	-0.29*	NS	NS	NS	NS	NS	NS	NS	NS	NS
Self-care	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Daily activity	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.21*	NS
Pain/ discomfort	-0.27*	NS	NS	-0.23*	NS	NS	NS	NS	NS	NS	0.55^	NS	NS
Anxiety/depression	-0.41^	NS	NS	-0.42^	NS	NS	NS	NS	NS	NS	NS	NS	NS
FACT-C Total	0.38^	NS	NS	NS	NS	NS	NS	NS	NS	NS	-0.27*	NS	NS
Physical wellbeing	NS	NS	NS	NS	NS	NS	NS	-0.29*	NS	NS	-0.29*	NS	NS
Social wellbeing	NS	NS	NS	NS	NS	NS	0.38*	NS	NS	NS	NS	NS	NS
Emotional wellbeing	0.25#	NS	NS	0.30#	-0.22#	NS	NS	-0.32#	NS	NS	-0.28*	NS	NS
Functional wellbeing	NS	NS	NS	0.59^	NS	NS	NS	NS	NS	NS	NS	-0.19*	NS
CRC concerns	0.23*	NS	NS	NS	NS	NS	NS	-0.29*	NS	NS	-0.32*	NS	NS
TOI	0.22#	NS	NS	0.38^	NS	NS	NS	NS	NS	NS	-0.24*	NS	NS
FACT-G Total	0.42^	NS	NS	NS	NS	NS	NS	NS	NS	NS	-0.24*	NS	NS
CIQ-R Total	NS	0.29#	NS	0.48^	NS	NS	NS	NS	NS	NS	NS	NS	NS
Home integration	NS	0.29#	-0.42^	0.24*	NS	NS	NS	NS	NS	-0.30#	NS	NS	NS
Social integration	NS	0.24*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Productivity	NS	NS	0.17*	0.81^	-0.17*	NS	NS	NS	NS	NS	NS	NS	NS
E-social network	NS	NS	0.45^	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Study 4

Evaluation of the Clinical Functioning Information Tool (ClinFIT) in CRC Surgical Prehabilitation Cohort

[Rujites G, Yang M, Amatya B et al 2026. Under review J Adv Rehabil Sci Pract]

Objectives: To evaluate the functional outcomes using ClinFIT with routinely collected preoperative risk and functional capacity measures in a prehabilitation CRC cohort

Methods:

- Prospective observational study
- **Measures**:
  - **Function**: ClinFIT
  - **Participation**: CIQ-R
  - **Anesthetic /Surgical risk indices**: American Society of Anesthesiologists (ASA) Physical Status Classification, Johns Hopkins Surgical Risk Score, Cardiopulmo functional exercise testing (CPET), Surgical Multidisciplinary Meeting (MDM) risk, Prehabilitation MDM risk
  - **Functional Capacity**: Duke Activity Status Index (DASI), 6MWT, 30-STS tests
  - **Nutrition screening & socioeconomic indices**

Box 1. Participants' inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Aged 18 years and over • Confirmed diagnosis (main) of CRC • Underwent primary CRC resection surgery at the PMCC • Completion of routine prehabilitation assessments with a complete ClinFIT score	• No recorded ClinFIT score • Unable to communicate in English or limited by severe cognitive impairment • Patients unable to complete assessment reliably e.g. medically unstable or psychiatric disorders limiting participation in assessment

Key findings

- N = 64.
- **Mean age** = 60.8±13.5 (range = 31-84)
- Majority **male: (58%)**
- **ASA II-III**: 93.8%, & low CPET risk predominated (Categories 0-1: 68.8%)
- **Prehabilitation MDM risk ratings**: Surgical MDM risk & Johns Hopkins Surgical Risk Score - **high-risk categories** (Category 4: 87.5%; Category 3: 85.9%, respectively)
- **MST scores** = low (0-1: 70.3%)
- **IRSAD scores** = mid-range (Categories 3-4: 56.2%)
- **ClinFIT total scores low (Median, IQR: 27; 10.3-63.8), indicating a relatively limited burden of functioning problems**

Characteristics	n, (%)
Age (years) [Mean±SD, range]	60.8±13.5, 31.0-84.0
Sex Male	35 (54.7)
Living circumstance - Partner/ Family	54 (84.4)
Disease duration (years) [Median (IQR)]	1.5 (1.1, 2.2)
LoS (days) [Median (IQR)]	15 (10, 20.5)
Comorbidities	50 (78.1)
American Society of Anesthesiologists (ASA) Physical Status	
ASA 1 - healthy	1 (1.6)
ASA 2	40 (62.5)
ASA 3	20 (31.3)
ASA 4 – brain dead	3 (4.7)
Cardiopulmonary Exercise Testing (CPET) risk category	
Category 0 - low	22 (34.4)
Category 1	22 (34.4)
Category 2	5 (7.8)
Category 3 - high	6 (9.4)
Prehab MD Meeting risk	
Category 0 - low	15 (23.4)
Category 1	13 (20.3)
Category 2	14 (21.9)
Category 3	6 (9.4)
Category 4 - high	15 (23.4)
Malnutrition Screening Tool (MST)	
Category 0 - low	30 (46.9)
Category 1	15 (23.4)
Category 2	12 (18.8)
Category 3	4 (6.3)
Category 4	0 (0.0)
Category 5 - high	1 (1.6)
Surgical MD Meeting risk	
Category 0 - low	1 (1.6)
Category 2	5 (7.8)
Category 4 - high	56 (87.5)
Johns Hopkins Surgical Risk Score	
Category 2 - moderate	8 (12.5)
Category 3- high	55 (85.9)
Index of Relative Socioeconomic Advantage & Disadvantage (IRSAD)	
Category 1 - low	9 (14.1)
Category 2	14 (21.9)
Category 3	18 (28.1)
Category 4	18 (28.1)

Key findings

ClinFIT total scores demonstrated:

- **Moderate positive correlation** with **ASA physical status** = higher functional burden with increasing anaesthetic risk
- **Strong inverse correlation** observed between ClinFIT & functional capacity (DASI), **moderate inverse correlation** (6MWD), **moderate correlation** (CPET risk category) & prehabilitation MDM risk rating
- **Strong inverse correlation** with CIQ-R total, indicating that **greater functional impairments - associated with poorer community reintegration**

Correlations between ClinFIT and clinical measures

Variable	N	Spearman's ρ*	p-value
ASA physical status	64	0.47	<0.001
DASI	62	−0.51	<0.001
CPET Risk Category	55	0.33	0.013
Prehab MDM risk	63	0.41	<0.001
Surgical MDM risk	62	−0.17	0.188
MST	62	0.13	0.312
Johns Hopkins Surgical Risk Score	63	−0.20	0.110
IRSAD Score	63	0.05	0.728
PHQ-4	61	0.16	0.221
6MWD	51	−0.41	0.003
30-STS	53	−0.27	0.055
Acute LoS	57	0.05	0.720
CIQ-R total	64	−0.56	<0.001

Summary

- **Increasing anaesthetic risk** - associated with greater multidimensional functional impairment
- Consistent **moderate-to-strong correlations** observed between ClinFIT & objective functional capacity measures (CPET, 6MWT, and DASI) - support association between **lower aerobic/cardiopulmonary capacity** & **worse multidimensional functioning**
- Prehabilitation MDM risk ratings, reflect alignment between **ClinFIT** & **clinician-assessed global perioperative risk**

Conclusion

ClinFIT **aligns closely** with measures of functional capacity, preoperative vulnerability, & participation, while remaining **relatively independent** of traditional surgical risk scores and short-term hospital outcomes.

Conclusions

- **Useful tool** for the assessment of functioning in rehabilitation settings across cancer care continuum
- Can be used in **various Ca stages** & **diverse patient population**
- **Feasible** to use in daily clinical practice
- Scores - **responsive & showed improvements** in patient functioning
- Information can be **used for goal setting** & delivery of the targeted intervention
- Improving **Oncology-Rehabilitation interface**
- **Collaboration across rehabilitation sector** is required to be used as a universal tool

CHALLANGE: Convincing other healthcare professionals (surgeons/oncologists) to use for routine practice

Thank you

amatyab14@gmail.com

"When function is restored, dignity, independence, and hope follow"

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Understanding ClinFIT

— From Data to Meaning —

Rasch Analysis and development of interval scales

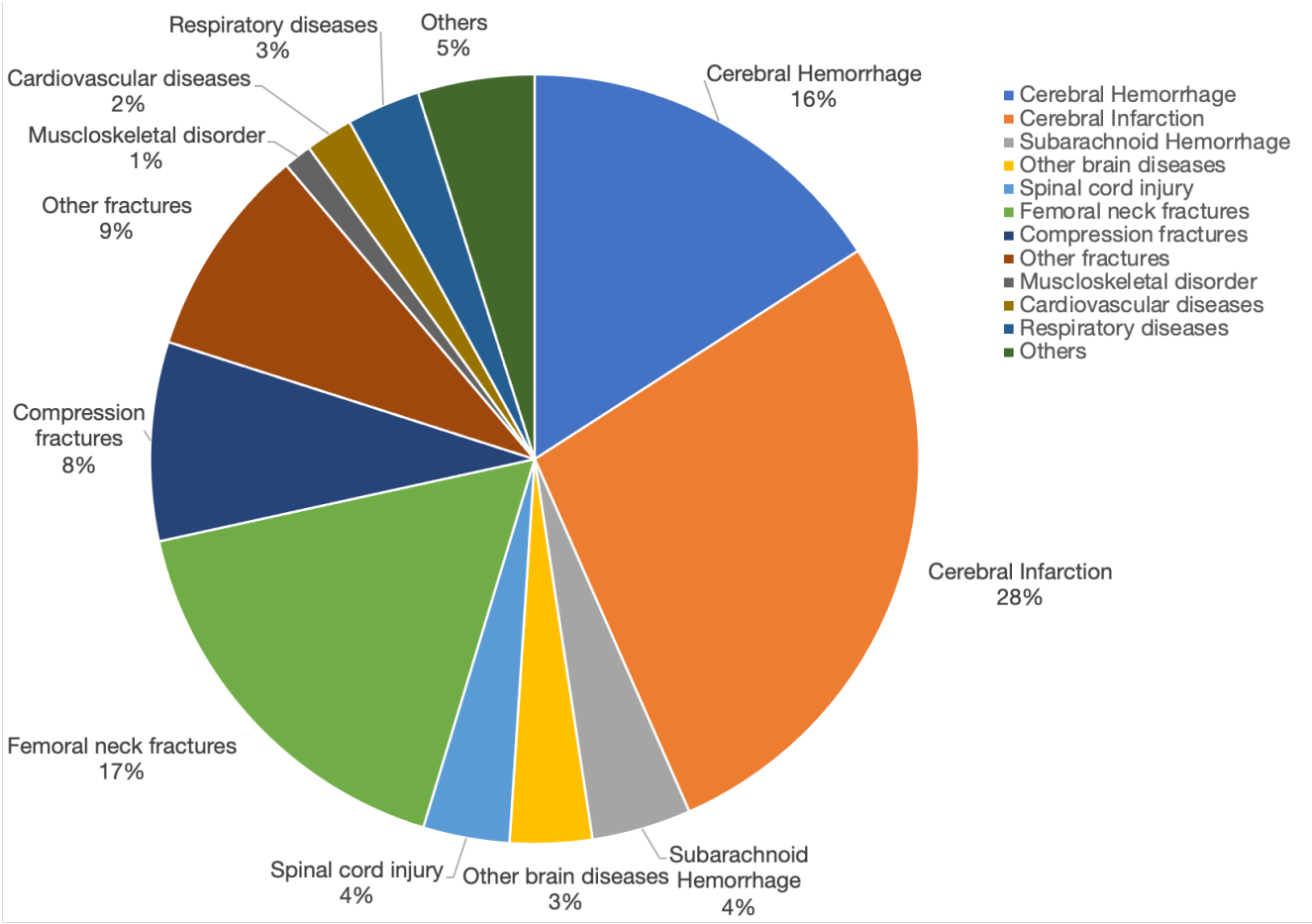
Masahiko Mukaino, MD, PhD

Professor, Department of Rehabilitation Medicine, Hokkaido University Hospital, Japan

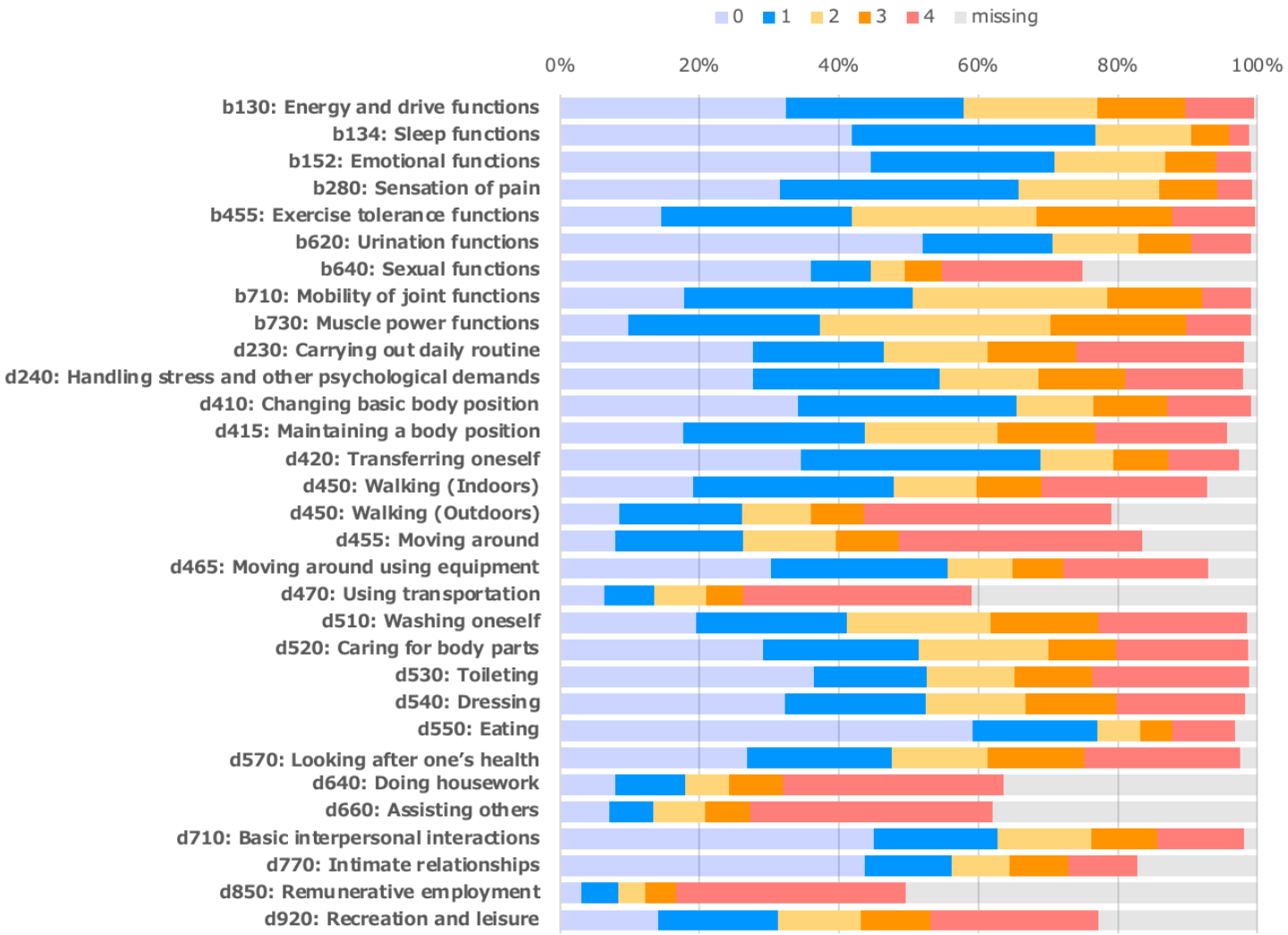
Japanese ClinFIT survey: Demographics

N=1102 from 20 hospitals

Age	77±29
Gender	Male 499/Female 603
Days after onset	Median 57 (1-417)
Ward	Acute 118/ Subacute 984
Diseases	
Neurological	562
Musculoskeletal	429
Cardiovascular	22
Respiratory	34
Others	54
FIM (Functional independence measure)	
motor	54.1±25.0
cognitive	23.8±9.4



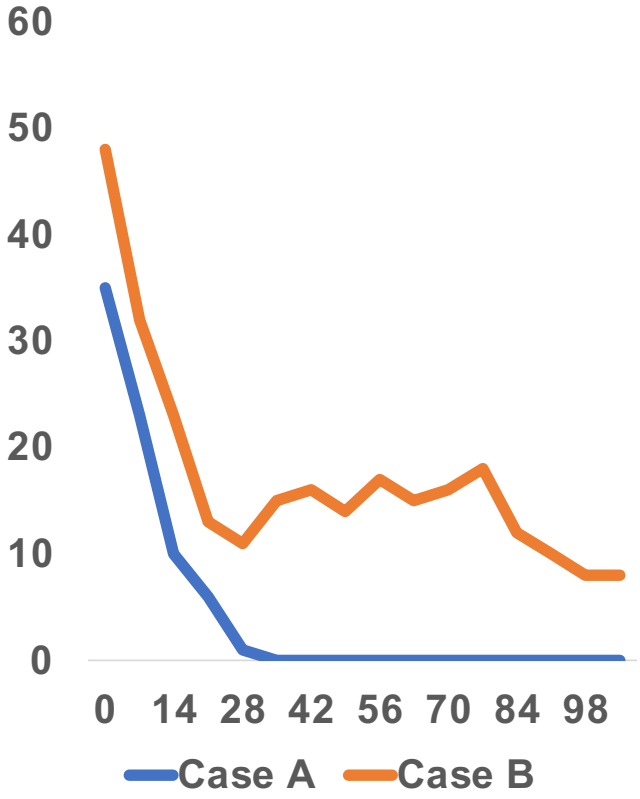
Distribution of functioning problems



In 25 out of 30 categories, more than half of the patients reported problems.

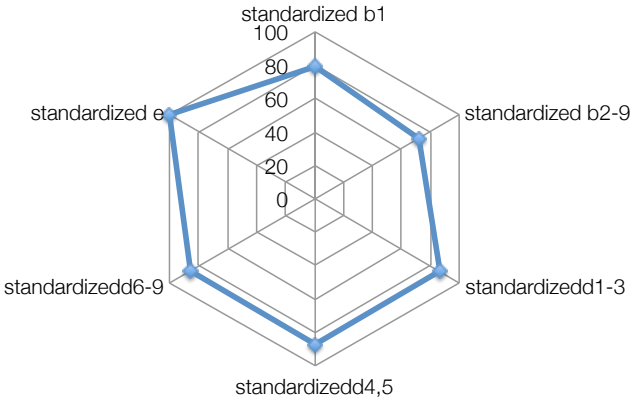
Potential applications of ClinFIT

Quantify the severity of the functioning problem



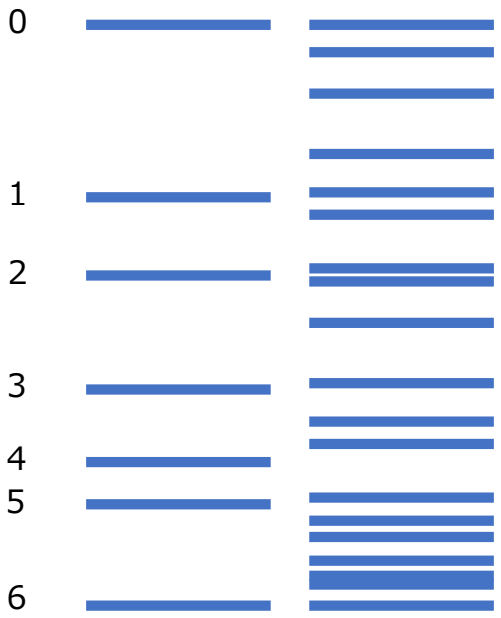
Describing functioning profiles in disease statistics

- Comparison between countries
- Comparison across diseases

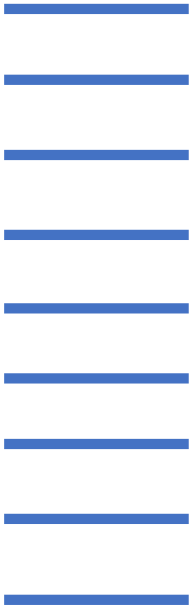


For statistical purposes: Interval scale is ideal

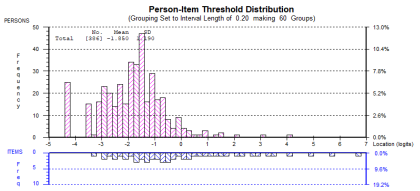
Ordinal scale



Interval scale



Rasch analysis

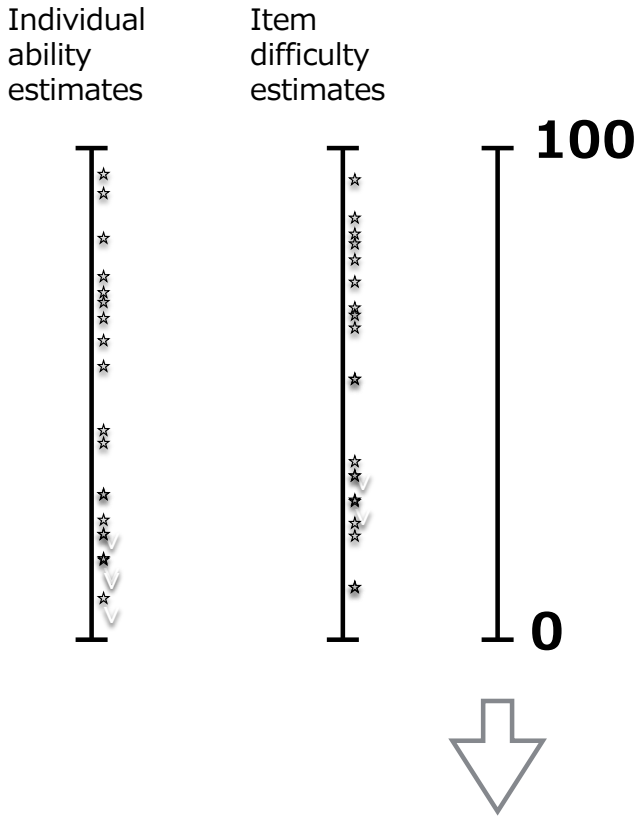


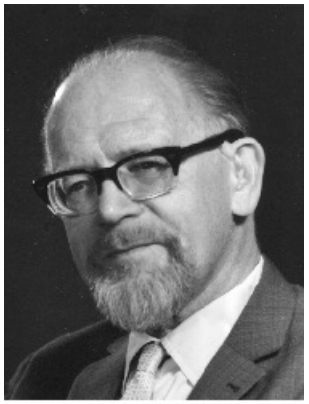
Transformation table for
Ordinal → Interval scale

ClinFIT COVID-19	Rasch estimate	Transformed interval score
18	−6.279	18.0
19	−5.686	23.3
20	−5.281	26.9
21	−5.005	29.4
22	−4.784	31.4
23	−4.594	33.1
24	−4.423	34.6
25	−4.263	[illegible]
26	−4.11[illegible]	[illegible]7.4
27	−3.9[illegible]6	38.7
28	−3.824	[illegible]
29	−3.68[illegible]	[illegible]1.2
30	−3.55[illegible]	42.4
31	−3.420	43.6
32	−3.291	44.8
33	−3.166	45.9
34	−3.043	47.0

Example only

Rasch analysis





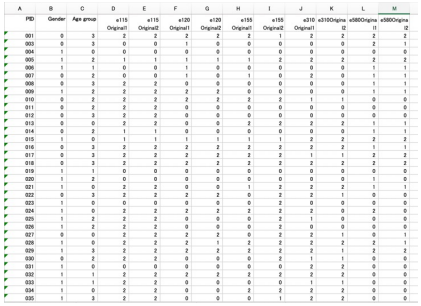
Georg Rasch (1901-1980)

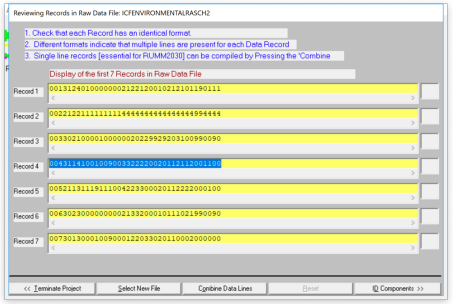
- The Rasch analysis enables to map individual ability and item difficulty from the distribution of the data, if the data fits to Rasch model.
- The estimates could be turned into 0-100 scales.

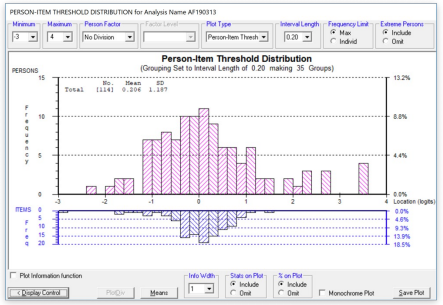
The scale could be treated as an interval scale

The procedure of the Rasch analysis

Data preparation → Set up analysis → Run analysis

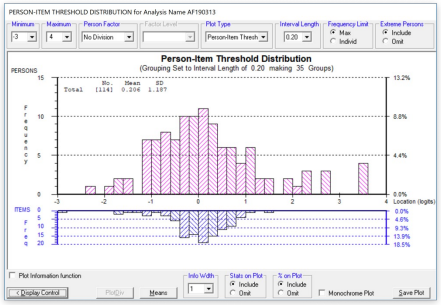




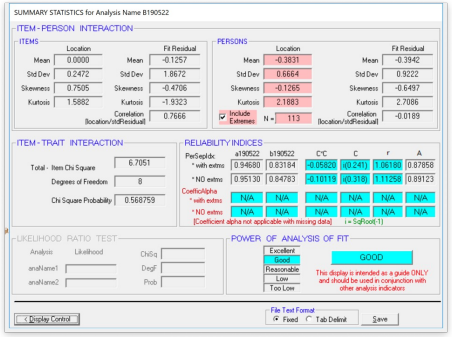


Modify the analysis setting to fit the Rasch model

Evaluate the item difficulty, distribution etc.
Development of transformation table



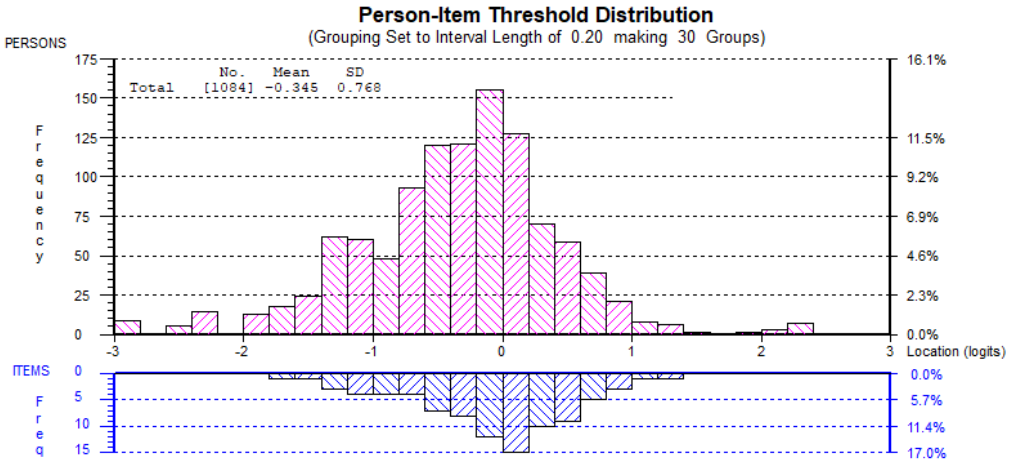
Raw score	Item location	0-100 scale	Z score
0	-2.67	0.0	-3.44
1	-2.12	10.8	-2.61
2	-1.79	17.3	-2.11
3	-1.59	21.2	-1.82
4	-1.45	23.9	-1.60
5	-1.34	26.1	-1.44
6	-1.25	27.8	-1.30
7	-1.18	29.3	-1.19
8	-1.11	30.7	-1.08
9	-1.04	31.9	-0.99
10	-0.99	33.0	-0.91
11	-0.94	34.1	-0.83
12	-0.89	35.0	-0.75
13	-0.84	35.9	-0.69
14	-0.80	36.8	-0.62
15	-0.75	37.6	-0.56
16	-0.71	38.4	-0.50



Rasch analysis

The fit to the Rasch model : with testlet approach and item splitting (Wainer et al 1987, Andrich et al, 2012)

	Location				Fit Residual				Item-trait interaction			Reliability		Unidimensionality			
	Item		Persons		Item		Persons		Chi square			Person separation index		Paired t-tests			
Analysis	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Value	df	p	WITH extremes	NO extremes	Proportion significant t-test	95%CI	Local dependency	DIF
ICF rehabilitation set 23 categories (Basic module)	0	0.582	-0.571	1.552	-0.739	5.605	-0.354	1.388	1314.7	198	0.000	0.95	0.95	21.70	20.4-23.0	Yes	Yes
3 Testlets	0.00	0.26	-0.35	0.77	-1.11	6.10	-0.47	0.95	40.00	27	0.051	0.85	0.85	3.10	1.6-4.7		Yes
3 Testlets (item split)	0.00	0.22	-0.30	0.75	-1.66	4.69	-0.48	0.96	40.76	36	0.269	0.84	0.85				



Development of the Interval scale

Raw score	Item location	0-100 scale
0	-2.67	0.0
1	-2.12	10.8
2	-1.79	17.3
3	-1.59	21.2
4	-1.45	23.9
5	-1.34	26.1
6	-1.25	27.8
7	-1.18	29.3
8	-1.11	30.7

Original Article

J Int Soc Phys Rehabil Med 2021;4:174-83

Developing ClinFIT COVID-19: An Initiative to Scale Up Rehabilitation for COVID-19 Patients and Survivors across the Care Continuum

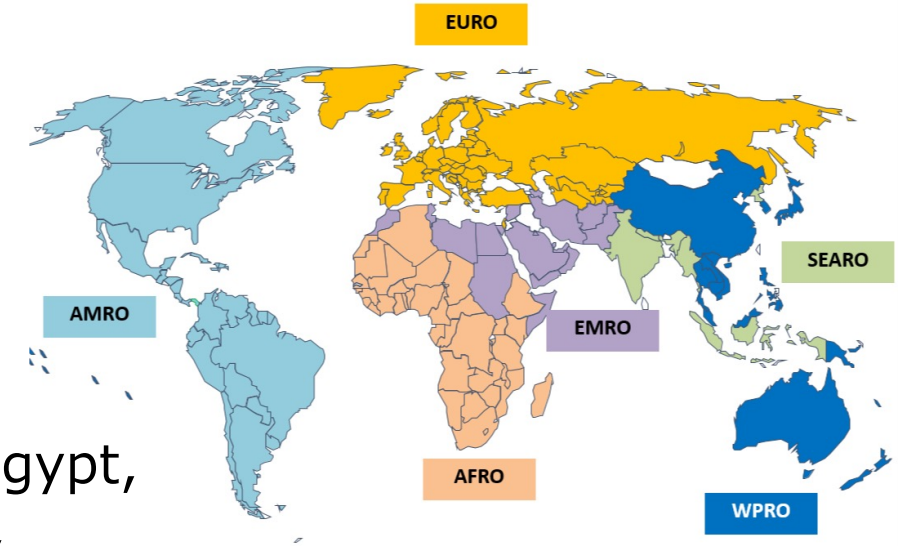
Melissa Selb[1,2], Gerold Stucki[1,2,3], Jianan Li[4,5], Masahiko Mukaino[6], Leonard Li[5,7], Francesca Gimigliano[8], on behalf of the ISPRM ClinFIT Task Force‡

ICF Category (code and title) and corresponding simple description	Acute N=13	Post-acute N=15	Long-term N=16
b130 Energy and drive functions (G) *Psychological energy and motivational drive to move towards goals, satisfy needs and control impulses*	✓	✓	✓
b134 Sleep functions *Cycle, quality and amount of sleep*	✓	✓	✓
b140 Attention functions *Focusing on needed information over a period of time*	✓	✓	
b152 Emotional functions (G) *Mental functions for the modulation of the expression of feelings and emotions*	✓	✓	✓
b280 Sensation of pain (G) *Unpleasant sensation indicating potential or actual damage of some body structure*	✓	✓	✓
b440 Respiratory functions *Functions of breathing, including gas exchange*	✓	✓	✓
b445 Respiratory muscle functions *Functions of the muscles involved in breathing*	✓	✓	✓
b455 Exercise tolerance functions *Capacity of enduring physical exertion related to respiratory and cardiovascular functions*	✓	✓	✓
b710 Mobility of joint functions *Range and ease of movement of a joint*	✓	✓	✓
b730 Muscle power functions *Capacity to generate force through the contraction of a muscle or muscle groups*	✓	✓	✓
d230 Carrying out daily routine (G) *Plan, manage and complete routine daily life activities*	✓	✓	✓
d240 Handling stress and other psychological demands *Manage and control the psychological demands to carry out tasks demanding responsibilities involving stress and/or distractions and/or critical issues*	✓	✓	✓
d450 Walking (G) *Moving in an upright position, step by step, always maintaining a support on the ground*	✓	✓	✓
d455 Moving around (G) *Moving around differently from walking (for example running, going up and down the stairs, jumping, climbing, swimming, etc.)*		✓	✓
d850 Remunerative employment (G) *Properly performing remunerative employment (full or part time or self-employed) in all its aspects*			✓
d920 Recreation and leisure *Engaging in recreational or leisure activity (play, cultural and sports activities etc during spare time)*			✓
s430 *Structure of the respiratory system* *Trachea, lungs, rib cage and breathing muscles*		✓	✓

International data collection for ClinFIT COVID-19

N= 1’748 persons

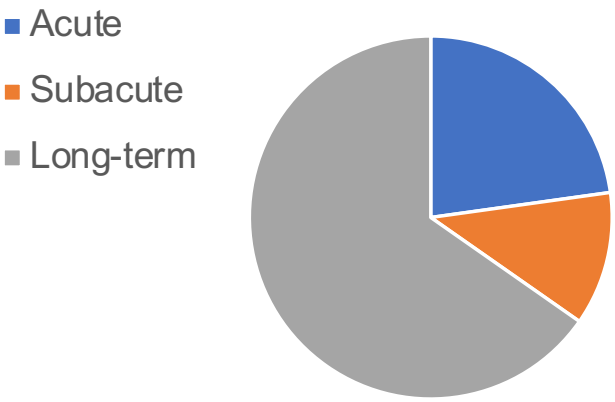
- 914 persons from EURO-Region
  Portugal (N=648), Greece, Sweden, Finland, Romania, Turkey and Italy
- 445 persons from EMRO-Region
  Morocco (N=280), Jordan (N=134), Egypt, Tunesia, Saudi Arabia, Djibouti, Qatar, Kuwait
- 389 persons from WPRO-Region
  Japan (N=369) and Taiwan



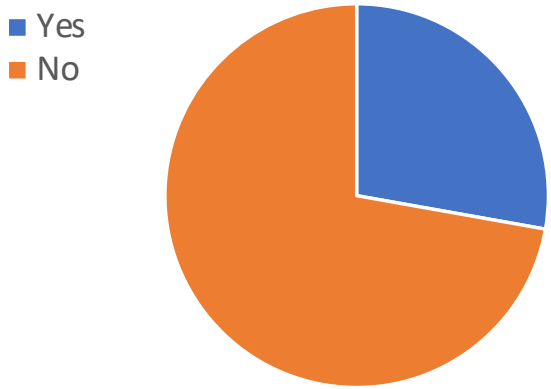
Patient characteristics

Age mean 60 (SD 20)
Sex Male 964/ Female 783
Days after onset 168 (1-1080)

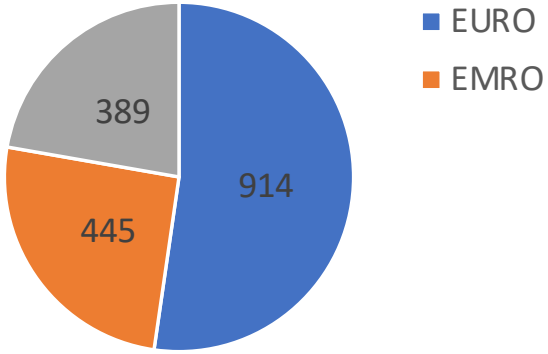
Stages:
Acute, Subacute, Long-term



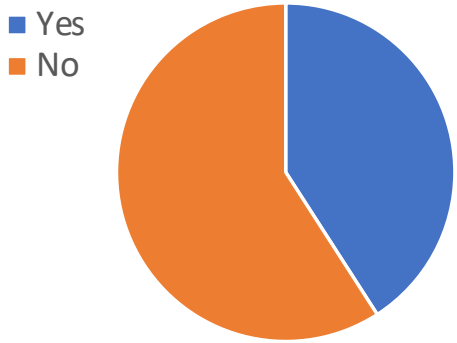
Need of mobility aid



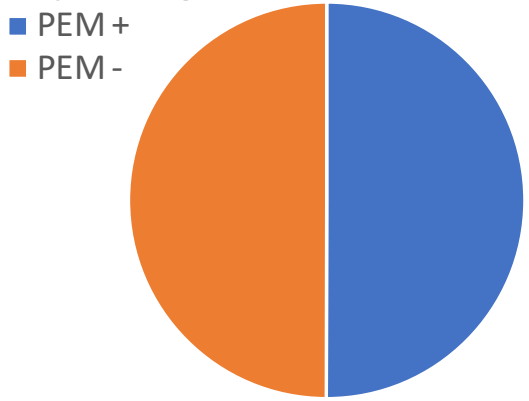
WHO Region



Need of assisstance

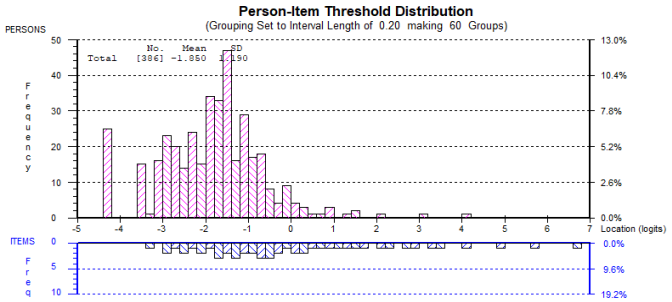


Presence of
Post-exertional malaise
(long term)

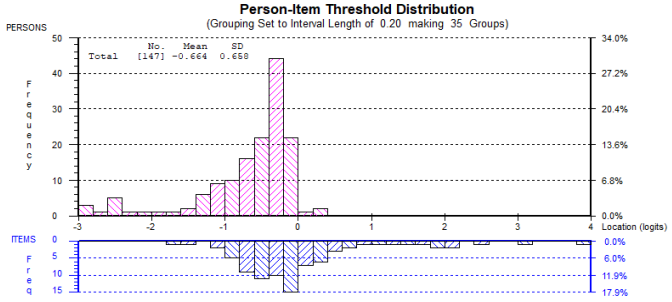


Rasch analysis-based interval scale was developed

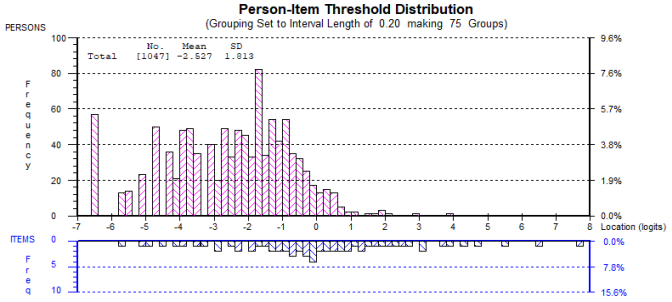
Acute



Subacute



Long-term



Transformation table from raw score to interval scale score

	Acute			
	Age ≤60		Age >60	
	Intuitive	With specifi-cations	Intuitive	With specifi-cations
0	0.0	0.0	0.0	0.0
1	6.4	5.9	7.2	7.6
2	10.5	9.8	12.0	12.9
3	13.2	12.5	15.2	16.7
4	15.2	14.4	17.7	19.8
5	16.9	16.0	19.8	22.4
6	18.2	17.3	21.5	24.6
7	19.4	18.3	23.1	26.5
8	20.4	19.1	24.6	28.2
9	21.3	19.8	25.9	29.6
10	22.1	20.4	27.0	30.8

-
-
-

Mukaino et al, 2025

Summary

- Interval scales are preferable for quantification and mathematical analysis
- Rasch analysis enables the conversion of clinical ordinal scales into interval scales by quantifying the difficulty of items and response options
- A standard conversion table was successfully developed through an international study using ClinFIT COVID-19.
- Future international data collection using standard and disease-specific ClinFIT versions will facilitate the further development of conversion tables.

Minimal Clinically Important Differences (MCIDs) in ClinFIT

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Group Leader
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Swiss Paraplegic Research — **Group Leader**

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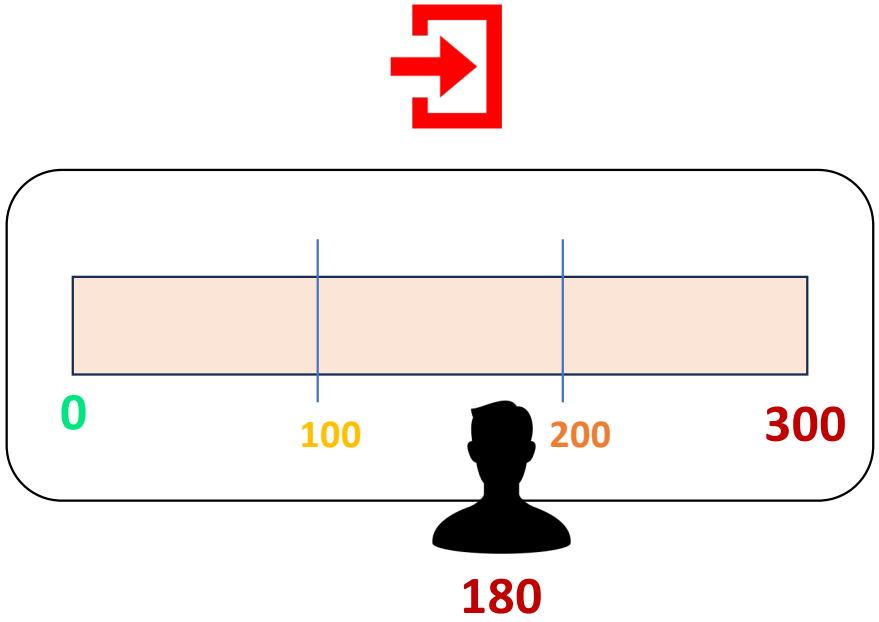
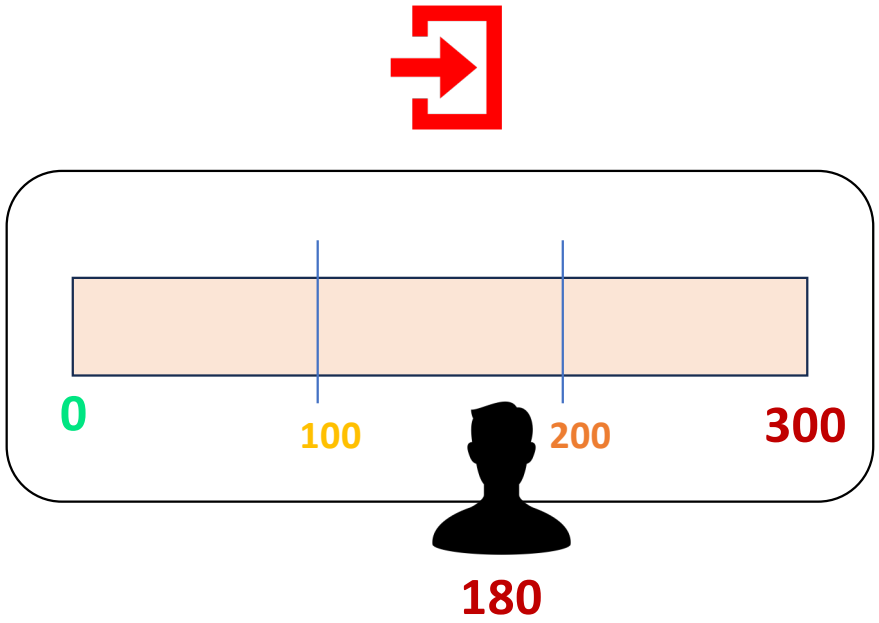
Thanks for slides contribution:
Prof. Dr. Masahiko Mukaino
Prof. Dr. Bhasker Amatya
Dr. Melissa Selb

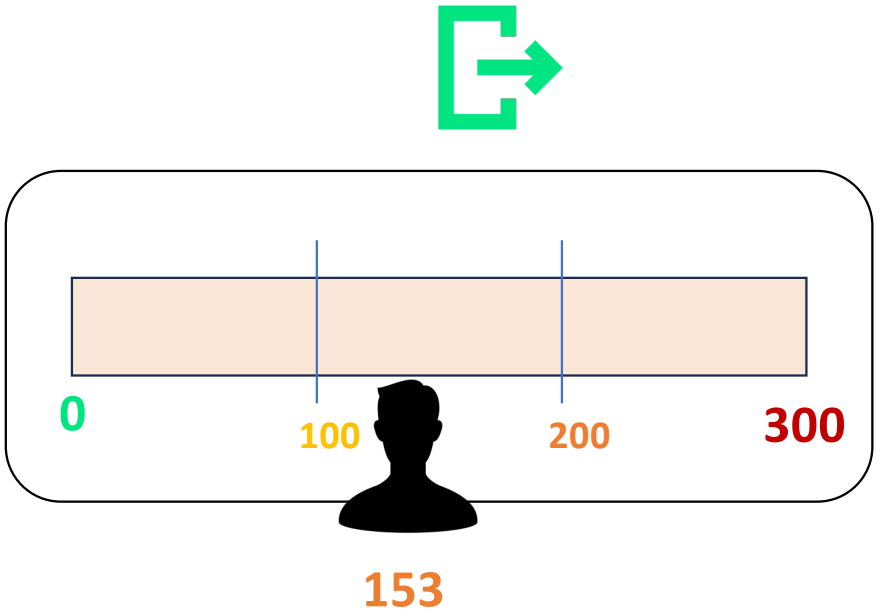
Minimal Clinically Important Differences (MCIDs)

Minimal Clinically Important Differences (MCIDs)

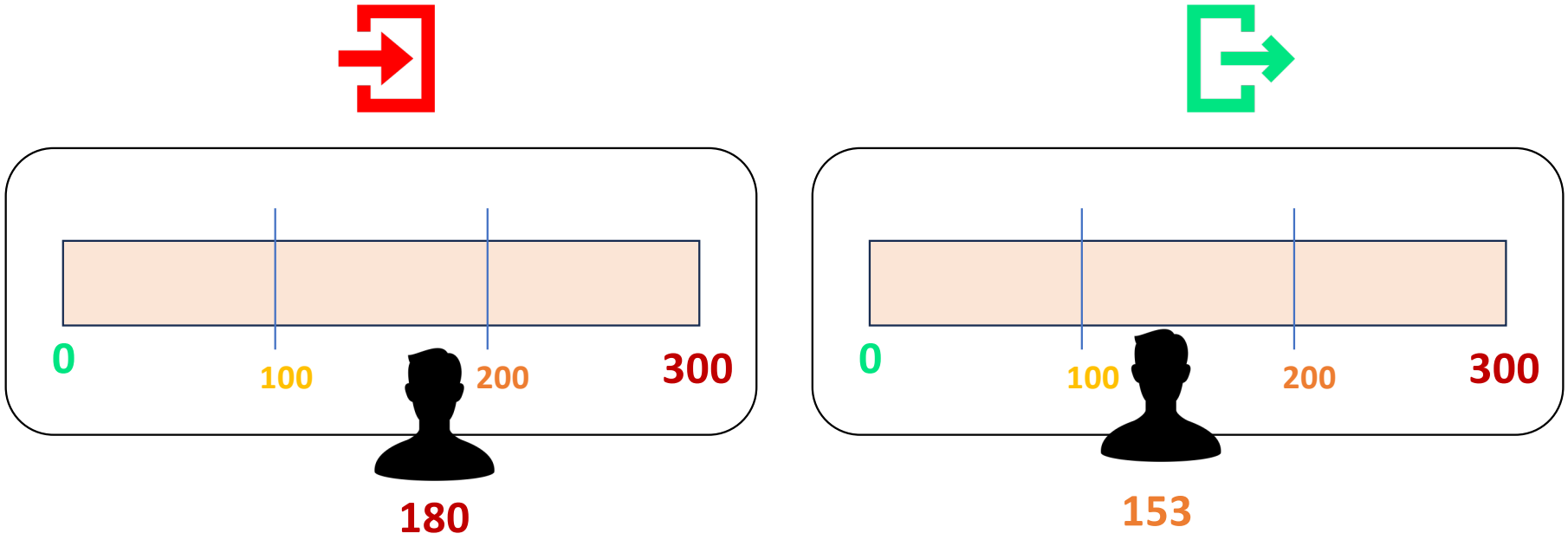


Minimal Clinically Important Differences (MCIDs)





Minimal Clinically Important Differences (MCIDs)



Is a change of -27 points in ClinFIT meaningful?

Minimal Clinically Important Differences (MCIDs)

Smallest change perceived as clinically meaningful

- Bridges **statistical significance** and **clinical relevance**
  - Statistical change ≠ meaningful improvement

- Supports interpretation of functional change in patient-centered care

Rationale

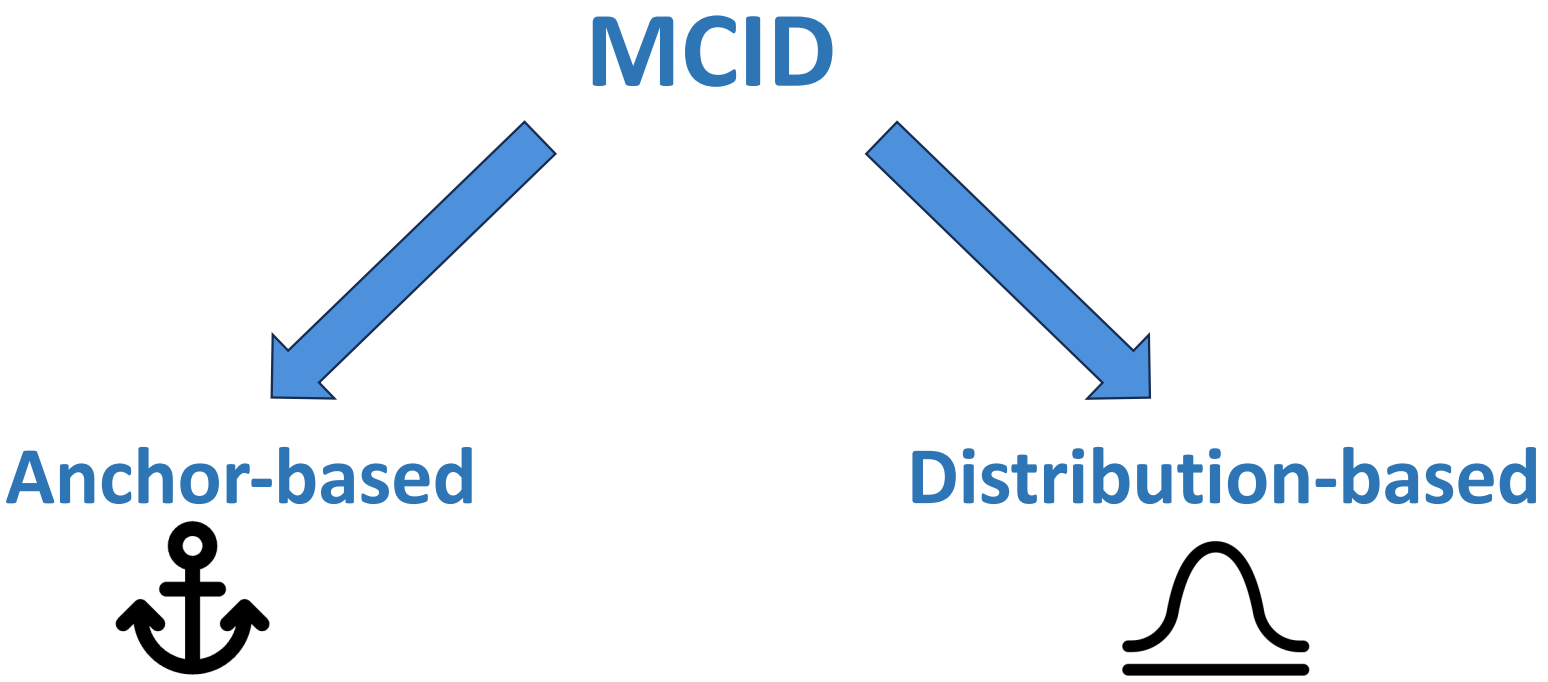
- No established MCID for ClinFIT

- Needed to:
  - Guide clinical decision-making
  - Evaluate treatment effectiveness
  - Communicate patient progress
  - Support research comparability

Goal

To estimate the MCID for the ClinFIT in an inpatient rehabilitation cohort

MCID Estimation Approaches



MCID Estimation Approaches

Anchor-based methods

- Link ClinFIT change to external indicators of improvement
- Anchors used:
  - FIM (MCID = 22)
  - EQ-5D-5L (MCID = 0.10)
  - EQ-5D VAS (MCID = 10)
- Approaches:
  1. ROC analysis to distinguish *Improved* vs *Not improved*
  2. Mean ClinFIT change in improved patients
  3. Difference in change between improved and not improved groups

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  3. Difference in change between improved and not improved groups

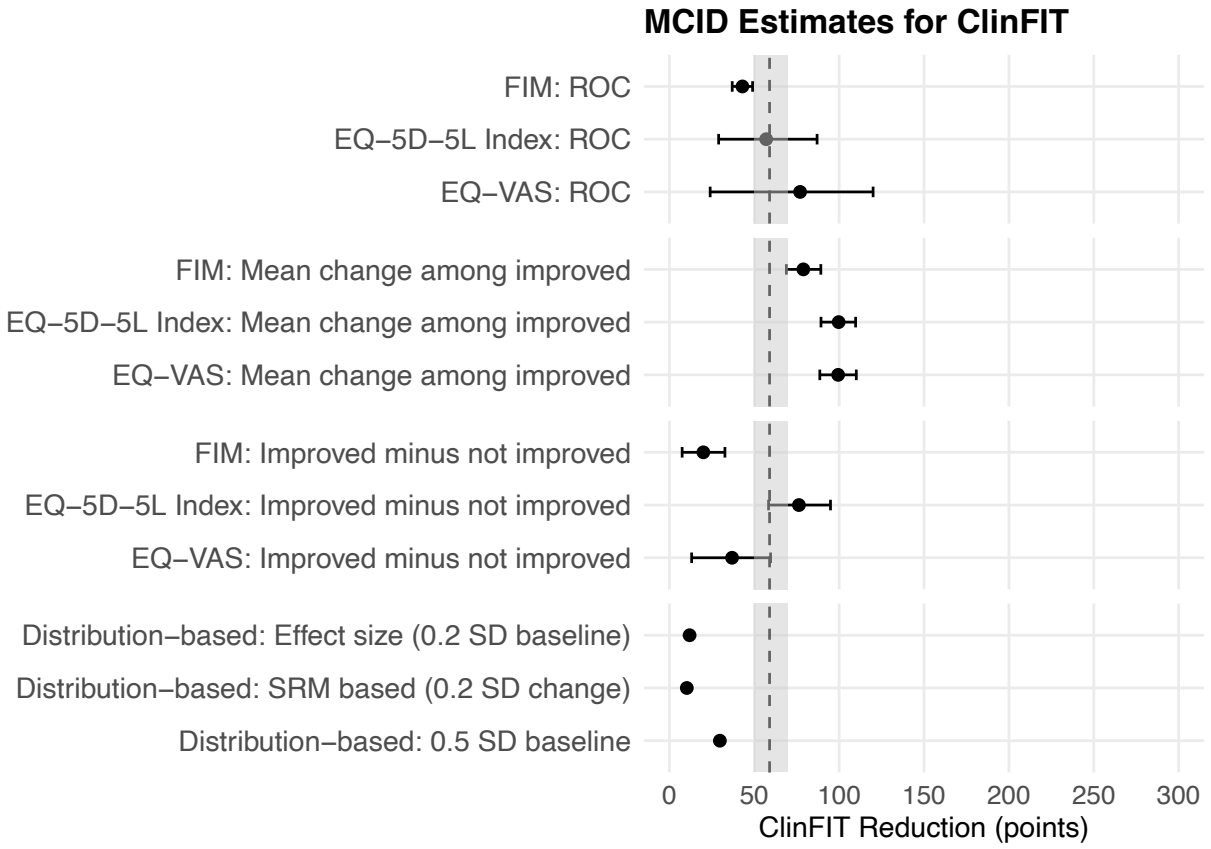
Distribution-based methods

- Based on statistical properties of ClinFIT scores:
  1. 0.2 SD (small effect)
  2. 0.5 SD of baseline scores
  3. 0.2 SD of change scores (SRM-based)

Triangulation

- Combine anchor- and distribution-based estimates
- Provides a more robust and reliable MCID

MCID Results



MCID Results

	Estimation Method	Anchor	MCID Estimate*	Average MCID (SD)	Average MCID Across Methods (SD)	Average MCID Overall (SD)
Anchor-Based Estimates	ROC Curve	FIM	–43	–59 (17.1)	–65.3 (27.9)	–53.3 (32.5)
	ROC Curve	EQ-5D-5L Index	–57			
	ROC Curve	EQ-VAS	–77			
	Within-Patient Mean Change	FIM	–78.9	–92.6 (11.9)		
	Within-Patient Mean Change	EQ-5D-5L Index	–99.7			
	Within-Patient Mean Change	EQ-VAS	–99.4			
	Between-Group Difference	FIM	–20.0	–44.4 (28.9)		
	Between-Group Difference	EQ-5D-5L Index	–76.3			
	Between-Group Difference	EQ-VAS	–36.9			
Distribution-Based	Effect Size (0.2 SD)	-	–11.9	–17.3 (10.8)	–17.3 (10.8)	
	SRM-Based (0.2 SD of change)	-	–10.3			
	0.5 SD Method	-	–29.7			

MCID Conclusions

- **Cohort change:** *n* = 258 inpatients (mean age 62.9, 54% male), ClinFIT Total improved from **166.6** → **97.5** at discharge (**Δ −69.1**, large effect **d = 1.18**).

- **Anchor validity:** ClinFIT change correlated strongest with **EQ-5D-5L Index** (**ρ = −0.68**), and moderately with **FIM** (**ρ = −0.31**) and **EQ-VAS** (**ρ = −0.32**), supporting EQ-5D-5L Index as the **primary anchor**.

- **Interpretation / recommendation:** Triangulation supports **~50–70 point reduction** in ClinFIT Total as a clinically meaningful improvement in mixed-diagnosis inpatient rehab (robust across diagnoses, strongest discrimination with EQ-5D-5L Index, AUC 0.89).

Limitations

- **Single-center study:** Limited generalizability

- **Dependence on anchors:** Anchor-based MCID estimates sensitive to the quality and relevance of reference measures (e.g., FIM's limited discriminative ability for comprehensive ClinFIT change)

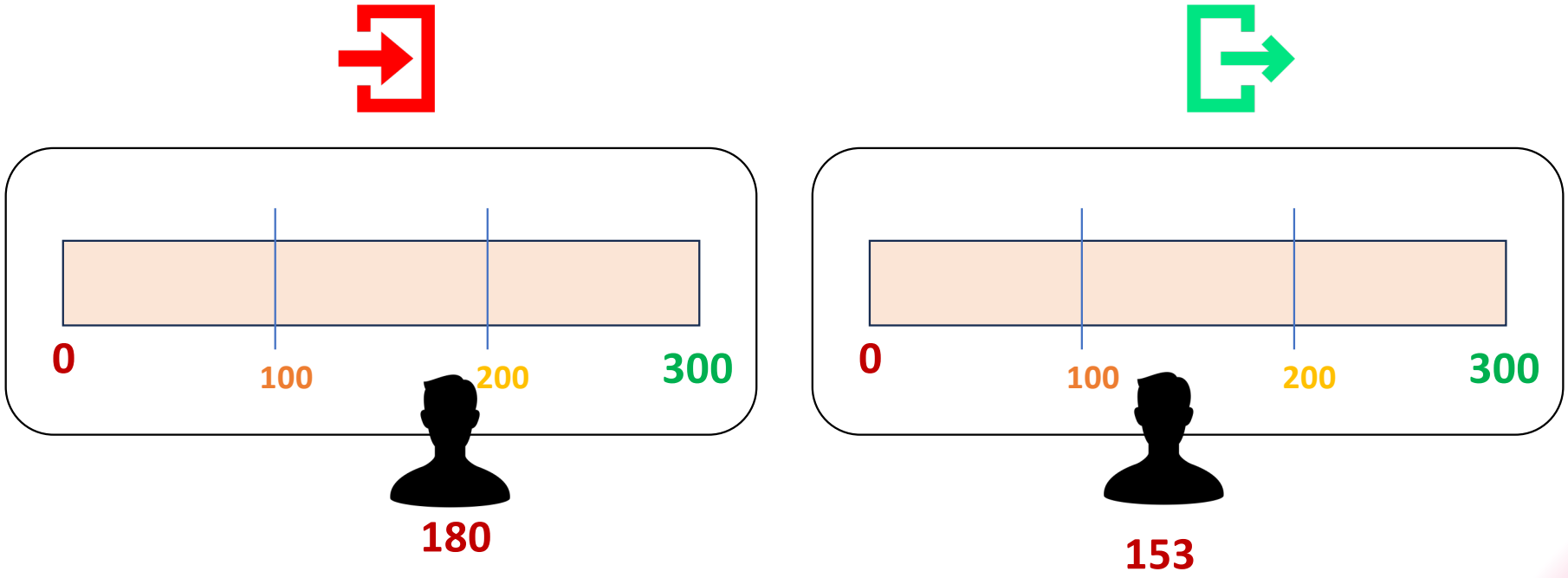
- **Data completeness:** FIM and EQ-VAS not available for all patients, potential sampling bias

- **No external validation yet**

Future Projects

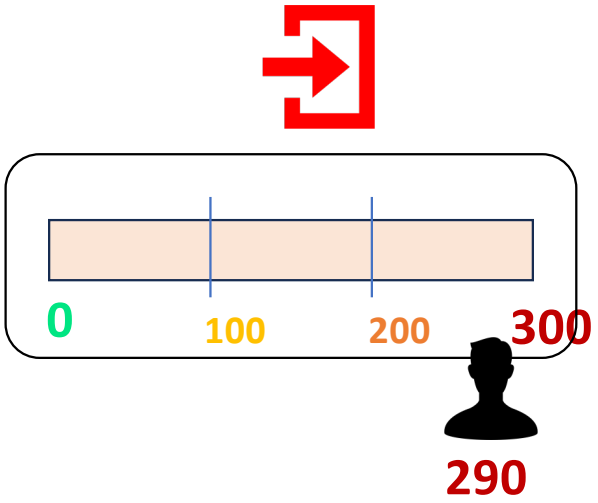
1. ClinFIT Subscales/Domains
2. Functional trajectories
3. Multi-site validation and benchmarking
4. Machine Learning to predict rehabilitation outcomes

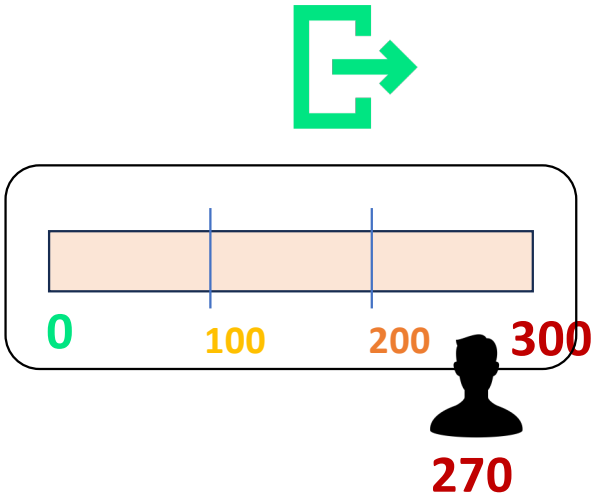
Minimal Clinically Important Differences (MCIDs)



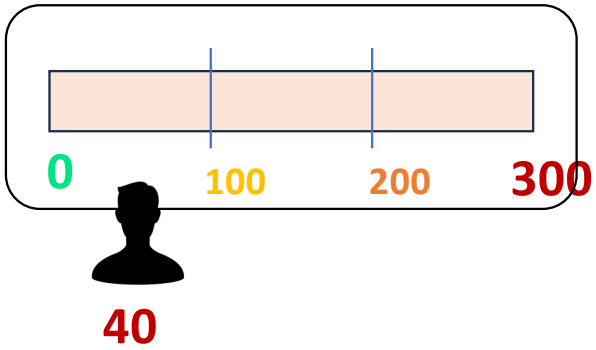
Is a change of -27 points in ClinFIT meaningful?

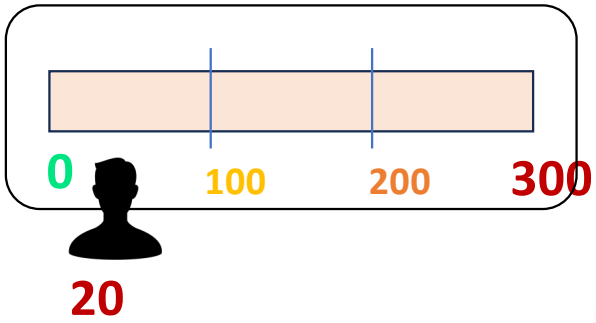
Are changes linear?





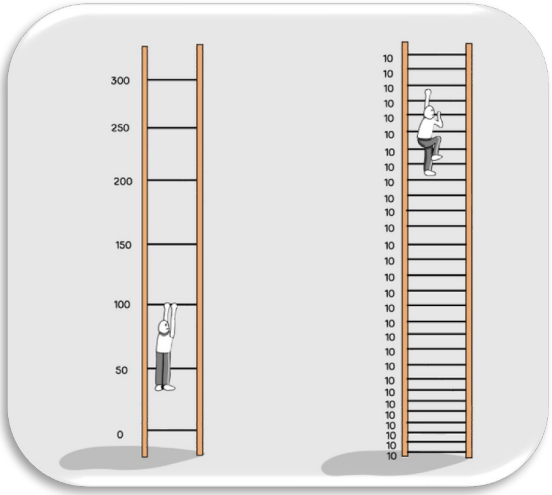
Does a reduction of 20 points always carry the same clinical relevance?





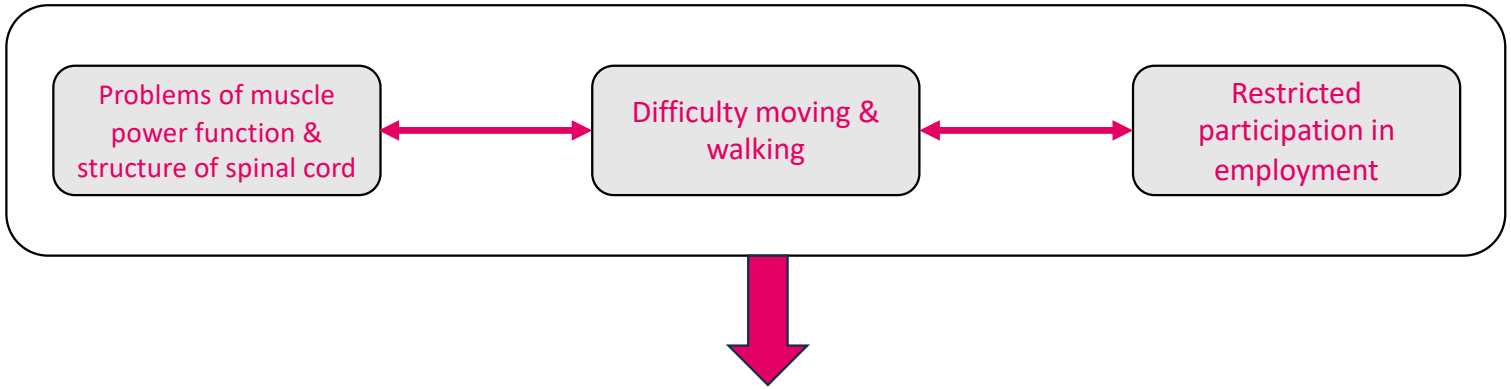
Raw scores assume equal change

No problem	Little Problem	Moderate Problem	Severe Problem	Complete Problem
0	1	2	3	4



- Some functional gains are easy, others hard
- Change depends on where you start

From raw scores to latent functioning

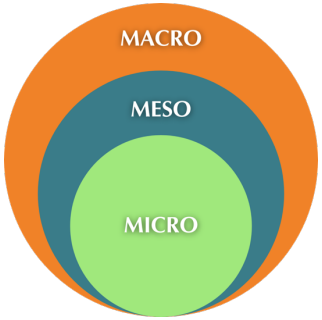


Functioning

- Functioning is not directly observed
- We observe indicators of functioning
- Items differ in difficulty and meaning
- People and items can share one scale

Functioning across system levels

Level	What is captured	Typical data	Main purpose	Example
Micro (individual)	Daily functioning & participation	Structured assessments, interviews	Clinical decisions, care planning	ClinFIT
Meso (services)	Functioning outcomes across patients	Aggregated functioning indicators	Service quality, system design	ClinFIT dashboards
Macro (population)	Participation, equity, trajectories	Surveys, harmonized datasets	Policy, investment, monitoring	InSCI



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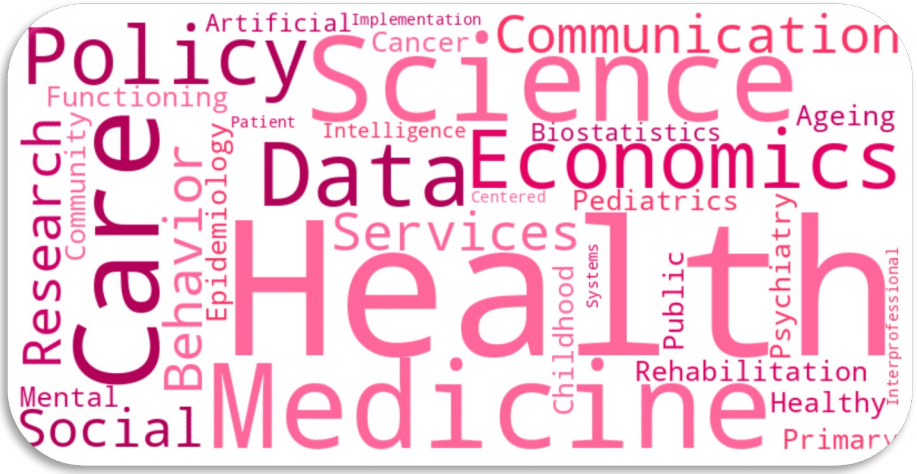


TRANSFORMING REHABILITATION • CONNECTING WORLDS

ISPRM2026

10th International Society of Physical and Rehabilitation Medicine World Congress

VANCOUVER, CANADA | MAY 17-21, 2026

in conjunction with the 74th Annual Scientific Meeting of CAPM&R

Canadian Association of Physical Medicine & Rehabilitation
Association canadienne de médecine physique et de réadaptation

The Global ClinFIT Study

– A Incoming ClinFIT Project with a International Initiative

A/Prof Xiaolei Hu MD, PhD

Julia Patrick Engkasan, Melissa Selb, Dominique Van de Velde, Fary Khan, Bhasker Amatya, Adrian Martinez-De la Torre, Masahiko Mukaino, Gerold Stucki

on behalf of the ClinFIT Special Interest Group

Relevant Financial Disclosure(s)

- **I have no financial conflict to disclose**

- Member of the Executive Committee of ESPRM
- Coordinator of the ESPRM Scientific Advisory Board
- Co-Chair in ClinFIT SIG, ISPRM

Global ClinFIT Study

ClinFIT Special Interest Group

- 27 members

Co-Chair
Xiaolei Hu, Umea University (Sweden)

Co-Chair
Julia Patrick Engkasan
Universiti Malaya
(Malaysia)

Secretariat
Yasothai Sahadeevan
Universiti Malaya
(Malaysia)

Background

- Functioning serves as a third indicator of health and represents a paradigm shift in our understanding of health.
- Optimising functioning complements the standard objectives of reducing morbidity and increasing lifespan, and promotes a fundamental redesign of health systems
- There is urgent need for a systematic, validated and comparable assessment of functioning
- Growing evidence on the use of the ClinFIT Generic-30 Set

Objectives

Overall Goal

To strengthen the clinical utility of the **ClinFIT Generic-30**

Primary endpoint

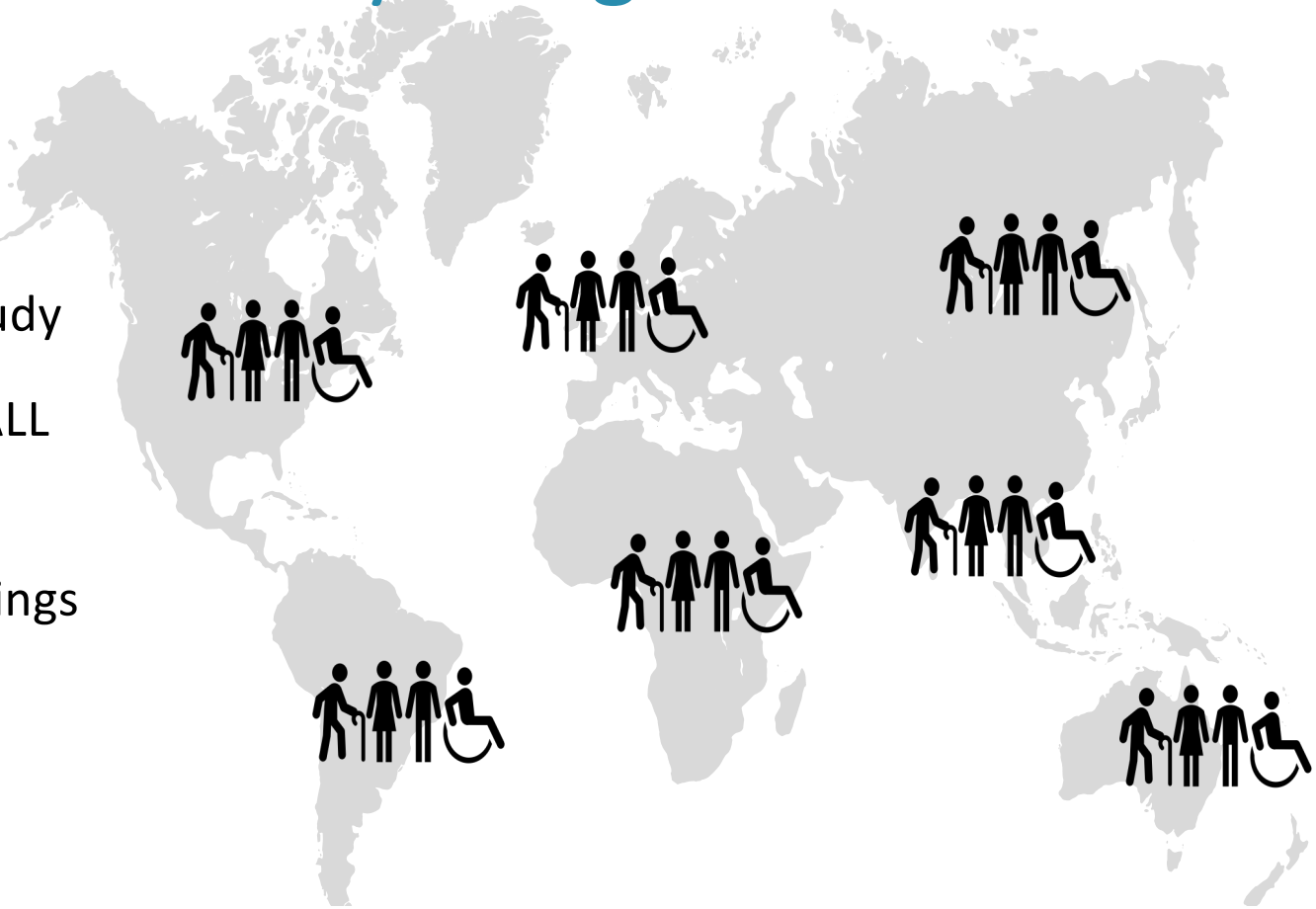
- To develop and validate an **interval-scaled metric** based on the ClinFIT Generic-30 for adults in their inpatient and outpatient rehabilitation

Secondary endpoints

- To **describe baseline** functioning profiles of adults admitted to in- and outpatient rehabilitation
- To evaluate the **responsiveness (sensitivity to change**) of ClinFIT in both in- and outpatient settings
- To develop clinically meaningful **cut-off** scores on the interval-scaled ClinFIT metric to support rehabilitation decision-making
- To estimate the minimal important change (**MIC**), also referred to as the minimal clinically important difference (**MCID**), on the interval-scaled ClinFIT metric
- To **revisiting and re-evaluate** all individual items in the ClinFIT Generic core sets

Study Design

- An international, multicenter longitudinal observational study
- Multi-Site data collection in ALL WHO regions
- Inpatient and outpatient settings



Timepoints for data collection

Inpatient setting

Outpatient setting

Patient Selection

- **Inclusion criteria**
  - admitted to an inpatient rehabilitation service/unit **or** received care in an outpatient clinic
  - Adult (≥ 18 years at the time of admission / visit)
  - All conditions
  - provide written consent

- **Exclusion criteria**: None.

Sample Size

- Minimum **30 participants per clinic**
- **at least 150 -200 participants /country/setting** for cross-country validation and DIF analyses

300–500 participants for the overall Rasch calibration

Assessments and Outcomes

- **ClinFIT Generic-30**
- EQ-5D
- Rehabilitation Complexity Scale
- Sociodemographic data
- Medical data

Preliminary Timeline of the Study

Data collection

- Start: September 2026
- Finish: February 2027

GANTT schedule of the Global ClinFIT Study

Process/ Year	2026			2027	
	Jan- Jun	Jul - Aug	Sep-Dec	Jan- Feb	Mar - Dec
Preparation of the regulatory approvals					
Set up to obtain clinic recruitment					
Participant recruitment & Follow-up					
Data clean, analysis and dissemination and summarizing					

Significance of the Study

- To improve standardized measurement of functioning
- To support triaging and clinical decision-making in rehabilitation
- To enable meaningful interpretation of change over time
- To enhance comparability across individuals, settings, conditions, and countries

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AFRO	Participating Countries
AMRO	
EURO	
EMRO	
SEARO	
WPRO	

We invite you to join the

Global ClinFIT Study

ClinFIT

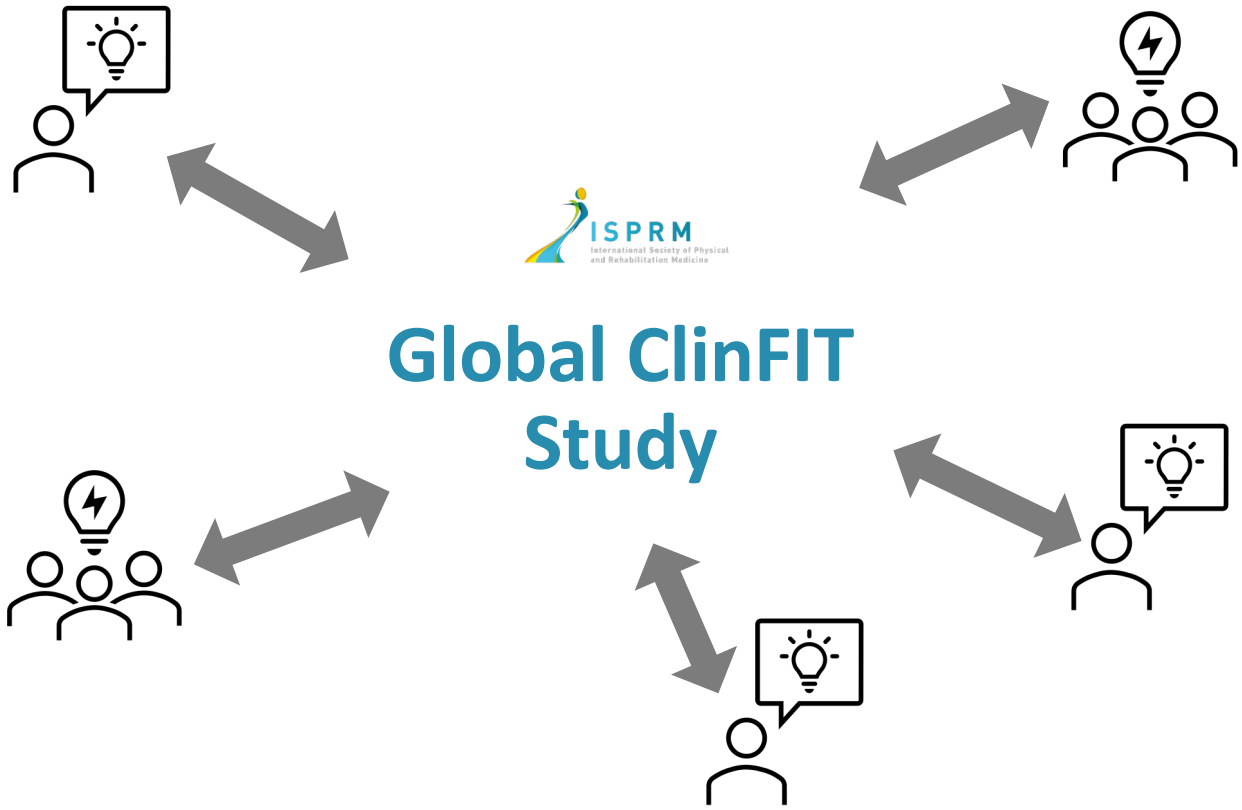
Special Interest Group

Co-Chairs

Prof. Julia Engkasan

A/Prof. Xiaolei Hu

Q & A


ISPRM
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Global ClinFIT Study

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Global ClinFIT Study

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