

Evidence-based Physiotherapy in children

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Fisioterapia



UNIVERSIDADE DA CORUÑA





Content

- 01 What we know and we don't
- 02 How to know more
- 03 How to do better

Search

#pediatrics

- 5560 registers
- 112 guidelines
- 1.210 systematic reviews and metanalyses
- 3.800 RCTs

#pediatrics /physical therapy [TITLE]

- 522 registers



[Home](#) [Display Selected Records](#) [New Search \(Advanced\)](#) [Continue Searching \(Simple\)](#) [New Search \(Simple\)](#) [Search Help](#)

Search Results

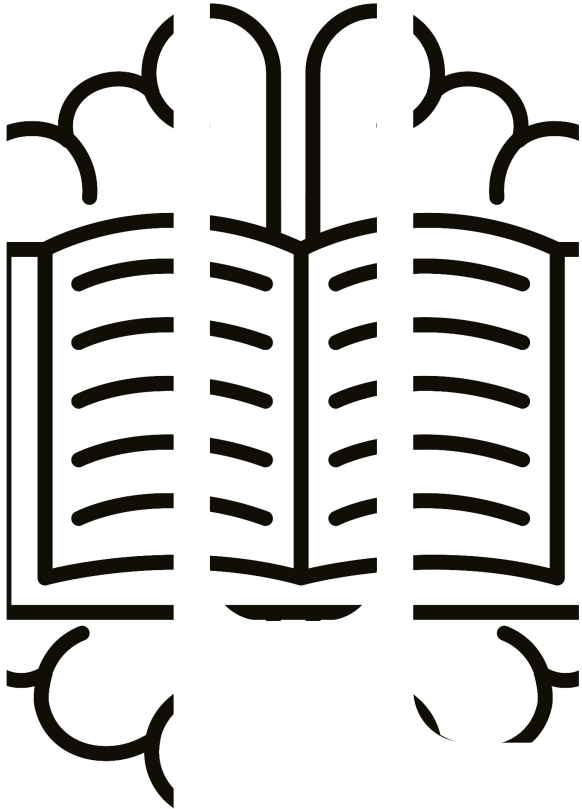
Click on a title to view details of that record. If your search has returned many records you may need to move to the next page (at the top or bottom of the list of records). To display a list of records from one or a series of searches, click on *Select* and then *Display Selected Records*

Found 588 records

< 1 2 3 4 5 6 7 8 9 10 ... 23 24 >

Title	Method	Score (/10)	Select Record
Cystic Fibrosis Foundation evidence-based guideline for the management of CRMS/CFSPID	practice guideline	N/A	Select
2023 American Heart Association and American Academy of Pediatrics focused update on neonatal resuscitation: an update to the American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care	practice guideline	N/A	Select
Exercise for solid organ transplant candidates and recipients: a joint position statement of the Canadian Society of Transplantation and CAN-RESTORE	practice guideline	N/A	Select

What we know and we don't



Time is brain

Early detection

Early intervention

Interventions **based on motor learning principles**



Enhance NEUROPLASTICITY

We recommend beginning intervention at the time of suspected diagnosis to **harness neuroplasticity through specific training**

What we know and we don't

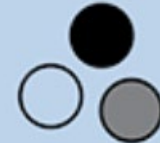
Motor learning principles



Dosage



**Massed
practice**



**Variable
practice**



**Task
specificity**



**Difficulty
progression**



**Continuous
feedback**



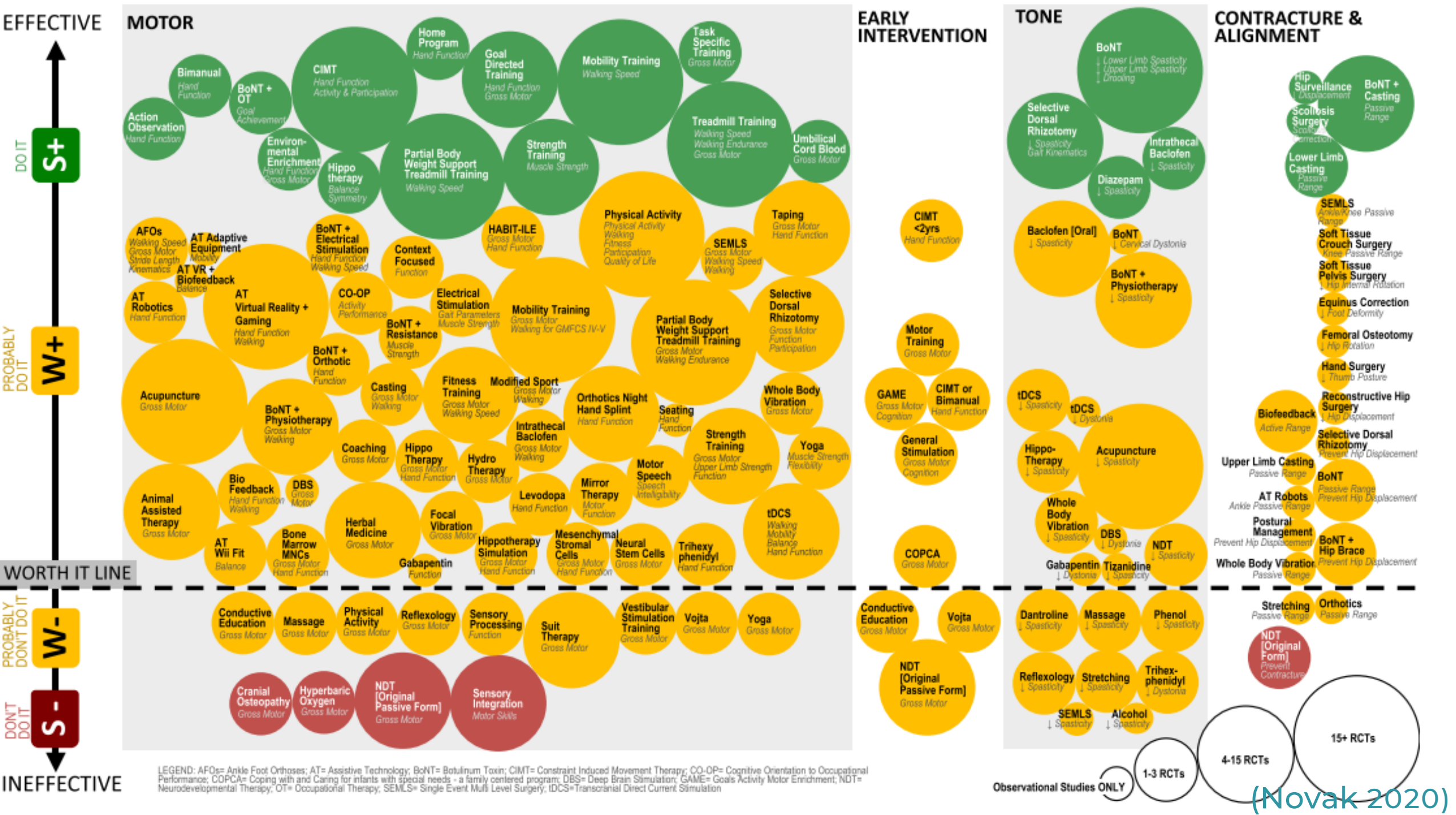
Retention



**Transfer
of skills**

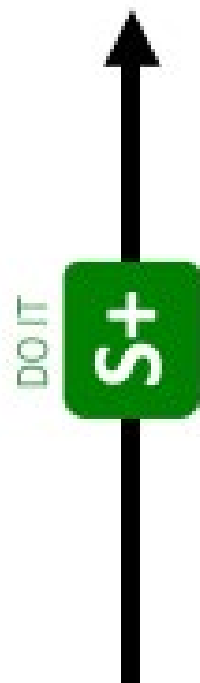


**Multimodal
feedback**



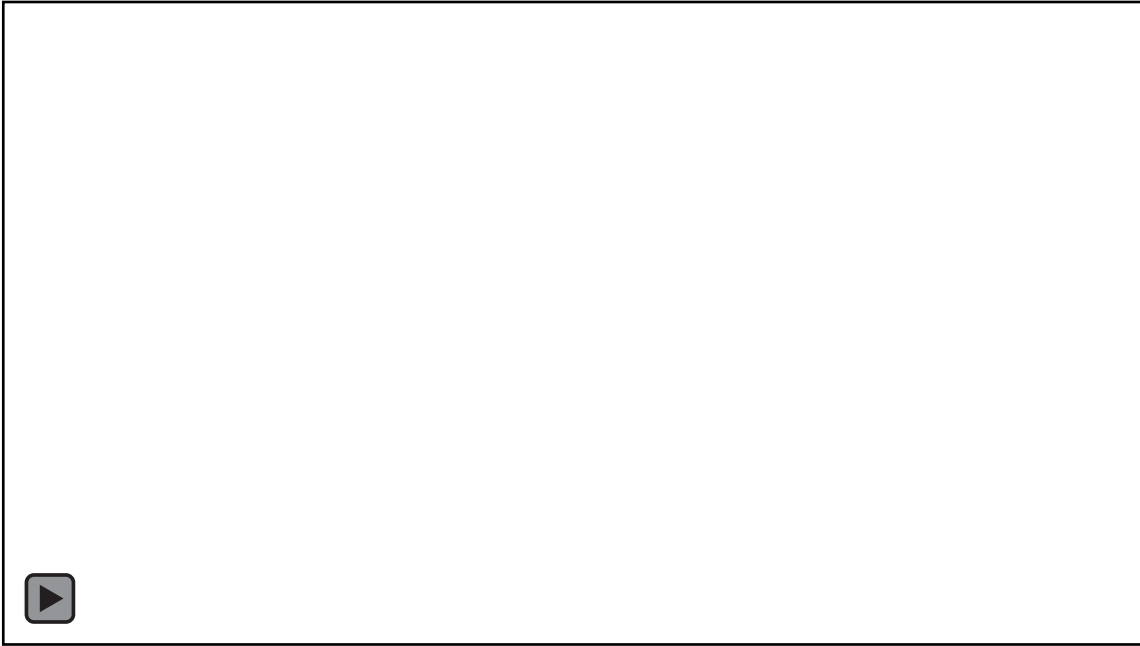
What we know and we don't

EFFECTIVE



01

What we know and we don't



What we know and we don't

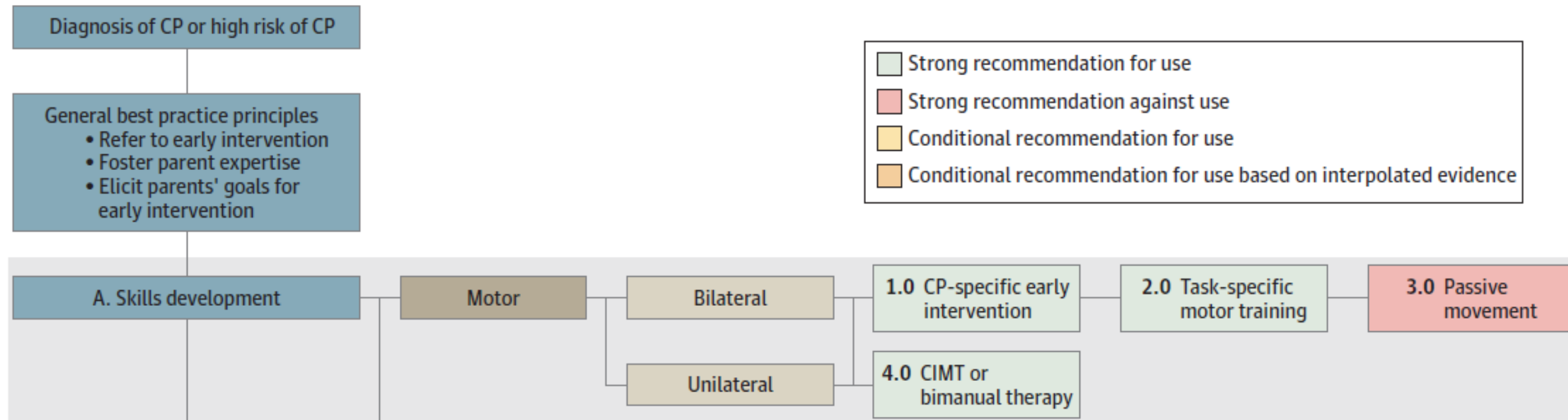
JAMA Pediatrics | Review

Early Intervention for Children Aged 0 to 2 Years

With or at High Risk of Cerebral Palsy

International Clinical Practice Guideline Based on Systematic Reviews

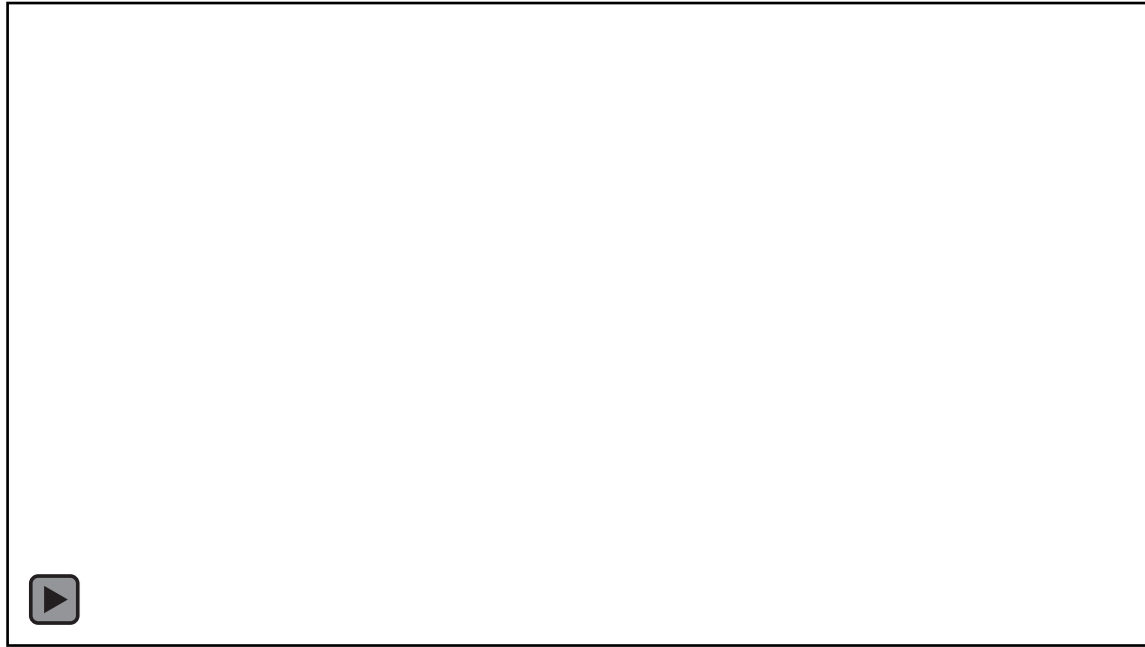
Figure. General Best Practice Guiding Principles



Morgan, 2021


01

What we know and we don't



What we know and we don't

Expert consensus
guidelines (based on
EBP)



CARE PATHWAYS

CENTRAL HYPOTONIA

Authors (AACPDM Central Hypotonia Care Pathway Team): G. Paleg (lead),
R. Livingstone, E. Rodby-Bousquet, M. Story, and N.L. Maitre

DEFINITIONS

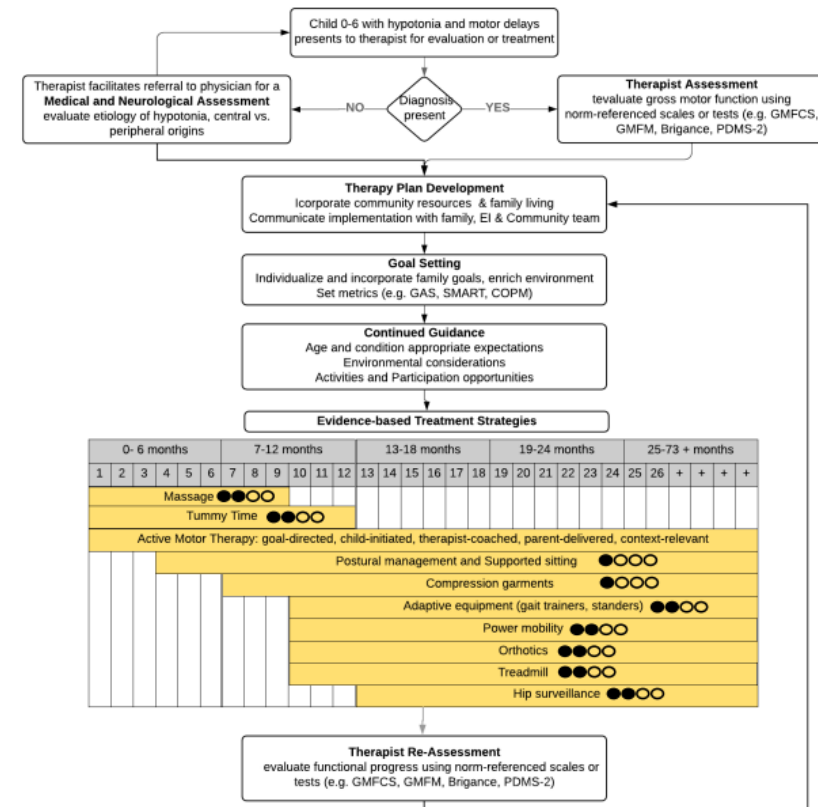
Hypotonia can be defined as abnormally low muscle tone, or reduced resistance to passive, relatively rapid movement. The imprecision of the definition reflects the lack of psychometric properties and reliability of assessments for hypotonia, therefore only clinical definitions currently in use by neurology specialists will be used in this pathway. Other terms for hypotonia include, but are not limited to, central hypotonia, floppy baby syndrome, benign congenital hypotonia, and neonatal hypotonia.

WHY IS THERAPEUTIC ASSESSMENT AND INTERVENTION IMPORTANT FOR CHILDREN (AGE 0-6 YEARS) WITH CENTRAL HYPOTONIA?

Infants and young children with diagnoses of Down syndrome (DS), Cerebral Palsy (CP), and/or developmental delay (DD) often present with low muscle tone that can influence their gross motor development. Other children presenting to therapists may have no established diagnoses.

- Central hypotonia can impede motor function through decreased joint stability, joint hypermobility, weakness, and/or decreased

Hypotonia Care Pathway Algorithm



Legend:

Yellow color = GRADE conditional recommendation for all interventions

Evidence levels:

Very Low ●○○○ Low ●●○○ Moderate ●●○○ High ●●●●

<https://www.aacpdm.org/>

What we know and we don't

Quality of care given can
only be as good as the
assessment on which it is
based”

(Johnson & Thompson, 1996)



What we know and we don't

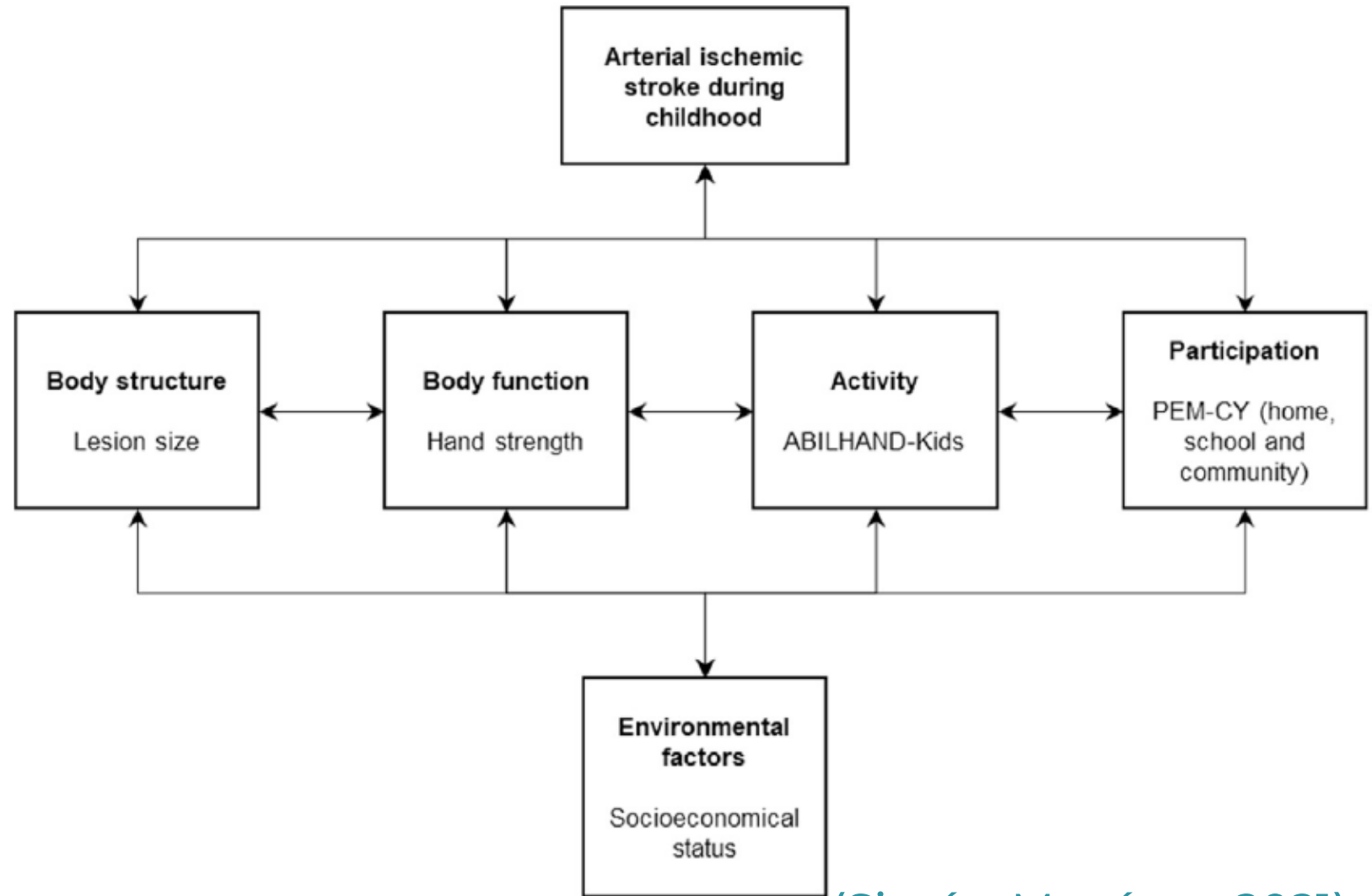
Apply & Assess: set and consense meaningful outcomes



What we know and we don't

WHO ICF guides EBP

Participation after childhood stroke: Is there a relationship with lesion size, motor function and manual ability?



(Simón-Martínez, 2021)

What we know and we don't

WHO ICF guides EBP

Review

Effectiveness of Virtual Reality in Children With Cerebral Palsy: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Yuping Chen, HsinChen D. Fanchiang, Ayanna Howard

Table 2.
Outcome Measurements for Each Study Included in This Meta-Analysis^a

Study	International Classification of Functioning, Disability and Health		
	Body Structure and Function	Activity	Participation
Acar et al ⁴⁸		ABILHAND: (+) JTHFT: (+) QUEST: Dissociated movements: (+) Grasp: (+) Protective extension: (+) Weight bearing: (+) WeeFIM: (+)	
AlSaif et al ⁴⁹	Upper limb coordination (BOTMP5:6): (+)	mABC-2: Manual dexterity: (+) Balance: (+) Catching and aiming: (+) 1-min walk test: (+)	
Chen et al ^{41,42}	Muscle strength: Curl up: NS Knee extension strength: (+) Knee flexion strength: (+) Bone density: Femur bone density: NS Lumbar bone density: (+)	GMFM-66: NS BOTMP: NS Balance: NS Bilateral coordination: NS Running speed and agility: NS Strength: NS	
Chiu et al ⁵¹	Grip strength: NS Tracking: Finger: NS Elbow: NS	Functional hand use: Quality: NS Quantity: NS JTHFT: NS Nine-Hole Peg Test: NS	
Cho et al ⁵²	Muscle strength: Right knee flexors: (+) Right knee extensors: (+) Left knee flexors: (+) Left knee extensors: (+)	10-m walk test: (+) 2-min walk test: (+) GMFM: Standing: (+) Walking, running, jumping: NS PBS: (+)	
Jannink et al ⁵³		Melbourne: (+)	
James et al ⁴³ ; Mitchell et al ⁴⁴	TVPS-3: (+)	6-min walk test: (+) Repetitions of sit-to-stand, lateral step up, half-kneel to standing: (+)	LIFE-Habits: NS AMPS: (+) COPM: (+)

(Chen , 2018)

What we know and we don't

How to choose an appropriate measure

1. What is the PURPOSE of the measure?



What we know and we don't

How to choose an appropriate measure

2. Is it STANDARDIZED?

- Specific protocols for implementation (there is a manual, instructions, specific training)
- Provide scores that allow quantitative assessment (there are published normative data)

What we know and we don't

How to choose an appropriate measure

3. How are its PSYCHOMETRIC PROPERTIES?

- All dimensions reflect the purpose/phenomenon (Construct Validity)
- When evaluated on different times you obtain similar results (Test-retest reproducibility)
- When evaluated by various raters they obtain similar results (Inter-rater reproducibility)
- When compared with a similar instrument they obtain similar results (Convergent reproducibility)
- When compared with a different instrument they obtain different results (Divergent reproducibility)
- When compared at different stages of a pathology or intervention can detect changes (Sensitivity)
- When compared between different phases of a pathology it discriminates (Specificity)
- [much more]

What we know and we don't

How to choose an appropriate measure

4. How is its CLINICAL UTILITY

- Time
- Cost
- Simplicity, clarity
- Specific material
- Specific training



What we know and we don't

An appropriate measure

Warranty

PURPOSE

STANDARDIZATION

VALIDITY,
REPRODUCIBILITY,
SENSITIVITY

CLINICAL UTILITY

If the only one could be
considered the

**THE GOLD
STANDARD**

How to know more

What if

I don't find a standardized instrument to assess the dimension I am interested in?

Change
question to a
measurable
one

Look better

Standardize
on your own
an existent
instrument

Design a new
standardized
instrument



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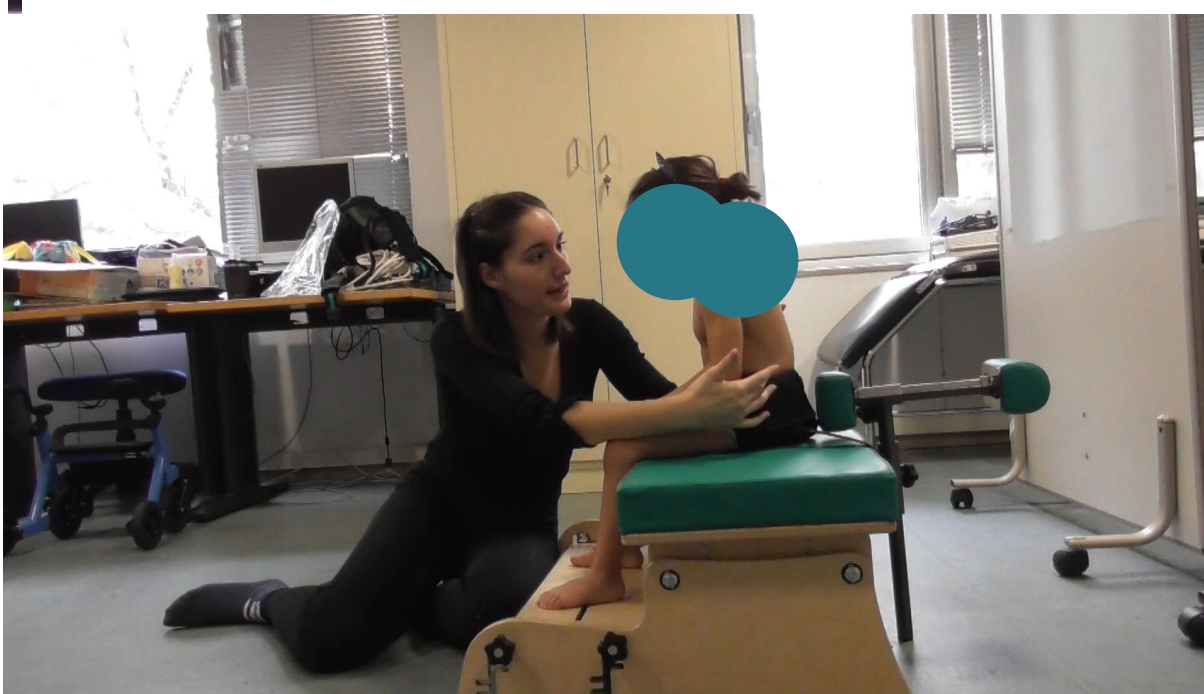
How to know more

The Reliability of the Segmental Assessment of Trunk Control (SATCo) in Children with Cerebral Palsy

Lisbeth Hansen, Katrine Thingholm Erhardsen, Jesper Bencke, Stig Peter Magnusson & Derek John Curtis

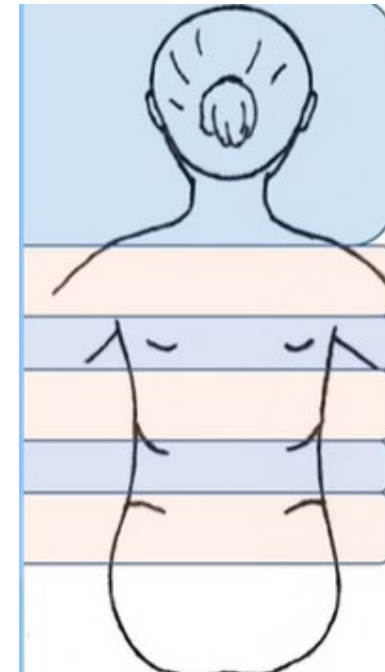
7 levels in static, active and reactive

Déficit from the mid thoracic segment



Team: Vanesa Gonzalez, Irene Gonzalez

Head control
Upper thoracic control
Mid Thoracic Control
Lower Thracic Control
Upper lumbar control
Lower Lumbar Control
Full Trunk Control



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02

How to know more

[Rehabilitation Measures \(sralab.org\)](http://sralab.org)

Look better

[Assessments by Topic – Strokeengine](#)

STROKE ENGINE

Assessments Interventions Consequences Resources About Glossary Contact FR

Stroke Engine provides the most current information about interventions and assessment tools used in stroke rehabilitation

Stroke Assessments Stroke Interventions Stroke Consequences

Shirley Ryan
Abilitylab

MENU

SEARCH

PATIENT PORTAL

educators, the Rehabilitation Measures Database (RMD) is the

Rehabilitation Measures Database

SEARCH THE REHABILITATION MEASURES DATABASE

FILTER BY:

ASSESSMENT TYPE

AREA OF ASSESSMENT

POPULATION

BODY PART

COST

APPLY

SCIRE Professional
SPINAL CORD INJURY RESEARCH EVIDENCE

[Spinal Cord Independence Measure \(SCIM\) - SCIRE Professional \(scireproject.com\)](http://scireproject.com)

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How to know more

- New uses for another age range/medical condition

ADAPTATION

- Children have less standardized tools than adults
- Most of adults' tests don't serve to children (self-reported, questionnaires, medical condition and development, etc...)

The Walking Corsi Test (WalCT): A Normative Study of Topographical Working Memory in a Sample of 4- to 11-Year-Olds

Piccardi L, Palermo L, Leonzi M et al. [See more](#)

The Clinical Neuropsychologist, (2014), 84-96, 28(1)

Adaptations of the Walking Corsi Test (WalCT) for 2- and 3-year-old preterm and term-born toddlers: A preliminary study

Nuria Martín-Pozuelo^{1,2}, Verónica Robles-García^{1*},
Laura Piccardi^{3,4}, Alejandro Quintela del Río^{5†},
Javier Cudeiro¹ and Isabel De las Cuevas-Terán^{6,7}

How to know more



Physical & Occupational Therapy In Pediatrics

ISSN: 0194-2638 (Print) 1541-3144 (Online) Journal homepage: <https://www.tandfonline.com/loi/ipop20>

Psychometric Evaluation of the Young Children's Participation and Environment Measure (YC-PEM) for use in Singapore

Chun Yi Lim, Mary Law, Mary Khetani, Peter Rosenbaum & Nancy Pollock

- New uses in other language or cultural environment

TRANCULTURAL VALIDITY

NIH-PA Author Manuscript

NIH Public Access

Author Manuscript

Arch Phys Med Rehabil. Author manuscript; available in PMC 2016 February 16.

Published in final edited form as:
Arch Phys Med Rehabil. 2015 February ; 96(2): 307–316. doi:10.1016/j.apmr.2014.12.016

Psychometric Properties of the Young Children's Participation and Environment Measure

Mary A. Khetani, Sc.D.*,



Irene Gonzalez (PhD tesis)

https://youtu.be/pwZJ6Cwli_s?si=fK48S-vtCjVuHlbq

How to know more

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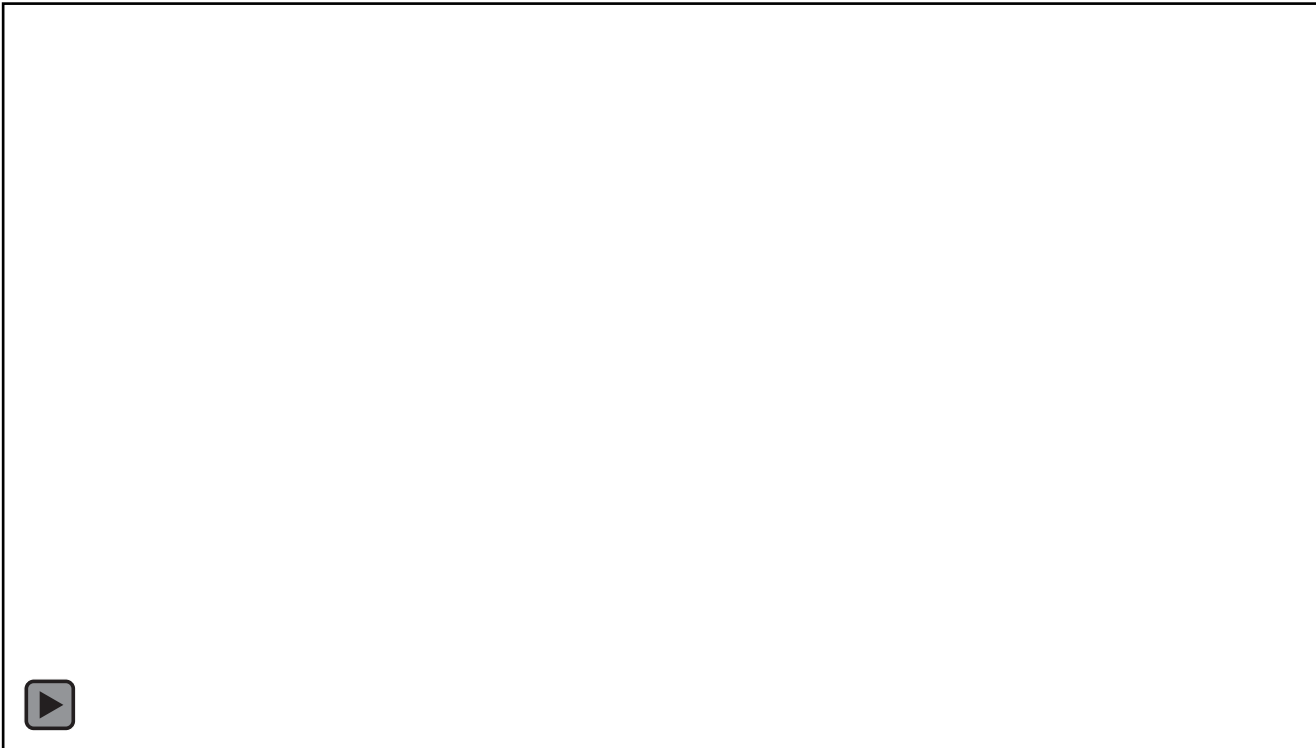
**Design a new
standardized
instrument**



How to know more

Psychometric properties of a revised version of the Assisting Hand Assessment (Kids-AHA 5.0)

Holmefur M, Krumlinde-Sundholm L



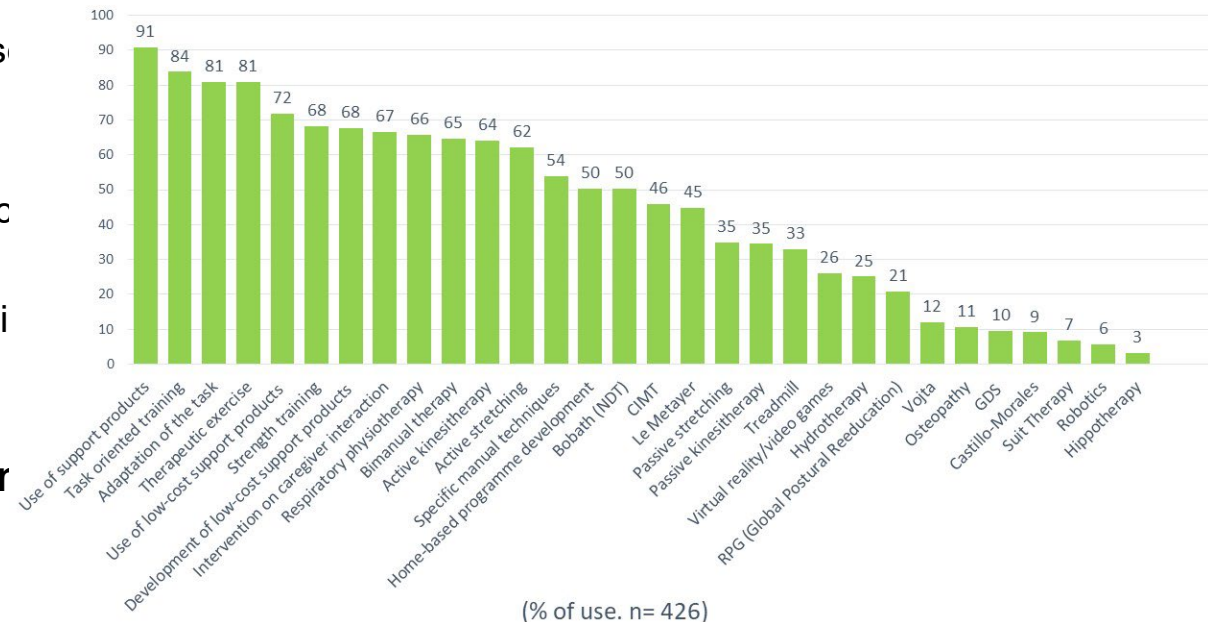
Design a new
standardized
instrument

How to do better

Therapeutic interventions and approaches used in Pediatric Physical Therapy in Spain: a Cross-sectional National Survey (Lillo et al. *publication in progress*)

426 respondents from all over the country

- Pediatric physical therapists use a **variety** of evidence-based interventions
- Half of physical therapists also use other interventions **without** evidence
- Practices mostly follow the expert approach, switching to the family centered
- The use of certain interventions varies depending on **settings and approaches**
- **Most physical therapists, especially young ones, give great importance to EBP**



How to do better

Knowledge translation strategies

(Schreiber, 2014)

Simplicity when sharing research

Consistent clinical decision making

Research about professionals' perspectives

(Camden, 2019)

Optimize the initial training and professional development of PTs in paediatrics

Advocate for sustainable and well-coordinated models of care built on best practices

Implement recommended actions


(Taksaki, 2023)

Table 4. Results in the third round among the 131 participants

Possible solutions of promoting EBP in the rehabilitation profession in Japan	Percent agreement (agree or strongly agree ratings)
Improving communication skills with medical staffs, patients, and academic PTs/OTs/STs [†]	92.4
Promoting awareness among therapists of the concept of EBP and the objective usefulness of practice guidelines as a tool to implement EBP [†]	84.7
Making information on EBP and practice guidelines more publicly available to therapists and patients [†]	84.0
Offering continuous support [†]	83.2
Gradually applying new practices in therapists to ensure accuracy, completeness, and continuance [†]	83.2
Setting up training sessions and workshops that do not specify a place or time [†]	81.7
Observing how people are actively implementing EBP (e.g. medical doctors) [†]	77.1
Making students of healthcare professionals strongly aware of the need for EBP from training school stage [†]	77.1
Holding awareness sessions to motivate staff and increase their willingness to provide the best care to patients [†]	74.0
Establishing an association or other subsidy scheme to create opportunities to learn about EBP at the workplace [†]	70.2
Developing apps that are useful for EBP implementation	69.5

Did you know that it can be informed the risk of this baby of having a cerebral palsy by observing his movements in a standardized way?

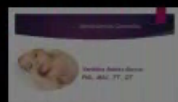


Reflex organized motor
behaviour 

Spontaneous and
intrinsic activity are
characteristics of the
nervous system

→ This activity can be
assessed with movement
observation

General movement assessment



Evaluación de los movimientos generales de un
bebé nacido en la semana 41 de edad
postmenstrual

- 95%-98% Sensitivity when there are not fidgety characteristics movements from 3-5 months
- Score MOS ≤ 14
- Before 3 months old a cramped-synchronized pattern appears
- Assymetrical segmental movements (fingers/wrists)

General Movements Assessment



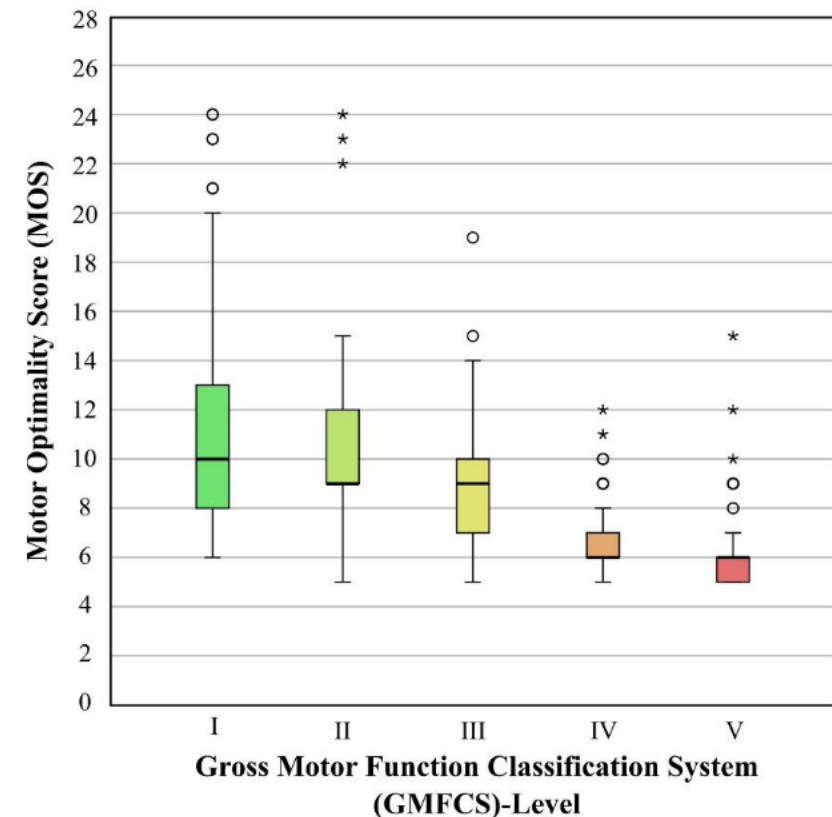
Article

Cerebral Palsy: Early Markers of Clinical Phenotype and Functional Outcome

Christa Einspieler^{1,†,*}, Arend F. Bos^{2,†}, Magdalena Kriebler-Tomantschger¹, Elsa Alvarado³, Vanessa M. Barbosa⁴, Natascia Bertonielli⁵, Marlette Burger⁶, Olena Chorna⁷, Sabrina Del Secco⁷, Raye-Ann DeRegnier⁸, Britta Hüning⁹, Jooyeon Ko¹⁰, Laura Lucaccioni⁵, Tomoki Maeda¹¹, Viviana Marchi^{7,12}, Erika Martín¹³, Catherine Morgan^{14,15}, Akmer Mutlu¹⁶, Alice Nogolová^{17,18}, Jasmin Pansy¹⁹, Colleen Peyton²⁰, Florian B. Pokorny¹, Lucia R. Prinsloo²¹, Eileen Ricci²², Lokesh Saini²³, Anna Scheuchenegger¹⁹, Cinthia R. D. Silva²⁴, Marina Soloveichick²⁵, Alicia J. Spittle^{26,27}, Moreno Toldo²⁸, Fabiana Utsch²⁴, Jeanetta van Zyl²⁹, Carlos Viñals³, Jun Wang³⁰, Hong Yang³⁰, Bilge N. Yardımcı-Lokmanoglu¹⁶, Giovanni Cioni^{7,†}, Fabrizio Ferrari^{5,†}, Andrea Guzzetta^{7,†} and Peter B. Marschik^{1,31,32,†}

- Subtype (dystonic)
- Other pathologies (autism)
- GMFCS correlation

Recent guidelines for the early identification of infants at risk for cerebral palsy (CP) recommend the **Precht General Movement Assessment** (GMA) in combination with **neonatal magnetic resonance imaging** (MRI) and the **Hammersmith Infant Neurological Examination** (HINE) as the assessments of choice



(Einspieler 2019)



Take-home messages

“Spread the word!”

Evidence-based physiotherapy is being built

It is crucial to prioritize the best available evidence

We have EBP knowledge

We know more each day,
BUT we don't know a great deal of things.

Assessment tools are as important as physiotherapy interventions

Knowledge and skills are important but also policies and economic and social actions implementing EBP