

# Rehabilitation Definition for Research Purposes

## *A Global Stakeholders' Initiative by Cochrane Rehabilitation*

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**Objective:** Since its foundation, Cochrane Rehabilitation has faced challenges with rehabilitation definitions because existing definitions did not indicate what rehabilitation includes and what it excludes. We aimed to develop a comprehensive and shared rehabilitation definition for research purposes to: (1) support the conduct of primary studies and systematic reviews and (2) identify relevant systematic reviews for knowledge translation purposes.

**Design:** We performed a multimodal study including seven preliminary research and discussion papers, four Consensus Meetings, and three Delphi rounds with 80 rehabilitation stakeholders. The Delphi Study aimed to obtain agreement and refine and complete the items composing the definition and meanings of rehabilitation. These stakeholders covered 5 continents, representing 11 global and continental rehabilitation organizations, 11 scientific journals, 4 Cochrane Networks, and 3 Cochrane Groups and included invited experts and representatives of low middle-income countries and consumers.

**Results:** We had a 70% to 82.5% response rate to the three Delphi rounds, during which participants responded to all items (100%) and provided relevant comments (range, 5.5%–50% per item). This participation led to several refinements to the rehabilitation definition through three preliminary versions, and the final items reached an agreement between 88.9% and 100%. We structured the definition using the PICO (Population, Intervention, Comparison, Outcome) framework. We concluded that “In a healthcare context,” rehabilitation is defined as a “multimodal, person-centered, collaborative process” (Intervention-general), including interventions targeting a person’s “capacity (by addressing body structures, functions, and activities/participation) and/or contextual factors related to performance” (Intervention-specific) with the goal of “optimizing” the “functioning” (Outcome) of “persons with health conditions currently experiencing disability or likely to experience disability, or persons with

### What Is Known

- Existing rehabilitation definitions do not indicate what rehabilitation includes and what it excludes, leading to methodological heterogeneity in both primary and secondary scientific literature.

### What Is New

- This publication proposes a rehabilitation definition for research purposes, supported by a broad agreement among global stakeholders. This definition provides explicit criteria to define rehabilitation and allows to improve rehabilitation research by standardizing the description of interventions.

disability” (Population). Rehabilitation requires that all the items of the definition are satisfied. We defined a “rehabilitation intervention” as “any intervention provided within the rehabilitation process.”

**Conclusions:** We developed a rehabilitation definition for research purposes achieving a broad agreement with global stakeholders. This definition provides explicit criteria to define rehabilitation. Using the proposed definition will improve rehabilitation research by standardizing the description of interventions. Our definition may require revision in the future, as further research enhances understanding and communication of the essence and complexity of rehabilitation.

**Key Words:** Rehabilitation, Evidence-Based Medicine, Clinical Trial, Health Care

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Since its foundation, Cochrane Rehabilitation has faced challenges with current rehabilitation definitions because available definitions do not indicate what rehabilitation includes and excludes.<sup>1</sup> In 2017, Levack et al.<sup>2</sup> identified and categorized all Cochrane systematic reviews (SRs) relevant to rehabilitation. The absence of an adequate definition drove these researchers to develop specific criteria around the concept that “rehabilitation is what rehabilitation professionals do” using the classical expert judgment (two reviewers with a committee to resolve discordances). Unfortunately, this circular argument is insufficiently robust for logical analysis, overlooks geographical variations of clinical practice, and targets a limited expert audience (i.e., it is not understood by a nonrehabilitation audience). This definition proved incoherent when they analyzed the rationale for resolving the conflicts among reviewers.<sup>3</sup> After iterative rounds to improve the inclusion criteria, the authors were unable to classify 6.4% of the 894 Cochrane SRs. The authors also found conflicts and errors in the initial categorization for 10.1% and 3.1% of reviews, respectively.<sup>3</sup>

A definition of rehabilitation needs to be agreed upon within the field as well as understandable and applicable outside the field. In another study, Negrini et al.<sup>4</sup> identified 89 Cochrane SRs containing the term “rehabilitation” in the title. Rehabilitation experts and PubMed librarians unanimously judged four of the Cochrane SRs as not rehabilitation related, although the authors had defined the topics as mouth, nutritional, penile, and schizophrenia rehabilitation. While rehabilitation experts achieved agreement on the rehabilitation classification of 91% to 94% of these Cochrane SRs, the percentage dropped to 50% for PubMed librarians outside the field.

In a first effort to tackle these issues, Arienti et al.<sup>5</sup> searched all rehabilitation definitions used by consumers (Google search), rehabilitation stakeholders (survey of Cochrane Rehabilitation Advisory Board), and researchers (Cochrane SRs). They found as many as 187 different rehabilitation definitions: 128 from consumers, 36 from stakeholders, and 23 from researchers. Nevertheless, there were terminological similarities with slight differences depending on the audience.

All this preliminary work highlighted the need for a comprehensive and shared rehabilitation definition that identifies what rehabilitation includes and excludes for scientific purposes to (1) support the conduct of primary studies, (2) appropriately synthesize the current evidence in systematic reviews, and (3) correctly identify relevant systematic reviews for knowledge translation purposes. This multimodal study aimed to develop an operational definition of rehabilitation for scientific research involving global experts and relevant stakeholders.

## MATERIALS AND METHODS

We undertook a multimodal study, including some expert Consensus Meetings and a Delphi process involving the Cochrane Rehabilitation Advisory Board, Executive Committee, REH-COVER (Rehabilitation COVID-19 Evidence-based Response) Action Steering Committee,<sup>6</sup> RCTRACT (Randomized Controlled Trial Checklist) Action Executive Committee,<sup>7</sup> and Cochrane Rehabilitation Headquarters. At the start of the project, the Cochrane Rehabilitation Advisory Board included 38 rehabilitation stakeholders from 5 continents, representing 11 international and national rehabilitation

organizations, 11 scientific journals, 4 Cochrane Networks, and 3 Cochrane Groups, with invited experts and representatives from low middle-income countries (LMICs) and consumers. The Cochrane Rehabilitation REH-COVER Steering Committee membership is drawn from four World Health Organization (WHO) regions, one low middle-income country and includes 13 experts (eight rehabilitation professions and one infectious disease specialist). The Cochrane Rehabilitation Executive and Methodology Committees and Advisory Board approved and contributed to the project and its methodology.

The project started in 2019 with discussions during Cochrane Rehabilitation meetings. The first steps included a Cochrane Rehabilitation Advisory Board and Executive Committee survey and four preliminary research projects.<sup>3–5,8</sup> The first Consensus Meeting (third Cochrane Rehabilitation Methodology Meeting) was held in February 2020 in Milan (Italy).<sup>1</sup> Cochrane Rehabilitation invited 19 experts from nine countries across three continents, representing four professional disciplines and multiple scientific and professional organizations. The aim of the Consensus Meeting was to develop the first version of the definition based on the preliminary works and group discussions.

To receive feedback and input from a general rehabilitation audience, we presented this first definition at five international scientific meetings: March 2020 International Society of Physical and Rehabilitation Medicine Congress, July 2020 International Spinal Cord Society Virtual Congress, September 2020 European Society of Physical and Rehabilitation Medicine Virtual Congress, September 2020 European Union of Medical Specialties Physical and Rehabilitation Medicine Section and Board Fall Meeting, and November 2020 Dutch Congress of Rehabilitation Medicine.

After these presentations, we performed three Delphi rounds with a 3-wk deadline using SurveyMonkey (SurveyMonkey, Inc, San Mateo, CA). The first Delphi round involved the 19 participants from the first Consensus Meeting. We expanded the other rounds to the Cochrane Rehabilitation cohort of stakeholders and experts included in the Advisory Board, the REH-COVER Steering Committee, the Executive and Methodology Committees, and at Cochrane Rehabilitation Headquarters. For various reasons, such as the inclusion of new stakeholders, and retirement or the change of role of individuals within their organizations or Cochrane Rehabilitation, the composition of these groups changed during the project. Consequently, we surveyed a cohort of 70 participants in the second Delphi round and 80 in the third. We sent group reminders at 1 wk and again 1 day before each deadline. After the deadline, we sent personalized reminders to nonresponders with a 2-wk extension of the deadline. During the first two surveys, participants judged each item (i.e., broken-down parts of the rehabilitation definition) and the inclusion/exclusion criteria (first Delphi) or meaning (other Delphi rounds). The participants could (1) accept, (2) accept with a comment, or (3) reject with a comment. We also provided space for comments as free text throughout the surveys. Although the last survey inquired about adding only one item to the final definition, the authors judged the last survey necessary after consultations during the Executive Committee and the Advisory Board Meetings. To be added, we required a minimum agreement of 80% on the concept and its meaning. We also asked participants to decide the defining term from a list of 16 using a Likert scale from 0 (completely inappropriate) to 4 (completely appropriate).

Before each of the three Delphi rounds, the authors held a half-day Consensus Meeting to produce updated and improved versions of the rehabilitation definition. We developed the updated versions through discussions informed by the comments received from the scientific meetings, the Delphi results, a published commentary to the paper introducing the first version of the definition,<sup>9,10</sup> and two editorials<sup>11,12</sup> in two major rehabilitation journals.

### RESULTS

The kick-off Consensus Meeting concluded with the rehabilitation definition version (ver) 1, accepted by all but one voter.<sup>1</sup> The participants followed the PICO (Population, Intervention, Comparison, Outcome) framework<sup>13</sup> to generate a definition with optimal meaning for research purposes. During the second Consensus Meeting, participants (1) unanimously agreed that it was not appropriate to develop a definition of “rehabilitation intervention” because all interventions can be part of the rehabilitation process, including some surgical procedures and drugs, (2) produced the rehabilitation definition ver 2, and (3) developed inclusion/exclusion criteria designed to enhance the clarity of the definition and meaning (Supplementary Digital Material 1, Supplemental Digital Content 1, <http://links.lww.com/PHM/B670>). The first Delphi round (81% response rate, with 100% answers by respondents) approved these results with 83% to 94.5% agreement. Furthermore, all items of version 2 received comments with a range between 5.5% and 50% of participants.

The third Consensus Meeting provided the rehabilitation definition ver 3 (Supplementary Digital Material 1, Supplemental Digital Content 1, <http://links.lww.com/PHM/B670>). Because of the comments received, participants decided to deliver for each term of the definition a “meaning” instead of “inclusion/exclusion criteria.” The second Delphi round (response rate 70% with 100% answers by respondents) showed 88.9% to 100% agreement with 7.4% to 33.3% comments on ver 3 (Table 1). Agreement and comments were evenly distributed among the PICO elements, with 76% of respondents approving all the definition items.

In response to the comments received, the fourth Consensus Meeting participants slightly changed the meanings of each item and added four explanatory notes as an integral part of the definition. The notes provide information on some of the abovementioned key decisions and state that (1) “rehabilitation” is defined when all of the elements of the definition are respected and (2) “rehabilitation intervention” is an abbreviation for “any intervention provided within the rehabilitation process.” Many comments in the first two Delphi rounds focused on the importance of active participation either by the patient (and/or family) and rehabilitator(s) in the process. Consequently, we ran a third and final Delphi round (Supplementary Digital Material 1, Supplemental Digital Content 1, <http://links.lww.com/PHM/B670>) to decide whether (and how) to introduce this concept in the final definition. The round had an 82.5% response rate with 100% answers by respondents and reached the required 80% agreement for introducing the last new term and its meaning. The word “collaborative” was considered appropriate by 80% of participants. Table 2 reports the final definition, with Table 3 presenting the meaning of each word. Supplementary Digital Material 2 (Supplemental Digital Content 2, <http://links.lww.com/PHM/B671>) discusses every item with some examples to facilitate understanding and application for final users.

### DISCUSSION

This article reports a new rehabilitation definition for scientific research purposes, and the process followed to reach it. The final definition reached a very high agreement among global rehabilitation stakeholders (international organizations, professional and scientific societies, Editors-in-Chief of high impact factor journals, low middle-income country and consumer representatives), Cochrane Rehabilitation, and relevant Cochrane Groups/Networks. Respondents answered all the questions, providing a high percentage of thoughtful comments that improved the definition and confirmed the importance of this work.

The definition reported in this article requires that the intervention is consistent with all the elements of the definition

**TABLE 1.** Rate of agreement and comments received at the conclusive Delphi rounds of each definition element

	Item		Meaning	
	Agreement	Comments	Agreement	Comments
In a healthcare context			89.1%	30.9%
Multimodal	88.9%	33.3%	90.7%	25.9%
Person centered	100.0%	24.1%	96.3%	18.5%
Collaborative	81.8%	39.4%	89.4%	27.3%
Process	98.2%	14.8%	90.7%	20.4%
Capacity	88.9%	22.2%	88.9%	25.9%
(By addressing body structures, functions, and activities/participation)	90.7%	13.0%	94.4%	7.4%
Contextual factors related to performance	94.5%	13.0%	90.7%	16.7%
Optimizing	88.9%	24.1%	96.3%	11.1%
Functioning	88.9%			
Persons with health condition	94.4%	20.4%	88.9%	24.1%
Currently experiencing disability	92.6%	18.5%	90.7%	18.5%
Likely to experience disability	98.2%	18.5%	94.4%	16.7%
Persons with disability	96.3%	11.1%	88.9%	16.7%

**TABLE 2.** The rehabilitation definition for research purposes produced with this work

*“In a healthcare context”* (see note), rehabilitation is defined as a *“multimodal, person-centered, collaborative process”* (Intervention-general) including interventions targeting a person’s *“capacity (by addressing body structures, functions, and activities/participation) and/or contextual factors related to performance”* (Intervention-specific) with the goal of *“optimizing”* the *“functioning”* (Outcome) of *“persons with health conditions currently experiencing disability or likely to experience disability, or persons with disability”* (Population).

## NOTES:

1. This rehabilitation definition focuses on services to address the healthcare needs of individuals. “Health care” can be defined as “...a general term comprising services provided to improve health in the general population as well as to cure diseases and relieve symptoms in diseased patients. Health care may denote the organization of services (e.g., private vs. public health care), a facility (e.g., hospital or healthcare center), as well as the actual delivery of care (e.g., to provide health care or to obtain health care)...” (Allebeck<sup>14</sup>). This rehabilitation definition does not include reintegration into the society of a convicted person.
2. This definition follows the PICO framework in this order: Intervention, Outcome and Population.
3. According to this definition, rehabilitation is defined when all the definition elements are respected.
4. The expression “rehabilitation intervention” is commonly used to describe a single intervention. However, this abbreviation can be a source of confusion. According to this rehabilitation definition, the expression “rehabilitation intervention” is acceptable as an abbreviation of “an intervention within the rehabilitation process.” Conversely, it is not acceptable as an abbreviation of “intervention applied by a rehabilitation professional.” According to this rehabilitation definition, the expression “rehabilitation interventions” does not include single interventions provided by rehabilitation professionals out of the rehabilitation process.

for this intervention to be considered rehabilitation. This is the main difference from those previously published.<sup>15–19</sup> This conditional requirement to meet all aspects of the definition makes it possible to exclude some interventions (e.g., those with only one component—not multimodal) or to include others typically not considered “rehabilitation intervention” (e.g., drugs like botulinum toxin or surgery like tendon lengthening) if provided within the process. Another critical difference is the requirement of more than one intervention (multimodality) to define rehabilitation. The participants of the Consensus Meetings discussed this element at length, but ultimately, the stakeholders’ agreement ended up being substantial (88.9%). There is also a subtle but relevant difference in the targets of interventions. Together with capacity, contextual factors are an intervention goal only when explicitly related to performance rather than intervention targeting contextual factors more generally. For example, a policy action to reduce architectural barriers is not rehabilitation even if rehabilitation professionals are involved; however, planning and adaptation of a patient’s home before discharge from a rehabilitation ward is part of the rehabilitation process. Finally, we clarified during the Consensus Meetings and introduced in the notes the meaning of the frequently used expression “rehabilitation intervention,” with the implication that rehabilitation professionals also routinely engage in other tasks which are not necessarily rehabilitation.

In 2011, the WHO defined rehabilitation as “a set of measures that assist individuals who experience, or are likely to experience, disability to achieve and maintain optimal functioning in interaction with their environments.”<sup>15</sup> This definition slightly evolved in 2017 to “a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment.”<sup>16</sup> The current definition includes these concepts, with one significant difference. Instead of “a set of measures,” the focus is on the “process”; the understanding is that in rehabilitation, measures (interventions) can be combined in different ways (in terms of timing and quantity), not only adding but also multiplying or even subtracting/dividing the effect of each component. Furthermore, we considered that the term “process” better conveys that rehabilitation is dynamic and interactive. Finally,

proces\* is one of the five roots most used by stakeholders, researchers, and the public in their definitions.<sup>5</sup>

In 2011, Meyer et al.<sup>17</sup> developed a conceptual description of rehabilitation as “the health strategy which, based on WHO’s integrative model of functioning, disability and health, applies and integrates approaches to assess functioning in light of health conditions; approaches to optimize a person’s capacity; approaches that build on and strengthen the resources of the person; approaches that provide a facilitating environment; approaches that develop a person’s performance; approaches that enhance a person’s health-related quality of life in partnership between person and provider; and in appreciation of the person’s perception of his or her position in life over the course of a health condition and in all age groups; along and across the continuum of care, including hospitals, rehabilitation facilities and the community, and across sectors, including health, education, labor and social affairs; with the goal to enable persons with health conditions experiencing or likely to experience disability to achieve and maintain optimal functioning.” The current definition is limited to research in the health sector and focuses only on interventions, not assessments. Nevertheless, the current definition encompasses all the Meyer et al.<sup>8</sup> definition elements. Furthermore, as indicated in our response to a commentary from Ebenbichler et al.,<sup>9</sup> we did not incorporate the term “health strategy” in the definition because defining rehabilitation as a strategy “would go beyond the operationalization aspect [that] we need for research purposes.”<sup>10</sup>

Many stakeholders have supported the efforts toward a common understanding of rehabilitation. Wade,<sup>11,18,19</sup> for example, has made substantial contributions, recently suggesting that rehabilitation cannot be defined but only described.<sup>11,12</sup> In 2020, he proposed an “evidence-based description of effective rehabilitation” as follows: “The goal: to optimize a patient’s self-rated quality of life and degree of social integration through optimizing independence in activities, minimizing pain and distress, and optimizing the ability to adapt and respond to changes in circumstances. Patients and places: may benefit anyone with a long-term disabling illness at any stage of that illness; be delivered in any setting. The content: rehabilitation is a problem-solving process, framed in the context of

**TABLE 3.** The final version of the rehabilitation definition with the meaning of each term

PICO	Definition	What Does This Mean?
Intervention	In a healthcare context (see note 1) rehabilitation is a Multimodal	Application of more than one intervention or of one intervention with more than one component
	Person-centered	Interventions are selected and tailored to an individual’s needs and engagement, building on and strengthening the resources of the person, taking into account the person’s values, preferences and contextual factors
	Collaborative	Participation of the person(s) providing the interventions and the person(s) engaged in rehabilitation. The degree of participation and the participants vary according to the health condition(s), the rehabilitation phase (acute, postacute, chronic), and the contextual factors, including setting(s) (inpatient, outpatient, home, community). Participation of the person(s) engaged in rehabilitation can be absent at early stages but must gradually develop during the individual continuum of care (rehabilitation process).
	Process	The process includes one or more consecutive rehabilitation cycles (assessment including goal setting, assignment, interventions, evaluation and repetition if needed) until the optimization of functioning—commonly referred to as the Rehab-Cycle.
	including interventions targeting a person’s Capacity (By addressing body structures, functions, and activities/participation)	What a person can do with limited or no influence of environmental factors Capacity is addressing body structures (body parts and organs), body functions (physiological functions of body systems, including psychological functions), activities (capacity to execute a task or action by an individual), participation (capacity to be involved in individual life situations)
and/or Contextual factors related to performance	Contextual factors include personal (that influence how the individual experiences disability) and environmental (the physical, social and attitudinal environment in which people live and conduct their lives) factors that influence performance (what a person with a health condition does in their usual environment)	
Outcome	with the goal of Optimizing	Improving or maintaining or limiting decline (changing trajectory in terms of deceleration and/or duration) in comparison to the expected (natural) course
	Functioning	Functioning is an umbrella term for body structures and functions, activities and participation
Population	of Persons with health conditions	Health conditions include illnesses, injuries and also physiological changes (for example, associated with aging or pregnancy) that affect health and functioning
	Currently experiencing disability	Persons with an impairment(s), activity limitation(s) or participation restriction(s) with potential for resolution of the condition or improvement of functioning
	or Likely to experience disability	Probability of disability due to worsening of the health condition or contextual factors, and with a potential for prevention or reduction
	or Persons with disability	Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others (United Nations Convention on the Rights of Persons with Disabilities—UNCRPD), with a potential to avoid or limit decline or optimize functioning

*(Continued on next page)*

TABLE 3. (Continued)

PICO	Definition	What Does This Mean?
Notes	<ol style="list-style-type: none"> <li>1. This definition focuses on services aimed at addressing the healthcare needs of individuals. Health care includes services related to health needs. "General health needs include health promotion, preventive care, treatment of acute and chronic illness, and appropriate referral for more specialized needs where required. These needs should all be met through primary health care in addition to secondary and tertiary as relevant" (WHO). Rehabilitation professionals, other health professionals, or appropriately trained community-based workers deliver the services. This definition does not include reintegration into the society of a convicted person.</li> <li>2. This definition follows the PICO framework in this order: Intervention, Outcome and Population.</li> <li>3. According to this definition, rehabilitation is defined when all the definition elements are respected.</li> <li>4. The expression "rehabilitation intervention" is commonly used to describe a single intervention. However, this abbreviation can be a source of confusion. According to this rehabilitation definition, the expression "rehabilitation intervention" is acceptable as an abbreviation of "an intervention within the rehabilitation process." Conversely, it is not acceptable as an abbreviation of "intervention applied by a rehabilitation professional." According to this rehabilitation definition, the expression "rehabilitation interventions" does not include single interventions provided by rehabilitation professionals out of the rehabilitation process.</li> </ol>	

the holistic biopsychosocial model of illness, delivered in a person-centered way [...]; will almost always use the following general approaches to management: repeated practice of functional activities; general exercise that increases cardio-respiratory work; education with an emphasis upon self-management; psycho-social support (not well defined yet). Rehabilitation always involves a large number of specific actions tailored to the patient's priorities and specific needs and goals [...].<sup>19</sup> Contrary to the current definition, the Wade description focuses on those elements of rehabilitation that have been proven effective and are likely to change with new evidence. Furthermore, different from all the other definitions, the terminology used by Wade is not based on WHO's International Classification of Functioning, Disability and Health.<sup>20</sup> Beyond this terminological issue, the current definition includes most of his concepts, with some distinctions. For example, Wade<sup>18</sup> describes the process as "problem solving." During our project, many other stakeholders proposed this term and other terms like "education," "teaching," and "active." During the last Delphi round, the final agreement was to use the word "collaborative" to acknowledge all the actors involved in the rehabilitation process: the person(s) and the provider(s). The description of the person also distinguishes both definitions. While Wade<sup>18</sup> refers to "patients," we consider the persons who benefit from rehabilitation, making a link with "disability." Furthermore, Wade<sup>18</sup> refers to "long-term disabling illness," while we did not introduce any time limits for disability.

As previously mentioned, Arienti et al.<sup>5</sup> described the terminology used in the most common definitions of stakeholders, researchers, and consumers, and their results informed this study. The current definition covers the five most frequently used roots of concepts used by the three groups (i.e., stakeholders, researchers, and consumers) together (function\*, proces\*, health\*, disab\*, and person\*). Moreover, the definition and meanings include the 10 most common roots employed by each group, with four exceptions: the roots patient\* and therap\* (first and seventh most used by researchers in Cochrane SRs) and restor\* and injur\* (third and ninth most used by consumers). Interpretation in both cases relies on these specific groups' everyday vocabulary and unique understanding of rehabilitation. Researchers in the health sector often interpret rehabilitation as a therapy provided to patients, in contrast to the current definition

of a rehabilitation process that includes multiple interventions provided to persons experiencing disability. Consumers often think of rehabilitation as restoration after an injury, while the current definition highlights optimizing functioning irrespective of the cause of the disability. The current definition can help these audiences enhance their understanding of rehabilitation.

We deliberately avoided a circular argument that Cochrane Rehabilitation previously used,<sup>2</sup> that is, rehabilitation is not all that rehabilitation professionals can provide. Consequently, we accept that rehabilitation professionals could provide interventions that are not rehabilitation, as reported in the examples in Supplementary Digital Material 2 (Supplemental Digital Content 2, <http://links.lww.com/PHM/B671>). As a result of the present work, Cochrane Rehabilitation will rearrange all Cochrane SRs identified as relevant to rehabilitation<sup>2</sup> as Cochrane SRs on (1) rehabilitation (following the current definition), (2) "rehabilitation interventions" (according to Note 4 of the current definition), and (3) interventions provided by rehabilitation professionals. This recategorization of Cochrane SRs will provide an opportunity to test the current new definition and perhaps result in more conflicts to solve.<sup>3</sup> The current definition correctly classifies the 4 Cochrane SRs previously reported as using improperly the term rehabilitation in the title.<sup>4</sup> These 4 Cochrane SRs do not report on rehabilitation because of inappropriate intervention<sup>21-23</sup> and outcome.<sup>24</sup>

The current definition has the potential to improve and clarify the development and publication of primary studies and substantially enhance the clarity of evidence synthesis within systematic reviews. We give here two examples where the definition could improve reporting of intervention components. Let's hypothesize a study focusing on spinal manipulation performed in a rehabilitation setting. We could have two main possibilities: (1) the treatment providers could manipulate only (strict per-protocol approach); (2) in a rehabilitation setting, we can also expect that they add educational advice, counseling, and perhaps even some suggestions for exercises. This second possibility is particularly true when independent clinicians (and not the researchers) provide the treatments because they are concerned with their patients' results and not with research integrity. Similarly, in a second example of therapeutic exercises for one specific health condition, it would be usual for a provider in a rehabilitation setting to incorporate

patient education into their exercise provision. They may even introduce the exercises within an overall cognitive-behavioral approach, sometimes without even being conscious of this and calling the treatment “therapeutic exercise” only. We would expect these adjunctive interventions to contribute to differential rehabilitation outcomes and procedures should be clearly reported.

Suppose some articles report treatments like manipulation, exercises, and orthosis as single interventions. At the same time, in the clinical reality of these studies, they were multimodal rehabilitation because they combined with others (e.g., counseling, education, cognitive-behavioral component). Their results would lead manipulation therapists or trainers to apply these treatments without adding the other elements, that is, providing single interventions and not rehabilitation. Consequently, the results could be completely different from the expectations. Failure to recognize what was performed in the primary studies (single intervention or rehabilitation?) because of poor study conduct, reporting, or (even worse, but probably also common) understanding can significantly impact the clinical end users. This negative effect multiplies in the case of secondary evidence synthesis. The risks are that the results of primary studies with highly different interventions are pooled together because they are erroneously judged to be similar interventions. Consequently, evidence syntheses may fail to identify effective treatments, generating low certainty results, generally limited by high heterogeneity. The broad audience and influence of evidence syntheses, for example, informing recommendations within clinical guidelines, make this a potentially serious problem that may impact the delivery of effective rehabilitation. The current rehabilitation definition can help (1) primary researchers to correctly define what they are doing when they study “rehabilitation interventions” or “rehabilitation,” and, particularly important, (2) evidence synthesis producers when they bring together and combine studies produced in different settings and test a variety of interventions.

Implementing this new rehabilitation definition for research purposes is a crucial part of this process. Cochrane Rehabilitation initiated the project and will work with the Cochrane Review and Method Groups to add the definition to their Cochrane SRs quality check. The project involved the Chief Editors of some major rehabilitation scientific journals, many of whom have agreed to promote the definition by either publishing this article or an editorial/letter/commentary.

We recognize that this rehabilitation definition for scientific purposes is the first edition. In the following years, we expect new studies to explore the advantages and disadvantages of this definition and consequently lead to future refinements that further improve it.

## CONCLUSIONS

We developed this rehabilitation definition for research purposes with a broad agreement between multiple stakeholders. The definition (1) has the advantage of providing explicit inclusion and exclusion criteria, (2) could impact future research production, and (3) is considered a first edition, which may be revised in the future, as further research enhances understanding and communication of the complexity of rehabilitation.

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