



Philosophy and Clinical Reasoning in Rehabilitation Sciences: Bridging the Gap

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Abstract

This paper addresses the relatively overlooked field of rehabilitation and physical medicine, offering an epistemological perspective on clinical reasoning in these disciplines, focusing on three different domains: diagnosis, prognosis, and treatment. Rehabilitation sciences, often overshadowed by medicine and nursing, present unique challenges in terms of clinical reasoning. We explore these challenges, highlighting the distinctive features that set rehabilitation apart from clinical medicine. Notably, rehabilitation focuses on functions, aiming to improve an individual's quality of life, setting it apart from disease-centered medicine. Drawing also from philosophical insights in nursing literature, we offer a multidisciplinary perspective on the epistemological dimensions of rehabilitation and physical medicine, shedding light on their placement within healthcare disciplines.

Keywords Philosophy of rehabilitation · Diagnosis · Prognosis · Evidence · Treatment · Clinical reasoning · Philosophy of medicine

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1 Introduction

Rehabilitation and physical medicine, also known as psychiatry, have not received an attention comparable to nursing or medicine when it comes to the evaluation of the theoretical status of their practices (Whyte 2008), and the philosophical reflection on rehabilitation sciences is also limited and often focused on ethical issues (Banja 1996; Hunt and Ells 2013; Richardson 2015)¹. Only relatively a few studies have assessed the epistemology of rehabilitation disciplines (see, e.g., Parry 1997; Kerry et al. 2008; DeForge and Shaw 2012; Shaw et al. 2010; Higgs et al. (2019), Araujo et al. 2022) and almost always by authors who are not philosophy scholars.

Professional rehabilitation practices exhibit connections with physicians' practices. The field of physical therapy incorporates aspects of our clinical reasoning approach that align with other healthcare professions. These common elements encompass a strong emphasis on patient-centered, collaborative reasoning and the integration of reflective and iterative components.

Recurring patterns imply the presence of overarching similarities in clinical reasoning across various healthcare disciplines (Huhn et al. 2019). For instance, professionals in rehabilitative sciences mainly formulate functional diagnoses, which fundamentally relate to differential diagnoses; moreover, like physicians, rehabilitators formulate prognoses and establish treatment plans. Additionally, it is commonplace for physicians and therapists to closely interact within a "team-based" division of labour (Garrison 2003), with the overarching objective of restoring a patient's health. Nevertheless, it is essential to recognize that the unique focus of each profession also contributes to the disparities in their conceptualizations. This implies that, despite the initial impression of similarity between clinical medicine and rehabilitation, certain fundamental issues differentiate these two disciplines while also highlighting significant commonalities with nursing.

First, according to the classical biomedical model, physicians' work focuses on disease², whereas rehabilitation professionals are primarily concerned with functions (Weiss et al. 2010; Jette 1989). Rehabilitation, akin to medicine, is centered on the restoration of specific bodily functions, but even more distinctly than medicine, it is explicitly aimed at enhancing a patient's quality of life within a particular environment (Garrison 2003). Second, it has been observed that "physiatry as a global concept is concerned with reducing pain, improving, and maintaining health-related functionality, reducing disability, and improving quality of life. Psychiatrists are concerned with improving the patient's ability to function" (Weiss et al. 2010, p. 2). Third, there seems to be a fundamentally subjective and relational aspect to treatment plans and prognostic judgments in the field of rehabilitative sciences. This dimension

¹ Among possible definitions of physical medicine and rehabilitation (PM&R), see Manne, Nasser, Maitin, in (Maitin 2014, p. 1): "PM&R focuses on the prevention, diagnosis, and treatment of disorders related to the nerves, muscles, and bones that may produce temporary or permanent impairment or disability. PM&R is often called the "quality of life profession," because its goal is to enhance patient performance and improve function. The focus is on quality of life—medically, socially, emotionally, and vocationally—after an injury or disease".

² Of course, it is important to improve a more person-centered perspective in medicine, which goes beyond the classical biomedical model of care (Loughlin et al. 2014; Loughlin 2020; Miles 2017).

does not appear to align with the role of physicians in medicine. In rehabilitation, it entails the patient's active effort in restoring their health, extending beyond the mere selection of treatment methods, or having a marginal impact on prognostic assessments (Chiffi and Zanotti 2017). It essentially demands the patient's active psychological and physical participation (Ahlsen et al. 2020).

Based on these insights, this paper seeks to address the "placement problem" that affects rehabilitation, which concerns the disciplinary status of rehabilitation and physical medicine. In other words, our goal is to offer an epistemological perspective on the specific features of clinical reasoning within rehabilitation and physical medicine. Specifically, we will focus on traditional domains of clinical reasoning, namely, diagnosis, prognosis, and treatment. To accomplish this, we will also incorporate valuable philosophical insights drawn from the nursing literature, enhancing our comprehension of the subject.

The paper is structured as follows. In Sect. 2, we analyse some key aspects related to the formulation of diagnoses in rehabilitation. In Sect. 3, we focus on decisions about prognosis in rehabilitation, considering the notions of "rehabilitation potential" and "health potential", and drawing comparisons between clinical reasoning in nursing and rehabilitation sciences. In Sect. 4, we explore the concepts of "rehabilitation potential" and "health potential" as possible ground for the selection of treatment options in rehabilitation, which are often strictly personalized for each patient. Section 5 serves as the conclusion of this paper, where we discuss the epistemological status of rehabilitation.

2 Diagnosis

Diagnostic reasoning in medicine classically consists of associating a set of signs and symptoms of a patient to a specific disease in light of different types of clinical judgements that may have a nosographic or pathophysiological objective³. However, Jette (1989, 967) pointed out that:

"What differentiates diagnosis by the physical therapist from diagnosis by the physician is not the process itself but the phenomena that are being observed and classified".

This topic has been indeed a subject of much discussion and has raised important questions within the field. Several authors (see, Sahrman 1988; Jette 1989; Guccone 1991; Jiandani and Mhatre 2018) have highlighted how physical therapists and rehabilitation professionals effectively establish diagnoses, although these diagnoses are qualitatively different from those established by physicians. Among other

³ Diagnoses (and prognoses) may be nosographic or pathophysiological, respectively. Regarding this dichotomy, see Federspil and Vettor (1999). Nosographic diagnoses aim to assign a patient's pathological condition to a specific category with a nosographic taxonomy. Acknowledging the causes, explanations and mechanisms behind an individual's pathological state is not necessary to formulate a nosographic diagnosis; on the contrary, this is necessary for pathophysiological diagnosis.

possible diagnostic methods, such as pattern recognition, *ex juvantibus*⁴, etc., physicians formulate differential diagnoses through the hypothetical-deductive method of selecting, testing, and ruling out hypotheses, whereas physical therapists formulate functional diagnoses, which at first glance are determined through similar cognitive processes⁵.

The debate surrounding two diagnostic approaches often centers on the distinction between them, which seems to hinge more on the specific focus of the diagnosis rather than the method employed. For instance, according to Jiandani and Mhatre (2018) the difference between these two approaches is rooted in differing perspectives on the object of the diagnostic reasoning: the differential diagnosis focuses on the *causes* while the functional diagnosis emphasizes *consequences* of a disease. On one hand, physicians aim to formulate pathophysiological diagnoses, seeking to identify the underlying causes behind a constellation of signs and symptoms indicative of a disease. On the other hand, physical therapists focus on assessing the consequences of such a disease, which may manifest as disabilities, impairments, and handicaps for individual patients (see Guccione 1991; Wood, 1980).

Let's illustrate this difference through a simple example. Consider a scenario where a patient presents with shoulder pain to a physician. In the quest for a diagnosis, the clinician investigates the patient's medical history, conducts a comprehensive physical examination, and explores numerous potential causes of shoulder pain. This process may involve formulating different diagnostic hypotheses, ranging from rotator cuff tendinitis to shoulder impingement syndrome or even cervical spine issues. To either confirm or rule out these hypotheses, the physicians prescribe further investigative tests such as MRI or ultrasound. Based on the results of these test, the clinician formulates a final diagnosis, which serves as the foundation for devising an appropriate treatment plan, that aims to alleviate symptoms and cure the underlying cause of the diseases.

Now, imagine similar patients seeking assistance from a physiatrist for their shoulder pain. Instead of focusing solely on identifying specific conditions, the physiatrist focuses on evaluating the patient's functional abilities and any limitations they may experience. This involves evaluating aspects such as range of motion, strength, and the ability to perform everyday tasks like reaching or lifting objects. Through this functional assessment, deficits are pinpointed –indicating, for instance, limited shoulder abduction or challenges with overhead lifting. Treatment under the physiatrist's care revolves around tailored exercises aimed at bolstering functional capacity, such as strengthening the rotator cuff muscles or improving scapular stability. The overarching objective is to enhance the patient's capability to re-engage in daily activities comfortably (see Table 1).

According to Sahrman (1988, 1704), physical therapists establish diagnoses which target a specific object that is not directly a disease. Moreover, she defines the

⁴ This is a diagnosis based on the process of making an inference about disease causation from an observed response of the disease to a treatment.

⁵ See, among others, Patel et al. (2005) and Stanley (2019) for a description of the use of the hypothetico-deductive method in the formulation of diagnoses in medicine. See Lotter (2018), for a description of functional diagnoses.

Table 1 Differential and functional diagnosis: contrasting approaches and goals

	Focus	Methods	Goals
Differential Diagnosis	Causes of the diseases	Hypothetical-deductive	Treating symptoms and curing the disease
Functional Diagnosis	Consequences of the disease	Alternative methods: narrative reasoning, case-based reasoning, etc.	Restoring functions and enhancing the overall wellbeing of patient

**Fig. 1** Diagram adapted from Guccione (1991, 500)

concept of diagnosis for a physical therapist in a way that is explicitly based on the concept of *dysfunction*, intended as an alteration of a function in a bodily system. With the concept of dysfunction, we can introduce further elements associated with functional diagnoses:

“Diagnosis is the term that names the primary dysfunction toward which the physical therapist directs treatment. The dysfunction is identified by the physical therapist based on the information obtained from the history, signs, symptoms, examination, and tests the therapist performs or requests” (Sahrman 1988, 1705).

Another relevant notion in rehabilitation is the concept of “functional limitation”. As clarified by Guccione (1991), Nagi (1965) defined the concept of functional limitation in the following terms:

“Nagi, however, recognized the need for a concept that served as a bridge between the presence of impairment and an individual’s disability. He proposed, therefore, the concept of ‘functional limitations which impairments set on the individual’s ability to perform the task and obligations of his usual roles and normal daily activities. These include roles within the family, peer group, community, work and other interaction settings as well as activities involved in self-care’” (Guccione 1991, p. 500, quoting Nagi 1965, p. 102).

The notion of functional limitation is connected to other concepts that are particularly relevant for the rehabilitation sciences such as disease, disability, and impairment (as shown in Fig. 1). Furthermore, as per Nagi’s (1965) characterization of the disablement process, there exists a sequential progression that can potentially result in disability. This progression encompasses the transition from a disease to a state of disability, wherein impairments and functional limitations serve as the second and

third stages. If any function fails to be restored at each step of this sequence, the patient may experience a lasting disability in some cases⁶.

It is worth noting that the model of disablement proposed by Nagi (1965) has been updated by *The International Classification of Functioning, Disability and Health* (ICF) for the rehabilitation sciences. As observed by Atkinson and Nixon-Cave (2011, 418):

“The Guide to Physical Therapist Practice also uses the Nagi model of disablement, which centers on the concepts of pathology, impairment, functional limitation, and disability, as a foundation [...] More recently, the profession has adopted the ICF as a framework to approach patient care that shifts the conceptual emphasis away from negative connotations such as disability and places focus on the positive abilities of the individual at the patient level rather than the systems level”.

This means that in accordance with the ICF model, rehabilitation sciences appear to deal with some core aspects of patient’s wellbeing and environment that go beyond his or her pathological condition. This emphasis on the overall wellbeing of the patient that is not just the medical recovery may find a parallel debate in nursing. As suggested by Edwards et al. (2004), recent developments in research on both nursing and physical therapy diagnoses show that they do not seem to be formulated through the hypothetical–deductive method of selecting a hypothesis among a set of others that were previously generated⁷. For example, the use of other methods, such as narrative reasoning or case-based reasoning in the case of physical therapy are very common (Edwards et al. 2004).

On these initial grounds, we argue that the methods and the phenomena classified in functional diagnoses by physical therapists can be compared to the phenomena at stake in nursing diagnoses, which do not always include a direct reference to diseases. For instance, nursing diagnosis does not aim to isolate a specific pathophysiological condition by trying to acknowledge the causes of a functional or organic alteration (as in medical diagnoses), and it must not merely rename and mimic a medical diagnosis (Chiffi and Zanotti 2015; Chiffi 2021). Therefore, there seems

⁶ Guccione (1991) does not provide a specific definition of the concept of disease, while the definition of impairment provided by Guccione coincides with that contained in the *International Classification of Impairments, Disabilities and Handicaps* (ICIDH) framework, which defines ‘impairment’ “as an alteration in anatomical, physiological, or psychological structures or functions that is the result of some underlying pathology” (Guccione 1991, p. 500). Finally, the definition of disability Guccione adopts conforms to Nagi’s model and makes clear that “Nagi reserves the term ‘disability’ for patterns of behaviours that emerge over long periods of time during which an individual experiences functional limitation to such a degree that he or she cannot create some semblance of ‘normal’ overall role performance” (Guccione 1991, p. 500). A more recent contribution on the notion of disability is (Leplege et al. 2016).

⁷ “Until the mid-1990s, the forms of clinical reasoning discussed were the main forms of reasoning described in the physical therapy literature. Researchers of expertise and clinical reasoning in physical therapy, nursing, and occupational therapy, then began to consider alternative methods for studying the development of expertise and the nature of clinical reasoning. In each field, engagement with the patient and family, as compared with the emphasis on the initial diagnosis, in our opinion, led clinicians to ask different kinds of questions regarding the nature of patients’ experiences of pain, illness, and disability” (Edwards et al. 2004, p. 314).

to be some similarities between diagnoses in nursing and in rehabilitation aimed at enhancing the overall wellbeing of the patient.

3 Prognosis

A prognosis is the ultimate outcome of a comprehensive clinical evaluation, primarily centered on the future (Chiffi and Androletti 2021). This is why it is generally regarded as a more intricate task than formulating a diagnosis or determining treatment options (Christakis and Sachs 1996). Even when a diagnosis has been carefully established, the prognosis can remain uncertain due to our incomplete understanding of pathological conditions, and the potential for diseases to evolve in unpredictable ways⁸ (Austoni and Federspil 1975). Moreover, a patient's specific features can significantly influence prognostic judgment. This phenomenon appears to be especially relevant in the field of rehabilitation sciences, where population-based evidence may be challenging to directly apply to the care of an individual, because of the role of contextual factors⁹.

In the rehabilitation sciences prognostic judgements are often considered to be shaped by an estimation of "rehabilitation potential" of the patient. This concept of rehabilitation potential has been defined as follows:

"Rehabilitation potential consists of a clinician's prediction of a patient's expected improvement with rehabilitation interventions. Clinician prediction is based on patient characteristics as well as the local healthcare environment and is shaped by the clinician's personal characteristics. Rehabilitation potential falls along a continuum and can change over time" (Whiting 1950).

For instance, regaining functions after their loss can be difficult for older adults with frailty (Cowley et al. 2021; Bean et al. 2019). The assessment of rehabilitation potential for each patient should prioritize a comprehensive approach that integrates restorative and adaptive strategies to optimize patient activity and participation in care. However, assessing the rehabilitation potential involves a complex, multidisciplinary decision-making process that includes providing a prognostic judgement of the expected outcomes and benefits of rehabilitation programs (Cowley et al. 2021). Researchers have also utilized this notion to establish a prognostic framework for understanding how rehabilitation can potentially reinstate daily living activities.

⁸ Diagnostic reasoning requires deductive, inductive and abductive types of reasoning. Abduction is an invitation to explore a hypothesis reasoning from the consequences to the hypothesis that may explain them (Barés Gómez and Fontaine 2022; Magnani 2001, 2023; Pietarinen and Bellucci 2014). Barosi, Magnani and Stefanelli (1993) and Magnani (2001) made clear that diagnostic reasoning is based on *selective abduction*, namely the clinical hypothesis to be judged is selected within a range of a well-established set of potential hypotheses. This means that it is not very common to create a new diagnostic hypothesis capable of modifying medical knowledge, that is it is very unlikely to have *creative abduction* in diagnostics. Instead, in virtue of its complexity, prognostic reasoning seems to be much more prone to creative forms of abduction.

⁹ Regarding prognosis in rehabilitation sciences, see Hudak et al. (1996). Regarding the concept of health in rehabilitation, see Bientzle et al. (2014).

This framework encompasses several factors, such as how rehabilitation can aid the patient in resuming daily activities, considering the individual's psychological readiness for rehabilitation, and accounting for the impact of the rehabilitation environment and contextual factors on the prospects of recovery (Nagi 1964; Cowley et al. 2021; Burton et al. 2015).

The assessment of rehabilitation potential focuses on individual patients, rather than just relying on population-based predictive models of rehabilitation outcomes. It draws from various sources that try to integrate epidemiological predictive models with experiential knowledge (Burton et al. 2015).

However, the concept of rehabilitation potential should not be employed to rationalize resource allocation decisions in healthcare or patient selection for rehabilitation interventions. Instead, it should be embraced to enhance the formulation of prognoses within the field of rehabilitation. Nonetheless, the potential to restore and promote health may extend beyond possibly measurable functional goals (Wade 2023). Even in this case a comparison with certain themes in philosophy of nursing can provide further clarification on this matter.

The main idea underlying clinical judgment in nursing and rehabilitation medicine is the promotion of a holistic person-centered perspective that extends beyond the pathophysiological aspects of care. According to Henderson (1966), this is highly relevant in nursing. As she pointed out:

“The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible” (Henderson 1966, p. 15).

This definition is counterfactual in the sense that it requires a nurse to formulate a set of hypotheses in an alternative scenario in which a patient possesses all the required cognitive resources and bodily functions to perform unaided daily activities. Indeed, a nurse's primary role is to assist the patient in improving and, if possible, restoring their optimal level of independence in performing these activities. Such an optimal level can be fixed once the nurse can judge the patient's health potential (i.e., understanding the maximal possibility for an individual to restore independence for self-care, given the patient's conditions). This may provide grounds for justifying specific nursing-oriented forms of clinical reasoning and interventions, in particular those regarding patient's potentiality to enhance specific behaviors possibly with the assistance of health professionals. The goal is not only to restore functions but also to promote global well-being, considering the patient's values, desires, and worldviews. For instance, having the opportunity to pray at the hospital can be a means for some patients to enhance their personal well-being.

We believe that the concept of “health potential” may also play a relevant role in rehabilitation and physical disciplines. It primarily concerns the prospective outcomes of a specific treatment for a patient, making it particularly relevant for prognostic purposes. Understanding a patient's health potential is valuable for healthcare

professionals as it provides insights into what can be realistically achieved to attain a specific state of health, which is essential information for prognosis.

However, unlike medicine, which traditionally focuses on pathological aspects or deviations from a given norm, nursing and rehabilitation sciences involve evaluating a patient's health potential by actively encouraging individuals to better manage their psychophysical processes, with the patient actively participating in their care¹⁰ (Chiffi and Zanotti 2016). This approach goes beyond merely achieving functional goals.

4 Treatment

In the previous sections, we have investigated some key aspects related to the role of diagnostic and prognostic reasoning in the rehabilitation disciplines. In this section, we explore the characteristic elements of treatments in rehabilitation and analyse them through an epistemological lens. We will focus on the nature and impact of evidence and the specific patterns of reasoning for rehabilitation treatments.

4.1 Evidence

A recurring theoretical theme in rehabilitation and physical medicine is indeed the so-called “practice–theory gap” (also known as “the know–do gap”) due to the difficulties of transferring research evidence into the practice of the discipline (Snöljung and Gustafsson 2019). Numerous hurdles have made the implementation of evidence-based approaches in the field of rehabilitation difficult, thereby impeding the perceived progress of scientific advancement in this domain (Hart & Bagiella 2012). A striking example of these challenges can be seen in the several barriers faced when conducting clinical trials testing rehabilitation interventions. Consequently, the field is often criticized for its absence of a robust empirical foundation, essential for demonstrating the efficacy of crucial interventions (Maher et al. 2004). According to the critics, the field of rehabilitation lacks a solid empirical foundation to demonstrate the effectiveness of its key interventions. In comparison to drug development, where rigorous multicenter trials are a prerequisite for regulatory approval, rehabilitation trials lag behind. Several unique characteristics of rehabilitation sciences contribute to this lag (Gordon 2009; Wade 2003).

Firstly, the absence of immediate catastrophic clinical failures means that there is less pressure to rigorously test and refine rehabilitation methods. In fields like surgery or drug development, if a procedure or drug is ineffective or harmful, the consequences are often immediate and catastrophic (Andreoletti 2021). For example, a poorly designed surgical procedure can lead to severe complications during or immediately after surgery (Andreoletti and Bina 2022). In drug development, an ineffective drug may not have the desired therapeutic effects, and adverse reactions can be apparent shortly after administration. However, in rehabilitation, the outcomes are typically less immediate and dramatic. Patients do not face life-threatening con-

¹⁰ On the philosophy of nursing, see Risjord (2011), Bluhm (2014) and Lipscomb (2023).

sequences due to poor rehabilitation methods in the same way that surgical patients might if a procedure fails. This lack of immediate, catastrophic failures can reduce the sense of urgency to rigorously test and refine rehabilitation interventions. Consequently, there may be less motivation to invest in expensive and time-consuming clinical trials or research to assess and improve rehabilitation techniques.

Secondly, rehabilitation interventions often lack clear endpoints, making it challenging to design clinical trials. Rehabilitation outcomes are often multifaceted, complex, and patient-specific (Bagiella 2009). Unlike other medical fields where success is measured by straightforward endpoints like survival rates or specific biological markers, rehabilitation goals are diverse and occasionally subjective. For instance, the success of a rehabilitation program may be evaluated based on improvements in a patient's mobility, pain management, cognitive function, or overall well-being. These outcomes can be challenging to measure precisely and consistently (i.e. objectively) making it difficult to design clinical trials with clear, universally, and applicable endpoints.

Thirdly, the nature of rehabilitation interventions, introduces complexities in standardization, a crucial requirement for rigorous empirical testing (Hart & Bagiella 2012). Many rehabilitation interventions involve behavioral therapies and exercises that are highly dependent on patient cooperation and the skill of the therapist. Unlike the administration of a drug or a surgical procedure, which can be standardized and controlled more easily, the delivery of behavioral therapy in rehabilitation can vary widely from one therapist to another. This variability in treatment delivery can complicate the standardization necessary for rigorous clinical trials, as the effectiveness of a behavioral therapy may depend on the skills and methods of individual therapists.

Lastly, rehabilitation lacks the industry interest seen in drug and medical device development (Dromerick 2003). Unlike drug and medical device development, where pharmaceutical and medical device companies have a strong financial incentive to invest in research and development due to the potential for substantial profits, rehabilitation sciences lack a similar level of industry interest. The economic incentives in rehabilitation are typically not as pronounced - to say the least - leading to very limited investment in research and development. This lack of financial backing can hinder the ability to conduct large-scale, rigorous clinical trials and impede the progress of evidence-based practices in the field of rehabilitation.

4.2 Reasoning

In the field of rehabilitation sciences, the utilization of reliable evidence poses significant challenges, making treatment decision-making particularly complex. Therefore, it's essential to consider the rationale behind these decisions.

In the previous sections, we explored commonalities between clinical reasoning in nursing and physiatry that are crucial for formulating treatment plans. We have established that a major factor contributing to the similarity between clinical reasoning in physical therapy and nursing lies in the concepts of "rehabilitation potential" (the capacity to achieve specific functional goals) and "health potential" (the capacity to enhance overall health). The former is primarily used in rehabilitation sciences, while the latter is more commonly employed in nursing.

The goal of both disciplines is to enhance the patients' overall health through their active participation. Unlike medical interventions, both physiatry and nursing require the active involvement of the patient in improving their health potential. Thus, a patient's active participation in care is not only a distinct feature of nursing but also a critical element in any rehabilitation-related treatment (Ramakrishna and Cifu 2003). However, there are unique aspects to judgments and interventions in physiatry, primarily related to health potential being mainly (though not exclusively) assessed through the functional notion of rehabilitation potential. Physical therapists are responsible for formulating diagnoses and prognoses that ultimately guide the implementation of treatment plans. Their main objective goes beyond just resolving functional impairments; it also includes the resolution of other problems that might be interfering with the patient's well-being.

It is possible to express the relationship among the different facets of clinical reasoning in physiatry (in particular, for treatments) in the following way:

A judgment regarding a functional limitation requires:

- a. Evaluation of a functional impairment (dysfunction) and
- b. Assessment of an individual's rehabilitation potential.

The notion of "functional limitation" has two components. The first component is impairment (i.e., dysfunction). In this context, a physical therapist formulates and executes treatment plans aimed at restoring impaired function. This crucial role of treatment planning is guided by a cluster of signs and symptoms hypothetically associated with a disease, resembling to a certain extent the role of a treatment plan established by a physician.

The second component of the concept of functional limitation is rehabilitation potential, which aims to evaluate the possibility that the patient may regain the loss or altered functions. As we have seen, this notion can be further extended to enhance the global health potential of the patient including environmental, social, and anthropological dimensions of care.

The relative importance of components (a) and (b) can vary depending on the specific nature of the rehabilitation discipline, addressing the specificities and complexities of various interventions in the field of rehabilitation. However, the interaction between these components remains consistent across the board.

Clinical reasoning in rehabilitation sciences builds upon the specific notion of functional limitation, which is essential for a treatment plan aiming to restore not only bodily impairment (rehabilitation potential) but also requires medical knowledge as well as a holistic approach to care, as in nursing (health potential). This implies that reasoning in physiatry demands skills connected to both medicine and nursing while also focusing on the functional aspects that impact a patient's overall health. Moreover, placing emphasis on functionality and individual well-being could aid in overcoming some of the challenges associated with designing and conducting clinical trials in rehabilitation sciences, thus promoting a better interplay between research and practice.

5 Conclusion

In the realm of clinical reasoning, bridging the gap between medicine and rehabilitation sciences poses a unique challenge. While medicine provides a solid foundation for clinical knowledge, there are inherent analytic gaps that must be addressed when we focus on the concept of rehabilitation. These gaps cannot be entirely filled by the existing literature on clinical reasoning in medicine, necessitating a multidisciplinary and philosophical approach. While nursing and medicine have traditionally been subjects of more extensive theoretical scrutiny, rehabilitation sciences have often been relegated to the periphery of philosophical examination, with the limited focus primarily on ethical considerations. Only a handful of studies have ventured into the epistemological dimensions of rehabilitation disciplines, and these have often been conducted almost always by non-philosophers.

To fill this gap, we investigated the unique characteristics of rehabilitation sciences, shedding light on what sets them apart from clinical medicine. Our focus was on analyzing clinical reasoning within the realm of rehabilitation sciences, particularly in the traditional domains of diagnosis, prognosis, and treatment, drawing comparisons with medicine and noting similarities with nursing.

In Sect. 2, we investigated the distinct nature of diagnoses in rehabilitation sciences, emphasizing the shift from disease-centered diagnoses prevalent in clinical medicine to functional diagnoses. Unlike medicine, where diagnoses primarily targeted the causes of diseases, rehabilitation sciences centered on the consequences of these ailments.

Section 3 explored how this distinction extended to the concept of “health potential”, a critical factor in determining prognosis and treatment strategies. This notion transcended mere functional goals and encompassed what we termed “rehabilitation potential”, guiding the formulation of effective treatment plans.

Finally, in Sect. 4, we examined the “practice-theory gap” within rehabilitation sciences, elucidating the specific challenges inherent in translating research findings into practical applications. Additionally, we investigated the unique reasoning processes underlying treatment decision-making in rehabilitation sciences.

The philosophy of rehabilitation may be considered a pivotal element within the broader philosophy of clinical practice. It is a field that warrants not only the attention of clinicians but also rigorous epistemological scrutiny from philosophers. Rehabilitation specialists can gain a deeper understanding and analyse the main facets of reasoning behind their practice more efficiently, while philosophers may find in rehabilitation disciplines an intriguing new field to explore in healthcare. The collaborative efforts of both disciplines can unlock new dimensions in understanding and improving the practice of rehabilitation in an interdisciplinary and global philosophical perspective.

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Declarations

Conflict of Interest The authors have no relevant financial or non-financial interests to disclose.

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