Per Koren Solvang, Halvor Hanisch, Jan D. Reinhardt

# The Rehabilitation Research Matrix

## Producing knowledge at micro, meso and macro levels

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## Abstract

*Purpose*: EU policy documents and health scholars point out that in order to understand the complexity of modern health systems, as well as to devise appropriate policy responses, considering micro, meso and macro levels is indispensable. This article aims to develop an analytical framework for how rehabilitation as an interdisciplinary field can be framed in such a three level framework. *Methods*: This is a conceptual paper based on recent contributions to the development of a theory of rehabilitation. The paper applies sociological theory to build an analytical framework for a holistic understanding of rehabilitation. *Results*: Three groups of agents in the field of rehabilitation are identified: individuals with disabilities, professionals, and governmental authorities. The paper systematizes how these agents are positioned and act at micro, meso and macro levels. In the intersection between the three levels of society and the three groups of actors, a nine-cell table emerges. In the cells of the table, key examples of important social processes to study in the field of disability and rehabilitation are identified. At the micro level, individuals experience a daily life relevant to rehabilitation, professionals ask what works in therapy, and policy authorities promote a strong work ethic. At the meso level, individuals with disabilities act as service user groups, professionals develop organizational designs and the policy authorities ask for cost-effective services. At the macro level, organizations representing people with disabilities lobby,

professionals negotiate authorization issues, and the policymaking authorities must identify what can count as just distribution of services. The nine cells of the table are elaborated on by presenting relevant current studies exemplifying each cell. *Conclusion*: To systematize societal levels and agents involved is to enhance the understanding of rehabilitation as an interdisciplinary field of research.

**Keywords:** rehabilitation, disabled persons, health services research, government, interdisciplinary communication, sociology

## INTRODUCTION

Models for understanding and improving health and human functioning are deemed important to rehabilitation practice and rehabilitation research [1,2]. The model represented by The International Classification of Functioning, Disability and Health (ICF) is a key reference point in attempts to outline a unifying theory of health, disability and functioning. The model is backed by the WHO and subject to much debate, in the form of both praise and criticism, as well as suggestions for improvement [3–6]. Attempts to improve the model address both the micro and macro levels of society [6,7]. This effort is integral to the holistic ambition of the ICF and to determining the direction for a theory of rehabilitation where the bio-psycho-social model of health and functioning holds a key position.

In the Scandinavian countries, a gap model of disability and human functioning has been suggested [8]. This is a relational model where disability is the result of a gap between the society's demands and the abilities of the individual. The model implies a two-fold ambition for rehabilitation: providing the individual with better abilities in functioning on the one hand, and designing physical and social environments that welcome diversity in human functioning.

Being a regional concept applied mostly in the Scandinavian countries for some time, the gap model has gained international recognition in recent years [9].

Both the ICF and the gap model include a macro level and a micro level, but they lack a clear understanding of the meso level of society. The environmental factors in the ICF model can be found at all three levels, such as work place adaption (micro), hospital organization (meso) and legislation (macro). In rehabilitation-related fields, such as health services research and the management of chronic illness, the meso level has been suggested as equally important to micro and macro levels. One example is the draft version of the 2011 EU Policy Brief on health services research. Here, the micro, meso and macro levels are introduced as contrasting but interconnected perspectives. The conclusion is that "it is only by considering the challenges health care systems face at each of these levels that their complexity will be understood and appropriate policy responses devised" [10]. Likewise, in a summary of different perspectives on managing chronic illness, these are sorted out as addressing individual (micro), institutional (meso) and social structural (macro) levels of society [11].

In the development of rehabilitation as a scientific field, we believe, in line with Gutenbrunner et al., that it is important to apply models of rehabilitation that include the meso level in a three-level model [12]. In contrast to the previous theorizing contributions that introduce the three societal levels to health and rehabilitation [10–12], we identify individuals with disabilities as agents not only at the micro level as patients, but also at the meso level as user representatives on hospital boards and as represented by NGOs lobbying at the policy forming macro level. We also depict professionals as agents at the macro level when trying to influence policy development. It is necessary to bring on board a frame that clearly includes studies on organizational issues, on interprofessional collaboration, and on jurisdictional disputes among the professions of rehabilitation. In addition, the aforementioned holistic perspectives on rehabilitation lack a clear concept of intentional, influence-seeking and

reflective social agents. Patients and professionals as well as governments are key stakeholders and agents in forming the practice of rehabilitation. These three agents can be located as actors on the individual, organizational or policy level. An improved understanding of the interactions between different actors and levels of society could contribute significantly to discussions of how to create a unified theory of rehabilitation.

In the foreword to a recent book on goal setting in rehabilitation, Wade identifies three features that define rehabilitation [13]. One feature is goal setting, which is the theme of the book in which the foreword is written. The other two features are the interdisciplinary collaboration underlining rehabilitation as a field where no single discipline alone can deliver solutions, and the holistic perspective as a biopsychosocial model of functioning. In this article, our aim is to demonstrate how the intersections of different social agents and different societal levels broaden the holistic perspective on rehabilitation. By applying a set of sociological approaches in analyzing how knowledge is organized and institutionalized, we arrive at a concept of rehabilitation that is wider than previous contributions suggest. An important feature of this widening is the institutional grounding of rehabilitation knowledge in a diverse set of epistemologies.

## METHOD: A THEORETICAL FRAMEWORK GROUNDED IN SOCIOLOGY

What is the role of sociology in rehabilitation research? An answer is given by the 2007 special issue of the *Journal of Rehabilitation Medicine* that instigated a process of developing human functioning and rehabilitation as a scientific area. The special issue leans heavily on the ICF model of human functioning. In the suggested development of an interdisciplinary approach, society is given a role in understanding the environmental factors and levels of participation in the ICF model [14]. The discipline of sociology is highly relevant in these

aspects of rehabilitation. Important to sociology is the relation between individual and society and the institutions regulating this relation. A key framing of this relation between individual and society is the analytical organization of society in micro, meso and macro levels [15].

In sociology, Collins systematized the micro-meso-macro framework [15]. According to Collins, there is one set of theories that aim to study how individuals think and act. Individuals are of course embedded in the social organization and cultural norms under which they live, but in the micro theories, the level of focus is on social interactions seen from the level of individual, family and peer relations. Another set of theories addresses the meso level where the key term is "organizations." The workings of entities such as schools, hospitals and professions are at the forefront when research questions are crafted. Finally, Collins introduces the macro level where the key term is "social structure." The state, politics and grand trends such as modernization and cultural change are addressed when research is conducted. The aim of Collins's book is to organize sociological theory, while our aim is to demonstrate the intersection between different agents and different societal levels in the field of rehabilitation and the production of knowledge pertaining to that field. In order to provide an overview of the field of rehabilitation, we intend to use the basic idea that the production of knowledge about society takes place at different levels.

In the field of rehabilitation, key agents are the patients, the professionals and the governmental authorities [16]. These agents have different forms of social capital that gives them power in defining how rehabilitation is to be understood and what shall be given priority in efforts to improve the endeavor of improving functioning, well-being and participation. Concerning authority, the governmental bodies are given this through the democratic system; the professionals are given authority by their expertise; and the patients gain authority by their status as citizens reliant upon rehabilitation services for improving their life situation.

The power of professionals and policy makers is well known. From the 1990s, patients as well have gained a steadily rising influence in the field rehabilitation [17]. One work that argues for the assigned power of clients is the seminal paper by Bickenbach et al., which crafts the basic tenets of the ICF model of functioning, a model of revolutionary importance to rehabilitation [18,19]. In the paper by Bickenbach et al., the sociologist Oliver is assigned authority not only because of his academic entitlements, but also because he is disabled himself and speaks on behalf of people with disabilities. The WHO World Report on Disability defines rehabilitation as providing measures that assist people who experience disability to achieve optimal functioning in interaction with their environments [20]. This definition implies that that people with disabilities are key actors in their own lives. In this positon, people with disabilities contribute to service user panels, and they form interest organizations lobbying for changes that improve the services provided to people with disabilities.

## RESULTS: INTRODUCING A STRUCTURAL MODEL OF REHABILITATION KNOWLEDGE

The relation between the individual and society is a key issue when attempting to articulate the breadth of rehabilitation combining the three **level**s of societal organization, micro, meso, and macro, with the three principal agents in rehabilitation, individuals experiencing disability, professionals assisting rehabilitation processes, and governmental bodies forming policies relevant to rehabilitation and the lives of people with disability. We suggest a nine-cell table as a relational structure that can serve as a point of reference for understanding the type of knowledge important to understand rehabilitation from the sociological perspective. The vertical dimension of the table represents the structuring of society in individual,

organizational and policy levels. The horizontal dimension represents agents and the actions they direct towards the different levels of rehabilitation practice.

The nine-cell structure will be presented in two tables. The first addresses the social organization of rehabilitation, and the second addresses research questions and scientific disciplines contributing to knowledge production in rehabilitation.

**Rehabilitation as a field of social organization**

*Table 1 Matrix of key agents and levels of society in rehabilitation*

| Agents / Level of Analysis | *Individuals experiencing disabilities* | *Professionals* | *Governmental authorities* |
|---|---|---|---|
| *Micro* | Making life-world decisions relevant to rehabilitation 1 | Targeting of clients' level of functioning, participation and well-being 2 | Expecting active care for own health and strong work ethic 3 |
| *Meso* | Acting as service user representatives 4 | Organizing hospitals, local rehabilitation units and rehabilitation chains 5 | Promoting efficient and accessible services 6 |
| *Macro* | Associations acting as advisory bodies and pressure groups 7 | Professional associations negotiating jurisdiction 8 | Securing democratic foundation of policy formation, and just distribution of services 9 |

The contents of the cells are not exhaustive, but what is identified in each cell in Table 1 are core examples of the issues important to the field of rehabilitation in the nine identified intersections between agents and levels of societal organization.

The lines of order in a table are far from coincidental. What is placed at the left side and the right side, and what is recognized as top and bottom, are parts of deliberate processes of

centering [21]. In this table we start with the micro and the individual because the life of the individual and challenges in functioning are a widely held starting point when reflecting on rehabilitation as a field of professional practice. Our aim is not to radically reconstruct the field of rehabilitation as a primarily sociological concern, but to develop a model of rehabilitation that broadens the holistic and interdisciplinary perspective in rehabilitation. Therefore, individuals and their lifeworld at the micro level come first, the professionals and the meso level of service-producing organizations come second, and governmental authorities and macro level of social organization come third.

The first cell of Table 1 identifies the individual with functioning problems as a decision-maker in his or her life situated in the local environment of home and work place. The second cell represents a core area of rehabilitation. Here, professionals enter the lives of people with functioning problems. The principal aim in the work of rehabilitation professionals is to assist clients in gaining a maximum functioning in interaction with their environments [20]. These three aims are clearly represented by the ICF model of functioning so important to rehabilitation. Professionals do not relate only to individuals, but also to professional organizations such as hospitals, outpatient clinics and municipal rehabilitation services. Such organizational relations constitute cell 5 in the table. In these organizations, rehabilitation professionals typically take part in interdisciplinary teamwork, coordinating their efforts with other professionals. When individuals with disability relate to services, their role as clients becomes accentuated. This relation is represented by both cell 2 and cell 4. Cell 2 highlights how professionals interact with clients in individual processes of rehabilitation. Cell 4 highlights the relation between organizations as frameworks for professional work and individuals with disability as user representatives. Rehabilitation clients often have lifelong relations to the services and a wide variety of user-involvement practices are established.

Their lifelong positions as individuals with disability, as clients in service provision and as subjects of inclusive design strategies have laid the ground for people with disability to form organizations, on local, national and international levels. The organizations play a pivotal role at the macro level of national politics. This role makes up cell 7. In the same way as people with disabilities do, professionals form organizations to take care of the interests of professional groups. Such interests on the macro level are typically jurisdictional issues including reimbursement schemes, authorization and health policy development. These issues form cell 8.

In addition to individuals and professionals, governmental authorities are also agents in the field of rehabilitation. On the micro level the authorities formulate expectations directed towards the individual. This is an approach clearly visible in public health improvement programs directed towards nutrition and exercising. In rehabilitation, authorities direct expectations toward the individual when anticipating eagerness to enroll in medical rehabilitation, to fit assistive products and to strive for full participation in work life. These expectations make up cell 3 in the table. The authorities also direct their attention to the organizational level. This attention is represented by cell 6 of the table. At this level, governmental authorities use a wide array of instruments to facilitate organizational designs that improve cost-effectiveness, quality and accessibility of services. Finally, in cell 9 the agency of governmental authorities acting at the macro level is depicted. Here, the democratic foundation of rehabilitation policies, just distribution of services, and considerations about law enforcement of inclusive practices are at the forefront.

A table like this matrix is a tool that can be in danger of ignoring important nuances. One such nuance is relatives as agents in cases where the person using rehabilitation is a child or has cognitive disabilities that cause a need for assistance in decision-making. Another nuance is the role of governmental authorities. The table is constructed with reference to a welfare

model where the government plays a key role. In other models of welfare provision, as in the United States, where private insurance companies play a key role, some of the interest of regulating portrayed by the micro and meso levels in the table cells 3 and 6, respectively, will be shared by private health insurance companies.

**Rehabilitation as a field of research**

Table 1 presents a social structure of rehabilitation-relevant issues. In table 2, research efforts are depicted and we place key examples of research questions in the nine cells. The scientific field of rehabilitation-relevant studies attends to a wide variety of themes for research. To demonstrate the wide scope of knowledge production aiming for relevance to the field of rehabilitation, we will point out 1–3 studies that represent research contributions in each of the cells.

The questions listed in the cells indicate key examples of empirical research conducted in the field of rehabilitation and in related fields of study. Whereas rehabilitation research is located primarily at the micro level, rehabilitation services research is located primarily at the meso level and rehabilitation policy research primarily at the macro level. Most studies in the field of rehabilitation contribute to the knowledge base in one of the cells, but in order to interpret what happens empirically at the level in question, it is important to have an understanding of how the phenomenon under study is framed by the other levels and cells in the matrix. This point is emphasized by applying dotted lines in the table. In this way, the matrix both serves the task of organizing knowledge production and provides the diverse producers of knowledge with a framework for the holistic and contextual framing of the knowledge production at hand.

*Table 2 Examples of key research questions relevant to rehabilitation, organized in a matrix of agents and levels of social structure*

| Agents / Level of Analysis | *Individuals* | *Professionals* | *Governmental authorities* |
|---|---|---|---|
| *Micro* | What is important when living with functioning problems and how is the experience narrated? 1 | What works (in therapy) and why does it work? 2 | How do government policies and power relations frame individual behavior, e.g., through social norms? 3 |
| *Meso* | How do individuals and service user groups experience rehabilitation systems and their impact on quality of life? 4 | What organizational designs and systems improve the effectiveness and efficiency of services? 5 | How do alternative government politics affect service provision? 6 |
| *Macro* | How does disability organizations' lobbying take place? 7 | How do various professional organizations relate to each other in terms of alliances and power struggles? 8 | What are the socio-cultural and legal foundations for policy formation and distribution of services? 9 |

*Micro level*

In the first cell, individuals with disabilities act at the micro level. The key term is "life experiences relevant to rehabilitation," and studies applying both qualitative and quantitative methodologies are important. A key example is Arthur Frank's theory-building study of illness narratives [22]. Numerous qualitative studies have employed his analytical scheme where three modes of storytelling are introduced. The first is the recovery narrative framed by a structured healing process; the chaos narrative, where patients are unable to speak of the illness that has turned their lives upside down; and the quest narrative highlighting illness as a turning point[23]. Survey research is a quantitative approach to knowledge generation on the micro level addressing experiences of people with disabilities. The community survey of the

Swiss Spinal Cord Injury Cohort Study, for instance, aimed to comprehensively assess experiences of functioning and disability, health, quality of life, and environmental factors of Swiss residents with spinal cord injury, using standardized questionnaires based on ICF Core Sets for spinal cord injury [24].

The second cell represents what often is believed to lie at the core of rehabilitation research. Here, the question of what works in rehabilitation is at the forefront. A vast amount of studies can represent this type of knowledge production and we would like to point out three types of such studies. First, there is the clinical trial of clearly distinguished measures intended to enhance the rehabilitation process. An example of a high-quality clinical trial is Weinstein et al.'s study about the effects of bracing in adolescent idiopathic scoliosis [25]. The trial was stopped prematurely because of the obvious superiority of bracing in the interim analysis. Second, prospective cohort designs are conducted to provide evidence of treatment effects on a quality level below that typical of randomly controlled trials [26]. Husson et al. reviewed 28 prospective cohort studies of prognostic functioning six months after traumatic brain injury [27]. The study showed strong evidence for scores on the Glasgow Coma Scale and other bio-physical measurements as prognostic factors. Third, there are studies evaluating the importance of person-centeredness and goal setting in the rehabilitation process. One widely cited article attending to such issues is authored by Levack et al. [28]. The results from a total of 19 studies on the effectiveness of goal setting in rehabilitation are reviewed. They find that some positive effects exist, but those effects are inconsistent.

In the third cell, authorities and governmental bodies that take action directed at the individual micro level are portrayed. From traditions of social science critically questioning relations of power, the governmental management of individuals is often addressed. A key tradition is Foucault-inspired studies of the relation between individuals and governmental management. One example of a study in this tradition is Moser's study of road traffic-accident survivors

living in one of the Scandinavian welfare states [29]. Here, three ways of managing the relation to rehabilitation are identified. The dominating way of relating to disability is normalization, whereby the person with disability is expected to live a self-determined life and become independent. Another way of relating to disability is fate, whereby disability is not to be overcome, but to be accepted and endured as a place for contemplation. Third, disability can be lived as passion with prosthetic technologies in active outdoor life, whereby the body stands out visibly as sensual, desiring and desirable. The author asks to what degree it is a problem that alternative approaches such as perceiving the disability as a fate and a site for contemplation, or as a possibility for living a passionate life of leisure, are silenced in the Scandinavian welfare-state discourse.

*Meso level*

In the fourth cell we again visit the perspective of the individuals affected by rehabilitation. We now find them at the meso level setting goals and interacting with service-producing organizations. Here we find a wide range of studies asking how rehabilitation services work. Are the clients satisfied and what role do the services play in clients' life projects? An example is a study that conducted semi-structured interviews with participants in the implementation of a National Service Framework for Long-Term Neurological Conditions in the United Kingdom. The study found that clients experience that effective care is provided while they are in the hospital setting, but that when they return to communities needs still exist, but services provided are inadequate [30].

In the fifth cell, professionals address organizational issues at the meso level. A key question is, what are models, services and organizational designs that work best. Siemonsma et al. ask what factors influence the implementation of home-based stroke rehabilitation in clinical

practice [31]. They identify meso-level determinants such as coordination of services and intraprofessional collaboration, as well as factors on the individual micro level such as level of satisfaction with services and the exact nature of the medical condition. The study concludes that all these factors are important facilitators of home-based rehabilitation efforts.

In the sixth cell the policy authorities that work to heighten the efficiency of services are portrayed. Key examples of related research efforts are studies of how modernization reforms such as New Public Management are legitimized and applied to the organization of services. One such study that addresses the organization of hospitals, but that also includes the organization of rehabilitation departments, discusses the evidence for negative consequences of commercializing health care in the hospital setting. The author does not find substantial evidence for negative impact on either quality or equality of service provision when commercialization takes place [32].

*Macro level*

In the seventh cell the individuals in question, that is people with disability, act on the macro level. Such action mainly takes place in some form of disability organization. As an example of knowledge production in this cell, we point to a study from one of the Scandinavian countries on how a disability umbrella NGO and its diagnosis-specific member organizations utilize both medical and social models of disability when they strive to improve the situation of their members [33]. In the Scandinavian countries, the organizations typically work closely with the policy forming authorities. This is often different in countries having liberal welfare state models such as the United States [34]. In the liberal welfare state models, the organizations representing people with disability are more detached from governmental authorities and in some cases closer to the private sector. One example is a study of how

organizations representing psychiatric conditions such as AD/HD nurture active relations with the pharmaceutical industry [35].

In cell 8 the work of professionals at the macro level is addressed. Key terms are "authorization" and the need for "clear prioritization of scarce resources." A typical approach in rehabilitation and related fields is to address the jurisdictional disputes between professions of who is best suited for different areas of work such as authorizing sick leave. A rehabilitation-relevant study on such issues is a 2012 paper by Feiring [36]. She studies a Norwegian welfare reform and points out that the influence of professionals in the field of rehabilitation is increasingly interwoven with managers and clients. An example from the international arena is a study by Reinhardt et al. [37], who outline a model for how international NGOs can contribute to the field of rehabilitation.

In cell 9 the policymakers are depicted at the macro level. Out of this pairing, issues such as the democratic foundation for policy formation and the just distribution of services are addressed. One example is Gutman's work on how it can be justified that more resources are allocated to pupils with disability (by special education) than to non-disabled pupils [38]. Another example is a study by Skempes et al. analyzing state obligations for provision of health-related rehabilitation under the United Nations Convention on the Rights of Persons with Disabilities, as well as methods to evaluate state parties' compliance with these obligations [39].

*Complexity*

Studies of rehabilitation-relevant practice do not always fit nicely into only one of the nine categories. This is not a problem. On the contrary, there is great potential in designing studies that overlap between cells. One example is between cells 2 and 5, studies that address

outcomes of organizational changes on the individual micro level. One example of such knowledge production is Andelic et al.'s study of rehabilitation chains [40]. One group of patients with traumatic brain injury received comprehensive early rehabilitation and were transferred directly to a rehabilitation hospital when stable. This was the continuing chain of rehabilitation. Another group did not receive comprehensive rehabilitation when in acute care, and had an intermittent period at a local hospital or nursing home before admission to a rehabilitation hospital. This was the broken chain of rehabilitation. The study estimates the costs of the services across five years to be lower and the health effects on the participants to be better in the continuing chain.

Between cells 2, 4 and 5 there are important interactional possibilities as well. Both individuals and professionals can be addressed in a single study design. Simeonsma's study, which was referred to as an example in cell 5 of a study of client satisfaction with services, also involved interviews with professionals about providing the addressed services and the cooperation between service levels [31]. Another example is Helgøy et al. who look into how persons with mobility-disability understand independence and how the wide variety of service providers they rely on have contrasting understandings of independent ways of living [41].

It is important to note that the cells of Table 2 where the agency of policy authorities is studied (cells 3, 6 and 9) and where the macro level is addressed (cells 7, 8 and 9) are seldom represented in what is commonly framed by the label "rehabilitation research." What policy authorities do is often not questioned, policy seems to fall outside interdisciplinary rehabilitation studies. Similarly, knowledge about rehabilitation-relevant social processes at the macro level of policymaking is seldom addressed in rehabilitation journals (cells 7 and 8). One exception is recent developments towards evidence-informed health policies and stakeholder dialogues. Moat et al., for instance, analyzed how evidence briefs are perceived by politicians and other stakeholders in selected African countries [42]. A key aim of the

matrix is to stimulate the inclusion of such studies in the field of rehabilitation knowledge production.

## DISCUSSION: IMPLICATIONS FOR REHABILITATION MODELLING

One important contribution in developing a unifying theory of rehabilitation was published by Arokiasamy [43], followed by a contribution by Siegert et al. in 2005 [44]. The Siegert article was accompanied by no less than five commentaries published by this journal (*Disability and Rehabilitation*). A key feature of the theorizing endeavors is the relation between the micro and macro level. Siegert et al. suggested an individually tailored definition of rehabilitation, which was criticized for ignoring contextual frameworks. This led them to conclude that the ICF tells us too little about the process of rehabilitation and that the concept of disabling environments is important to any future theory of rehabilitation [45]. The matrix suggested in this article meets these challenges in two ways. First, the process of rehabilitation is elaborated by bringing in the organizational meso level and the policymaking macro level. At the meso level, in addition to professionals, clients and authorities are also identified as actors. At the macro level, in addition to policymaking authorities, professionals and clients are also identified as actors. Second, the issue of disabling environments is viewed from the angle of people with disabilities as organized interest groups. Their efforts to build an inclusive society typically takes place at the macro level where they lobby for regulations of the accessibility of the built environment, anti-discrimination law, etc.

In a 2009 letter to the editor, Reinhardt and Stucki summarize a wide nomenclature of what they identify as distinct scientific fields in human functioning and rehabilitation research [5]. The authors voice an ambition to design rehabilitation as a scientific field addressing issues from cell to society. The matrix adds to this body of research in two ways. First, it takes the

organization of society as a starting point, rather than the organization of universities, and presents a far simpler table that is easier to apply when discussing the breadth of rehabilitation as a field of scientific research. Second, the matrix adds to the organization of rehabilitation as a distinct field by also identifying organized service users, not only patients, as key actors in rehabilitation as a field of research.

A clear distinction between cells 1 and 4, between life-world experiences of individuals with functioning problems and their role as users of services, is an important quality of the model. This distinction is in accordance with the view on the term “user” voiced by people with disability. People who experience disabilities find it important that their lives shall not be reduced to their client status in public discourse, but simultaneously, the client role is crucial to the well-being of people with disability [9]. Hence, an important quality of the matrix is in clarifying the distinction between the lived life of the individual and the individual’s position as a service user. Additionally, identifying user representatives in cell 4 suggests an important dimension to the meso level not dealt with in previous attempts to define the meso-level organization of rehabilitation [12]. The matrix suggests that institutionalized service user representation on hospital boards and similar bodies is important to the work of service providers and service funders as well as to the quality of service delivery.

The matrix also responds to how rehabilitation must relate to the emergence of critical disability studies from the early 1990s and onwards. The importance of the insights from disability studies was first outlined in the paper that launched the basic idea behind the ICF model of health and functioning [18]. In it, the importance of the environment in rehabilitation was underlined by referring to the pioneering work of the first generation of disability studies scholars. Zola [46] developed the universal perspective on health and functioning and Oliver [47] introduced the social model of disability, where the political and economic structures of society were given prime importance as key areas for change if

inclusion and participation are to be achieved. Likewise, Hammel has systematically addressed the importance of disability studies to rehabilitation in her book *Disability and Rehabilitation* [48]. On the micro level of the individual, Hammel points to the need for rehabilitation professionals to engage not only in therapeutic processes, but also in advising about how to live a fulfilling life with an impaired body. On the macro level, Hammel encourages rehabilitation professionals to be engaged in policy development and universal design as well as in altering cultural images of disability that affect individuals who live with functioning problems. By systematizing the individual life-world, professional service production, and cultural norms, as well as the built environment and policy development, the matrix is well-suited as a framework that includes perspectives from disability studies in rehabilitation.

Each of the 9 cells in the table represents a specific area of knowledge relevant to rehabilitation. They are based on the types of actors studied and the societal level at which the acting take place. The wide range of the matrix expands the scope of rehabilitation research compared to the content of what is published in journals believed to represent rehabilitation research [49]. The matrix also represents a wider scope than the WHO definition of rehabilitation, a definition that underlines individually targeted measures for achieving optimal functioning as the core of rehabilitation [20]. The intention in the broadening represented by the matrix is not to strive for an equal importance of each cell about what counts as rehabilitation research. What is at stake is to broaden and strengthen the frame of reference for research relevant to rehabilitation. The matrix can serve as a framework for reflecting on one's own position in the broad landscape outlined, as well as how this position intersects with other positions in the matrix. Both physiotherapists doing a clinical trial and political scientists studying policy disputes will gain from systematically relating their work to a wide frame of knowledge production.

## CONCLUSION

The nine-cell matrix introduced does three things to the field of rehabilitation modelling. First, it systematizes how a broad perspective on the meso level is important to the modelling of rehabilitation as a cross-disciplinary field including service users as organized actors. Second, the matrix explicates the full potential of rehabilitation as a cross-disciplinary field. Third, the model elucidates the complexity of understanding rehabilitation as a holistic biopsychosocial framework for improving human functioning, well-being and participation.

## DECLARATION OF INTEREST

The authors declare no conflicts of interests. The authors alone are responsible for the content and writing of this article.

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