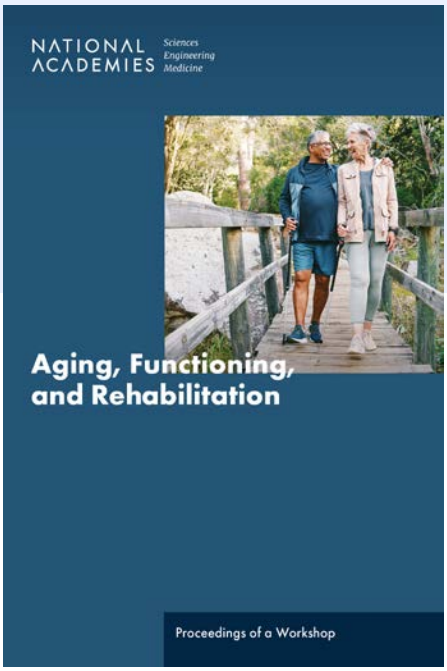
Aging, Functioning, and Rehabilitation



The National Academies of Sciences, Engineering, and Medicine convened a hybrid workshop on February 16–17, 2024, at the University of Lucerne, Switzerland, to facilitate a discussion focused on the World Health Organization's (WHO's) concept of functioning and its role in rethinking the concept of health, with an emphasis on healthy aging and on rehabilitation as a health strategy. The workshop included an array of experts in diverse fields from all WHO regions. Participants offered many suggestions to operationalize functioning as a measure in health policy, rethink disability as a universal human experience, and formulate a feasible public health agenda that addresses the increasing relevance of rehabilitation in the twenty-first century. The webcast and workshop presentations are available online.[1]

Jerome Bickenbach, University of Lucerne, defined *functioning* (see Box) and described the WHO's International Classification of Functioning, Disability and Health (ICF) model (see Figure) as a classification system that measures an individual's functioning and disability associated with their conditions and considers the degree to which an individual engages with and participates in their environment, which can be used as a tool to measure and compare differences in health. John Beard, Columbia University, United States, noted that the ICF framework has "been absolutely transformative to the field of aging," and Birgit Prodinger, University of Augsburg, Germany, said the ICF has helped establish an international standard to describe functioning.

[1] Workshop webcast recording and panelist presentations can be accessed at https://www.nationalacademies.org/event/41714_02-2024_aging-functioning-and-rehabilitation-a-workshop.

BOX
Foundational Concepts

Bickenbach described *functioning* as information about how a person's health state affects their daily life, or their "lived experience of health." Functioning is comprised of both biological health and *lived health*, where lived health is fully contextualized as an outcome of interactions between an individual's intrinsic health capacity and their environment. He added that health systems need to shift away from relying solely on mortality and morbidity, with functioning as a third indicator of health. Beard described *healthy longevity* as the state in which years in good health approach the biological lifespan, with physical, cognitive, and social functioning that enables well-being across populations. Alarcos Cieza, WHO, Switzerland, described *rehabilitation* as a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment. Cieza noted a gap between health care needs and access and explained that globally, 2.4 billion people are living with a health condition that could be improved by rehabilitation services.

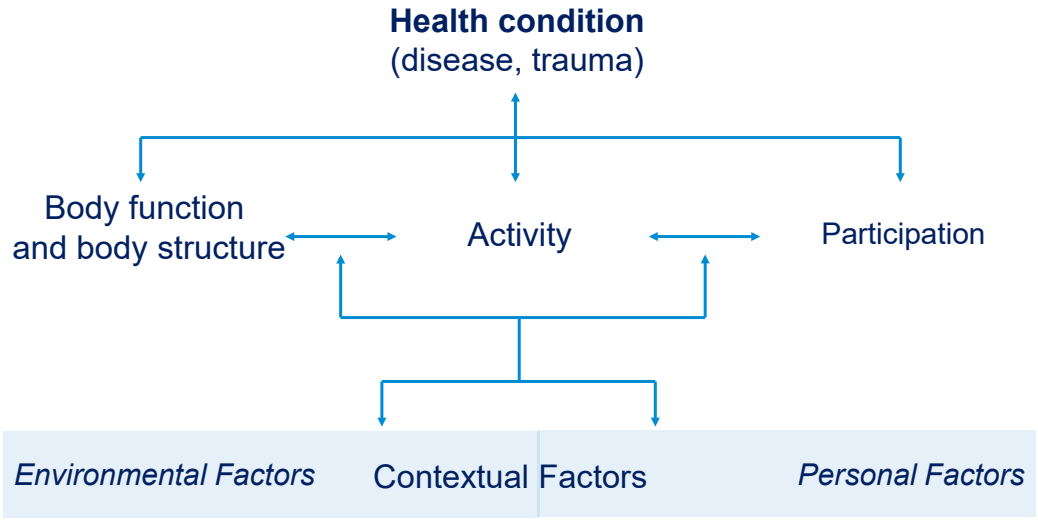


FIGURE World Health Organization's model for the International Classification of Functioning, Disability and Health.
SOURCES: Gimigliano presentation, February 16, 2024. Adapted from WHO, 2001, CC BY-NC-SA 3.0 IGO.

FUNCTIONING AND REHABILITATION FOR HEALTHY LONGEVITY

Workshop participants discussed how to advance measurement of functioning and how different assessment tools can help practitioners make use of functioning and rehabilitation in health care settings. For example, Francesa Gimigliano, University of Campania "Luigi Vanvitelli," Italy, outlined tools that aid in integrating functioning across health systems, including the International Classification of Service Organization in Rehabilitation, the Individual Rehabilitation Project, the Scheda di Dimissione Ospedaliera in Riabilitazione, the Standardized Assessment and Reporting System for functioning information, the WHO's Model Disability Survey, and the International Society of Physical and Rehabilitation Medicine's Clinical Functioning Information Tool. Evaluating individuals' functioning and the cost-effectiveness of interventions will require creating functioning trajectories that span the life

course, explained Prodinger, and use of data collection tools at micro (patient and care provider interaction), meso (service provision and payment), and macro levels (planning, implementing, and evaluating policies and programs).

Eleanor Simonsick, National Institute on Aging, United States, discussed moving beyond the "tyranny of low expectations"—that is, when goals are too focused on the lowest level of capacity or functioning—toward more age-appropriate measures and metrics of success. NiCole Keith, Indiana University, United States, added that low expectations have hindered progress in community settings and have been used to justify ageism, which limits access to rehabilitation services. Some efforts to measure disease prevalence may unintentionally lead to bias, which Beard said overlooks the environmental barriers that limit older adults' participation and their important social contributions outside the formal workforce. It is key to keep in mind people's values and what matters to them, said Ruth Katz, Association of Jewish Aging Services, United States. Because older adults prioritize mobility, independence, and mental health, Katz said, long-term rehabilitation services and care planning are crucial to supporting overall functioning.

MAKING A COMPELLING INVESTMENT CASE FOR OPTIMIZING FUNCTIONING

Workshop participants highlighted the importance of using return-on-investment and cost-effectiveness studies to build the economic case for investing in functioning and rehabilitation. Dorothy Boggs, London School of Hygiene & Tropical Medicine, United Kingdom, noted that though research is often more widely available in high-income countries, "there is a lack of reliable data on population functioning and the need for rehabilitation and assistive products globally." Paola Sillitti, Organisation for Economic Co-operation and Development (OECD), France, said that rehabilitation enables older adults to contribute to the "economy of well-being," and preventing falls and accidents reduces the added costs of more acute care. Furthermore, investments in functioning and rehabilitation are also investments in what matters to people, which Sillitti explained is the main objective of the OECD's Patient-Reported Indicator Surveys initiative, which seeks to measure the outcomes and health care experiences people prioritize. Gimigliano also urged a reframing of rehabilitation as an investment to improve functioning rather than another health expense.

Workshop participants discussed the need to develop better tools for collecting high-quality data on functioning, including moving beyond indirect measures such as disability-adjusted life-years (DALYs). Jan Reinhardt, Sichuan University, China, observed that although DALYs can help quantify burden of disease, the measure is disconnected from how researchers and clinicians define disability. Carl Willers, Karolinska Institutet, Sweden, also argued for moving beyond indicators of mortality and morbidity because they may not correlate with well-being. Walter Frontera, University of Puerto Rico, United States, said developing improved measurement tools will support the case for investing in functioning. Willers described the necessary characteristics for data to help build an investment case for optimizing functioning: these data should be structured and standardized, using the ICF framework to compare conditions and contexts; granular in detailing outcomes and costs; contextualized to the individual; routinely collected for registration and reporting; accessible for continuous monitoring and research; complete, with direct and indirect costs; and transparent in methodology.

IMPROVING REHABILITATION IN HEALTH SERVICES DELIVERY AND CARE ACROSS THE LIFE COURSE

Health services focused on improving functioning and rehabilitation can also be integrated into other components of the health system and community-based health care services, emphasized Frontera, noting that people live in communities, not in rehabilitation units or acute care facilities. Because health systems tend to focus on symptom relief and treatment, reorienting rehabilitation means integrating these interventions into domains of an individual's life beyond physical health and fostering positive changes around autonomy, social inclusion, and living and working conditions, said Elias Mpofu, University of North Texas, United States. Patricia Morsch, Pan American Health Organization, United

States, described healthy aging programs that develop a person-centered plan, such as the WHO Integrated Care for Older People framework and the Community Aging in Place—Advancing Better Living for Elders program, or that emphasize community engagement and at-home physical exercise, such as the Vivifrail program.

Workshop participants noted that new technologies and innovations can support rehabilitation services in the community and in health care delivery by enabling early identification of disease and preventing or delaying onset of disease and other conditions that affect functioning. Alan Jette, Boston University, United States, described how new instruments and approaches can monitor functioning, like the Item Response Theory, which enables quantitative measuring of function and, when integrated with computerized adaptive testing, can be administered on larger scales. Beard said recent innovations in computational mechanisms and artificial intelligence have influenced the global approach to aging and are enabling the "analysis of the complex, biological changes that occur with age." Workshop participants described how new innovations and data analysis can also improve health systems and affect health care delivery, such as in Reinhardt's ongoing development of a performance-oriented payment system for rehabilitation episodes using ICF categories and a machine-learning approach to formulating a cost-predicting model.

Several workshop speakers discussed how health services should encompass the whole lifespan. Henri Bounameaux, Swiss Academy of Medical Sciences, Switzerland, said that health systems should aim to do more than just improve high-quality care for individuals but should also include population health and accountable use of financial, human, and natural resources. Matilde Leornardi, Istituto Neurologico "Carlo Besta," Italy, reiterated this point, saying that supporting functioning will require coordination between services across the lifespan, though most health system strategies for noncommunicable diseases do not currently include rehabilitation or functioning.

FUNCTIONING AS THE FOUNDATION FOR HEALTHY LONGEVITY RESEARCH

Workshop participants discussed strategies to support healthy longevity research, including developing hybrid assessment tools that combine self-reporting and clinical assessments. Simonsick said that because people can be unaware of their own limitations and may underreport impairments, performance tests can provide more accurate assessments. Boggs described hybrid tools that can shorten assessment times, such as the Functional Needs Assessment Tool, a population survey method that identifies needs for services and assistive products.

Somnath Chatterji, formerly of WHO, suggested identifying a clear research agenda for the next 5 years that incorporates implementation research. Jonathan Bean, Harvard Medical School, United States, added that implementation research can shed light on how interventions should be packaged, and which ones are truly effective, and noted the need to clarify and harmonize several concepts in aging and rehabilitation, such as how the ICF framework defines activities and participation.

ADVOCATING FOR POLICIES THAT SUPPORT HEALTHY LONGEVITY, REHABILITATION, AND FUNCTIONING

Supporting healthy longevity through advocacy for policy change will require engagement from partners in multiple sectors, said Abderrazak Hajjioui, Abdelmalek Essaâdi University, Morocco. Victor Dzau, National Academy of Medicine, added that "collaboration across international boundaries is so important." One strategy is to develop curriculum to train researchers in best practices for both conducting and disseminating research in human functioning sciences, which Julia Engkasan, Universiti Malaya, Malaysia, said will require researchers to collaborate with existing organizations and move beyond publication to disseminate findings to wider audiences. Hajjioui stressed that advocating for policies that support functioning starts with education and training not just for researchers but also for policymakers, private institutions, consumer organizations, and academic institutions. Another

strategy is implementing interprofessional approaches and models that optimize functioning, focus on the individual, and develop a more robust plan for evaluation and care. Such approaches should emphasize community engagement across a variety of settings, said Morsch, who provided examples of programs that use interprofessional models to improve functioning in an individual's living space. Jette emphasized the importance of collaborating with health systems, clinician and patient groups, and content and health system experts.

WORKSHOP WRAP-UP

Bickenbach noted there are two barriers to implementing and scaling up interventions: one is too much focus on proxy measures and a bias toward simplistic measures of complex issues, and the other is inadequate cross-sector collaboration and strategies to encourage partnerships between interested parties. He explained that proof of concept demonstration projects will be a practical and necessary way forward for researchers.

Beard said a specific, targeted discipline of human functioning sciences would help shift the current medical focus away from assessing a person by their disease, condition, or disability and would be a natural starting point for fostering rehabilitation as a way to optimize functioning and support healthy aging. He added that the ICF model is a strong foundation for assessing functioning, and better tools, such as those developed with newer technology, may help operationalize different components of the framework.

Cieza spoke to resolving the tensions between functioning as a public health strategy and rehabilitation as a clinical treatment strategy. She emphasized that the two strategies do not have to compete because rehabilitation can inform population and public health, and ultimately benefits everyone. Gerold Stucki, University of Lucerne, concluded that it is time to seize the moment to establish functioning as a core concept relevant to population health, healthy aging, and rehabilitation.

FOR MORE INFORMATION

This Workshop Highlights was prepared by Ruth Cooper and Adrienne Formentos as a factual summary of what occurred at the workshop. The statements made are those of the authors or individual workshop participants and do not necessarily represent the views of all workshop participants, the planning committee, or the National Academies of Sciences, Engineering, and Medicine.

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For additional information regarding the workshop, visit https://www.nationalacademies.org/our-work/aging-functioning-and-rehabilitation-a-workshop.

The publication from this workshop is available from the National Academies Press at (800) 624-6242 | http://www.nap.edu | http://www.nationalacademies.org

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