



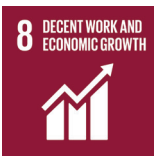
World Health  
Organization  
REGIONAL OFFICE FOR Europe



## FACTSHEET

Sustainable Development  
Goals: health targets

# REHABILITATION



*As populations age and chronic health problems become increasingly prevalent (1), more and more people are living with multimorbidity and disability (2). For them, rehabilitation is essential if they are to remain as independent as possible, participate in education and work, and fulfil meaningful roles in life. Along with prevention, promotion, treatment and palliation, rehabilitation addresses the health needs of a population and contributes to universal health coverage.*

- ▀ Rehabilitation refers to interventions designed to optimize functioning and reduce disability in individuals with health conditions in their interactions with their environment. It addresses the needs of a broad range of people across the lifespan. Rehabilitation is a fundamental component of health care, often needed to achieve and maintain the best outcomes for other health interventions such as surgery, trauma care and management of noncommunicable diseases (2,3).
- ▀ Rehabilitation is needed by anyone with a health condition, impairment or injury, acute or chronic, that limits functioning. People with severe, long-term physical, mental, intellectual or sensory impairments may benefit substantially from rehabilitation and participate more intensively and for longer duration than other rehabilitation users. People may access rehabilitation after an acute illness or injury (e.g. a burn or musculoskeletal injury); if they have a chronic condition (e.g. diabetes, cardiac failure or lower back pain) or in order to facilitate recovery following surgery (2).
- ▀ Rehabilitation is not a luxury health service reserved for athletes or restricted to a small group of people with very significant long-term impairments. It is a health strategy for everyone, since everyone will experience a health problem at some point over the lifespan, and everyone ages and inevitably declines in health. Rehabilitation is not usually a matter of curing but rather enhancing capacity; in itself, this may also promote health and prevent decline (4).



- ▀ Rehabilitation services make a difference to people suffering from a wide variety of health problems, ranging from cancer, stroke, cardiovascular diseases and chronic respiratory conditions (5–7), to cerebrovascular, neurological and mental health conditions (8–10), as well as with many other noncommunicable conditions or injuries (10,11).
- ▀ Rehabilitation is also relevant across the lifespan: children with congenital and developmental disorders or who have sustained injuries can benefit from rehabilitation to continue with school; adults who have developed health problems or work injuries can benefit from rehabilitation so that they can return to work; and older people can benefit from rehabilitation that ensures independence and active ageing, and improves physical or mental functioning. In general, rehabilitation helps to achieve and maintain the best outcomes of other health interventions.
- ▀ Rehabilitation is a good investment as it is cost-effective. It shortens hospital stays, decreases re-admissions and reduces the risks of secondary complications due to health problems (12). By improving a person's ability to participate in everyday life, rehabilitation cuts the costs of ongoing care and support and speeds up the person's return to education or work. Rehabilitation also reduces the need for other health and social care services, such as home-based programmes for preventing falls or occupational therapy for older people (1,13).
- ▀ Because rehabilitation services enhance all aspects of a person's life across their lifespan, the impacts of rehabilitation extend beyond the health sector and, therefore, contribute to several of the Sustainable Development Goals (SDGs). Rehabilitation is an important investment in human capital and contributes to health, economic and social development. So, while progress on rehabilitation is central to attaining SDG 3 (particularly SDG 3.4, reduce premature mortality from noncommunicable diseases), it is also relevant to SDG 1 (eradicate poverty), SDG 4 (ensure quality education) and SDG 8 (ensure decent work and economic growth).
- ▀ In the context of development, rehabilitation is a particularly powerful health strategy because it focuses both on the underlying health problem (disease, injury or even a natural process such as ageing) to optimize intrinsic health capacity and also on translating that capacity into what people can actually do in their everyday lives, given the physical and social environment in which they live.



## **SDG 3.4 and 10.2. Reduce premature mortality from noncommunicable diseases, promote mental health and well-being and promote universal social, economic and political inclusion**

- There is good evidence of the need for rehabilitation services across Europe (14). However, there are concerns regarding both current and future unmet needs for these services and the inequalities in coverage within and between countries. In order to scale up and strengthen rehabilitation services in national health systems in the WHO European Region, it is essential that the basic building blocks of health systems are strong and there is strong governance nationally and regionally, a well-trained workforce and a functioning health information system.
- People in the WHO European Region are living longer and the proportion of older people in the population is increasing. This is set to increase from 23.9% in 2015 to 34.2% in 2050 for those aged 60 years and over and from 4.7% to 10.1% over the same period for those aged 80 years and over (15). The ageing process is inevitably associated with increasing functioning problems, including chronic health problems, multimorbidity and health decline.
- The proportion of people with measurable limitations in the basic activities of daily living (e.g. moving around, taking a bath or shower and dressing) is also steadily rising and will have profound economic implications in the future (16). The increase has been found to be substantial between the ages of 50 and 70 years in Greece, Spain and Italy, but seems to occur later, after 70 years, in the Netherlands, Sweden and Switzerland (17).
- The prevalence of health conditions associated with severe limitations in functioning, many of them caused by noncommunicable diseases, increased by 9.9%, so affecting nearly 14 million people, between 2006 to 2016 in the WHO European Region (18).
- Globally, the absolute number of years lived with disability has steadily increased since the early 2000s, and it is estimated in the WHO European Region that 78% of those years lived with disability result from health conditions where rehabilitation could help (18).
- A recent survey showed that less than 20% of patients with heart failure who could benefit from cardiac rehabilitation received it in the European Union, and the United Kingdom specifically had a very low participation rate in cardiac rehabilitation (19–22). In Estonia, only about 10% of all people with impairments received rehabilitation services in 2015 (23).
- In three French-speaking countries (Belgium, France and Switzerland) a study in 2009 of children with musculoskeletal, neurological, swallowing and speech/language-related conditions found that the percentage of rehabilitation services successfully provided for them ranged between 7% and 63% (24).
- The Multiple Sclerosis Barometer Survey 2015 of the European Multiple Sclerosis Platform has also shown that over half of the population with multiple sclerosis lacked access to rehabilitation services in seven Member States of the WHO European Region. The availability of multiple sclerosis rehabilitation clinics varies significantly, with western European countries indicating a number of clinics almost three times higher than that of eastern European countries. Moreover, in 11 countries, patients had to travel more than 100 km to reach the nearest available dedicated rehabilitation clinic (25).



TARGET 3.C



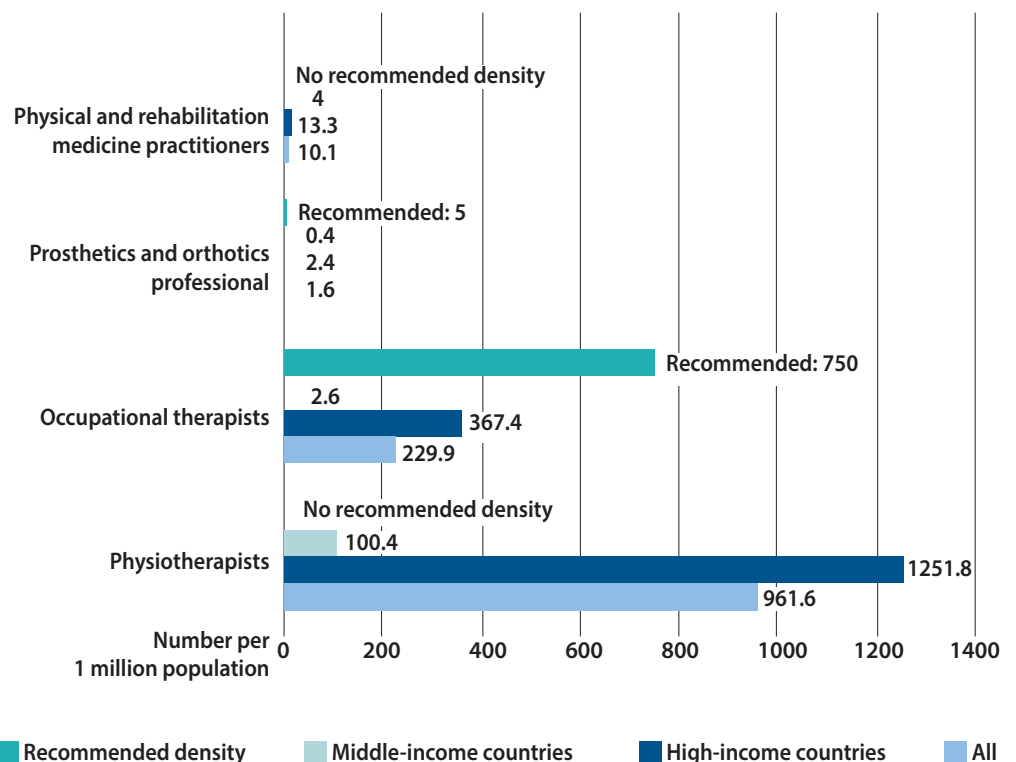
### SDG 3.c. Substantially increase health financing and the recruitment, development, training and retention of the health workforce

- /// The evidence suggests that one of the central reasons for the unmet need for rehabilitation in the WHO European Region is the lack of a qualified rehabilitation workforce.
- /// Based on a proxy indicator for the level of provision (the number of health professionals who deliver rehabilitation services per 1 million population in other high- and middle-income regions of the world), the WHO European Region is below the average for several rehabilitation professionals, such as physical and rehabilitation medicine clinicians, physiotherapists, occupational therapists, prosthetists and orthotists (26).
- /// While there is a shortage of rehabilitation specialists across the WHO European Region, this shortage is particularly acute in the 21 middle-income countries, where in 2016 there were 12 times fewer physiotherapists, 141 times fewer occupational therapists, six times fewer prosthetics and orthotics professionals, and three times fewer physical and rehabilitation medicine practitioners than in the 32 high-income countries of the Region (Fig. 1) (26).

Fig. 1. Rehabilitation specialists in the WHO European Region



Source: World Health Organization, 2017 (26).



**TARGET 3.8****SDG 3.8. Achieve universal health coverage**

- Research suggests that, in general, the factors contributing to unmet need for rehabilitation services in a number of Member States of the WHO European Region are poor accessibility, transport barriers, high out-of-pocket expenses, lack of provider coordination and lack of awareness of the need for rehabilitation (4,27–31). These factors undermine the goal of universal health coverage.
- There is also evidence of differential access to rehabilitation services and programmes, both within and between different EU Member States, which widens health inequalities (32–37). Notably, a survey of 70 neurotrauma centres across the EU showed that in 32 centres people with brain injury aged 65 years and older were less likely to be referred to a rehabilitation clinic, thereby being deprived of the fundamental right to access and benefit from rehabilitation measures on an equal basis with other patients (38).
- The same study also showed that only 19% of the participating centres implemented clinical practice rehabilitation guidelines for the management of traumatic brain injury (38). Substandard quality of rehabilitation care is not only ineffective but also increases costs for patients, the health system and the community at large; it can also be a disincentive for using rehabilitation services. Continuous clinical quality management and the availability of quality standards are essential to maintain quality of care (39,40).
- Whether through public, private or mixed insurance schemes, rehabilitation services should have stable financial support to ensure that any individual in the Region who could benefit from rehabilitation services can access them (3,4,41,42).
- The 2030 Agenda for sustainable development acknowledged that rehabilitation is an integral component of the health-care continuum of services (43). Furthermore, the United Nations' Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases emphasized the importance of rehabilitation across the life-course, given the often chronic nature of these diseases (44). WHO has determined that rehabilitation services need to be fully incorporated into the package of essential services for universal health coverage (3, 45,46).

**TARGET 8.5****SDG 8.5. Achieve full and productive employment and decent work for all, including people with disabilities, and equal pay for work of equal value**

By aiming to optimize functioning, rehabilitation has a central role to play in helping people who experience functioning problems because of injuries or diseases to continue participating in employment.

- Reviews of return-to-work rehabilitation interventions for a variety of health conditions show that they are effective, whether measured in terms of the number of sick-leave days or employment status (47–49).
- One example is a successful rehabilitation programme in the Netherlands for patients with chronic low-back pain. It consisted of a workplace intervention based on participatory ergonomics, and a graded activity programme based on cognitive behavioural principles. It was delivered in physiotherapy practices, occupational health and therapy services, and hospitals. It reduced the time it took patients to return to work by more than half, and led to higher functioning status a year later (50).

- / A study in Finland evaluated the outcome of a comprehensive post-acute six-week neurorehabilitation programme for patients with traumatic brain injury. It found that 89% of patients who participated in the programme were productive (defined as working, studying or participating in volunteer activities) compared with 55% of controls (51).
- / A 2017 study estimated the return on investment for medical and vocational rehabilitation to help workers to return to work after a work-related health absence. Using data from five European countries, the study found that every €1 invested produced a return of €3.7 for employers and €2.9 for social security systems. The estimated productivity gains outweighed investments by a factor of 2.8. The study concluded that investing in effective rehabilitation had significant cost-effectiveness and is, therefore, a good return on investment (52).



**SDG 4.2. Ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education**

Rehabilitation for children optimizes participation in life activities and well-being. High-quality, accessible and affordable rehabilitation services can help children in several aspects of life, including in their education, contributing to improvements in both health and basic social outcomes.

- / In Europe, rehabilitation services for children vary widely. While countries such as Germany have established dedicated paediatric rehabilitation services (53), other countries still consider this discipline within the mandate of general rehabilitation services. In Austria, for example, a number of hospital beds have been devoted to children’s rehabilitation after a long health planning process, while Italy has established a specialized network of rehabilitation centres for children and adolescents (53). Sweden has developed child and adolescent habilitation teams to which children are usually referred by a paediatrician or child psychologist. These teams are staffed by rehabilitation professionals and other specialists (54).
- / Timely access to early identification and intervention services designed to minimize disability is paramount for children diagnosed with a variety of health conditions, including muscular and neurodegenerative disorders, cardiometabolic disorders and respiratory conditions (e.g. asthma and cystic fibrosis) as well as other traumatic conditions, particularly spinal cord and brain injuries (55). Various studies from across Europe show that participation in rehabilitation programmes is associated with both health and non-health benefits, not only for children but also for their families and the society at large (55).
- / A cohort study of 7163 children and adolescents with diabetes participating in inpatient rehabilitation in Germany showed marked improvements in clinical outcomes; reduced complications, particularly the incidence of severe hypoglycaemia; and improvements in children’s independent living abilities (56).
- / Provision of assistive technology as part of the rehabilitation process is vital for children to maintain and improve their functional abilities and participate in social life (57). Evidence from the Region and elsewhere shows that the provision of assistive products and modifications of children’s immediate environment can result in significant improvements in physical mobility and self-care skills and reduction in caregiver support, as well as enhanced social participation (58,59). Additionally, qualitative studies have shown that children’s perception of the use of assistive products is, depending on the context, generally positive (60).

- ▀ Data on the cost–benefit of rehabilitation services for children are relatively limited in the WHO European Region. A study conducted in the United States of America, however, showed that provision of inpatient rehabilitation for children with severe asthma was significantly associated with a reduction in estimated total medical costs over a four-year follow-up period (61).
- ▀ Despite progress in rehabilitation research, significant evidence gaps still remain with regard to the clinical effectiveness, efficacy and safety of rehabilitation programmes for children and adolescents (53). It is perhaps for this reason that comprehensive rehabilitation services for children in many countries of the WHO European Region, including low- and middle-income countries, appear to be weak or in their infancy.
- ▀ Commonly cited barriers to accessing rehabilitation for children include lack of availability, lack of funding and lack of information (62). There was also an issue of limited knowledge among professionals of children’s needs (62), and a lack of coordination between service providers (63,64).
- ▀ Removing such barriers will require financial investments and a coordinated policy response to integrate rehabilitation services in health and social systems within the overall framework set by the WHO Regional Office for Europe’s strategies for investing in children (65) and integrated health service delivery (66).



The WHO Global Disability Action Plan 2014–2021 (67), endorsed by WHO Member States in 2014 (68), expressed in Objective 2, a commitment “to strengthen and extend rehabilitation, habilitation, assistive technology, assistance and support services, and community-based rehabilitation”. The Action Plan sets out key actions for this objective:

- /// provide leadership and governance for developing and strengthening policies, strategies and plans on habilitation, rehabilitation, assistive technology, support and assistance services, community-based rehabilitation and related strategies;
- /// provide adequate financial resources to ensure the provision of appropriate habilitation and rehabilitation services and assistive technologies;
- /// develop and maintain a sustainable workforce for rehabilitation and habilitation as part of a broader health strategy; and
- /// expand and strengthen rehabilitation and habilitation services ensuring integration, across

the continuum of care, into primary (including community), secondary and tertiary levels of the health-care system, and equitable access, including timely early intervention services for children with disabilities.

In February 2017, WHO hosted Rehabilitation 2030: A Call for Action; this highlighted the urgent need to address unmet needs for rehabilitation around the world, and the necessity of rehabilitation for achieving SDG 3: to ensure healthy lives and promote well-being for all at all ages. It identified 10 areas of action at country level that would ensure that no one was left behind (Box 1).

The Global Disability Action Plan stresses that implementation of actions for rehabilitation involves all sectors and diverse actors from national and local governments plus a wide range of partners, including international organizations of the United Nations system, nongovernmental organizations, the private sector, communities, and people with disability and their families (Box 2).

## Box 1. Leaving no one behind

**Rehabilitation 2030: A Call for Action:** in 2017, WHO hosted the first meeting on rehabilitation (45) and, based on the background paper that was prepared for the meeting (26), the meeting confirmed a commitment to rehabilitation and identified the following 10 areas for action at country level.

1. Create strong leadership and political support for rehabilitation at subnational, national and global levels.
2. Strengthen rehabilitation planning and implementation at national and subnational levels.
3. Improve the integration of rehabilitation into the health sector to effectively and efficiently meet population needs.
4. Incorporate rehabilitation into universal health coverage.
5. Build comprehensive rehabilitation service delivery models to progressively achieve equitable access to quality services, including assistive products, for all the population, leaving no one behind.
6. Develop a strong multidisciplinary rehabilitation workforce that is suitable for country context and promote rehabilitation concepts across all health workforce education.
7. Expand financing for rehabilitation through appropriate mechanisms.
8. Collect information relevant to rehabilitation to enhance health information systems, including system level rehabilitation data and information on functioning utilizing WHO’s International Classification of Functioning, Disability and Health (69).
9. Build research capacity and expand the availability of robust evidence for rehabilitation.
10. Establish and strengthen networks and partnerships in rehabilitation, particularly among countries of differing income levels.

## Box 2. Intersectoral action

**A polio outbreak in 2010 in Tajikistan left hundreds of people with impairments:** WHO helped the Government of Tajikistan to develop a multisectoral national programme for the rehabilitation of people with disabilities. This was the first of its kind and was implemented in 2013. The programme was developed through a consultative multisectoral process led by the Ministry of Health and Social Protection and involving several other ministries, disabled people's organizations, national and international nongovernmental organizations and donors.

Since that initial stimulus to provide support for rehabilitation, noncommunicable diseases have increased by 18% and are now the leading cause of disability and death in Tajikistan. Disabilities associated with noncommunicable diseases, such as amputation, blindness or paralysis, have also increased, creating substantial demands on the country's social welfare and health systems.

One of the four strategic pillars of the national programme is medical and social rehabilitation, which aims to reduce barriers and improve access to habilitation and rehabilitation services nationwide. Recognizing that rehabilitation is an intersectoral activity, the national programme strengthens multidisciplinary practices carried out by health professionals in conjunction with specialists in education, employment, social protection and other fields. It also promotes the involvement of non-specialist workers in rehabilitation, such as community-based workers, family members, friends, other community members and groups. It integrates rehabilitation services into a wide range of settings, including acute in- and outpatient facilities, residential care, communities and homes (70).

The national programme also develops initial and continuing training for professionals and staff working in habilitation and rehabilitation services, thereby promoting the availability, knowledge and use of assistive devices and technologies (70).

## Monitoring progress



Currently, there are no indicators available to directly address rehabilitation or assistive products and the outcomes of their utilization in the joint monitoring frameworks for the SDGs, Health 2020 or noncommunicable diseases. In the WHO European Region, the use of rehabilitation service indicators for the assessment of health systems performance is also limited. A Health Evidence Network report in 2018 noted, "the most frequently identified indicators were classic public health indicators on health status and outcomes, but these were largely limited to measurements of mortality and morbidity and have yet to expand to the concepts of disability or discomfort" (71). Indicators on human functioning – the core outcome of rehabilitation – are essential for health-care planning and decision-making (72), yet remain underutilized. The result is that availability of data on rehabilitation service delivery is limited (73).

Monitoring rehabilitation services is essential to improve health and functioning and to achieve universal health coverage. Rehabilitation indicators, when embedded within a health system monitoring framework, can help to produce evidence to support sound policy and programme decisions. To address this gap, WHO has implemented initiatives in recent years to build the capacity of stakeholders to monitor rehabilitation services and harmonize the collection of rehabilitation

data. As part of developing national action plans for rehabilitation, WHO has made available a menu of indicators and tools for data collection that countries can use to assess priority issues in rehabilitation governance, workforce and service delivery (74).

The WHO rehabilitation indicators menu recommends two categories of indicators: core and expanded indicators. All countries are encouraged to adopt the core indicators, while countries may select any of the expanded indicators according to the objectives of their strategic plan. The core indicators are as follows (74).

**Rehabilitation governance** (rehabilitation integrated into health plans) is the total number of health plans in the country in which rehabilitation is explicitly included at an activity level.

**Rehabilitation financing** (rehabilitation expenditure) is the total annual national rehabilitation expenditure as a percentage of total annual national health expenditure.

**Rehabilitation workforce** is the total number of rehabilitation personnel per 10 000 total population.

**Rehabilitation services** are assessed as the number of tertiary hospitals providing rehabilitation and the bed density):

/// total number of tertiary hospitals in the country with three or more rehabilitation professions present as a

percentage of the total number of tertiary hospitals in the country; and

- total number of rehabilitation beds per 10 000 total population.

Rehabilitation coverage (multidisciplinary rehabilitation for people with complex needs) is the number of people with complex needs because of injury who accessed multidisciplinary rehabilitation per year in the country.

In addition, indicators for the evaluation of community-based rehabilitation services have been developed, although these indicators focus largely on low- and middle-income countries (75).

Given the current policy emphasis on health systems accountability in the WHO European Region, monitoring approaches and tools that focus on vulnerability and respect for human rights, such as the Rehabilitation System Diagnosis and Dialogue framework (RESYST) (76,77), can provide additional opportunities to assess equity concerns in rehabilitation systems and policy development in line with global and regional recommendations (4,67,78). The selection of the most appropriate indicators should in any case be guided by the technical robustness of individual metrics and the underlying goal or broader agenda that drives the monitoring activity.

## WHO support to its Member States



Rehabilitation 2030 highlighted the urgent need to address unmet needs for rehabilitation around the world, and the necessity of rehabilitation for achieving the SDGs (Box 1). Three main areas were identified where WHO could act to support Member States (45):

- leadership and governance: holding regional meetings to support the ongoing implementation of Rehabilitation 2030;
- planning and implementation: development of a WHO country toolkit and emergency-related documents such as guidelines for rehabilitation provision in emergency contexts and minimum technical standards for emergency medical teams in burns, spinal cord injury and orthoplastics; and
- research and evidence: continuing work on the WHO and World Bank Model Disability Survey (79), conducting a global status report on rehabilitation and producing publications on health policy and system research for low- and middle-income countries.

WHO's commitment to supporting rehabilitation in Member States was reinforced at the Second Rehabilitation 2030 meeting held in July 2019 (80). The aim of this meeting was to reaffirm the objectives and to:

- review actions undertaken to date by WHO, its partners and Member States for the Rehabilitation 2030 initiative;
- agree on concrete actions for rehabilitation in countries to advance the implementation of WHO's Thirteenth General Programme of Work 2019–2023; and

- identify enablers and barriers for moving the global rehabilitation agenda forward.

WHO has also committed itself to act in the area of assistive products by establishing the Global Cooperation on Assistive Technology (GATE) initiative. This is a partnership that aims to improve access to high-quality affordable assistive products globally (81). Assistive products (e.g. wheelchairs, prosthesis, orthoses, hearing aids and walkers) are intended to maintain or improve an individual's functioning and independence and thereby promote the person's well-being.

The provision of assistive products is an integral part of rehabilitation. However, the agenda for assistive products goes beyond rehabilitation. Assistive products are also used to prevent impairment and secondary health conditions (82). A key component of the GATE initiative is the Priority Assistive Products List, which includes hearing aids, wheelchairs, communication aids, spectacles, artificial limbs, pill organizers, memory aids and other essential items for many people with disabilities and older people to help them to live healthy, productive and dignified lives (82). The 2018 World Health Assembly adopted a resolution on improving access to assistive technology in the light of estimates of over 1000 million people who would benefit from one or more assistive products worldwide and the predicted increase in the numbers who will need such support in the future (83).

WHO regularly collaborates and coordinates with partners, including:

- Association for the Advancement of Assistive Technology in Europe
- CBM
- Department for International Development, United Kingdom
- European Stroke Organization
- Humanity and Inclusion (Handicap International)
- International Association of Logopedics and Phoniatrics

- International Committee of the Red Cross
- International Society of Physical and Rehabilitation Medicine
- International Society for Prosthetics and Orthotics
- United Nations Children's Fund
- United States Agency for International Development
- World Confederation for Physical Therapy
- World Federation of Occupational Therapists

## Resources

### Global Cooperation on Assistive Technology

[http://www.who.int/phi/implementation/assistive\\_technology/phi\\_gate/en/](http://www.who.int/phi/implementation/assistive_technology/phi_gate/en/)

### Global Disability Action Plan 2014–2021

[https://apps.who.int/iris/bitstream/handle/10665/199544/9789241509619\\_eng.pdf;jsessionid=4FAF83641CF3514A03F567F39685DD8A?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/199544/9789241509619_eng.pdf;jsessionid=4FAF83641CF3514A03F567F39685DD8A?sequence=1)

### Guidelines on Provision of Manual Wheelchairs in Less-resourced Settings

<https://www.who.int/disabilities/publications/technology/wheelchairguidelines/en/>

### International Classification of Functioning, Disability and Health (ICF)

<http://www.who.int/classifications/icf/en/>

### Minimum Technical Standards and Recommendations for Rehabilitation: Emergency Medical Teams

<https://apps.who.int/iris/bitstream/handle/10665/252809/9789241511728-eng.pdf;jsessionid=19AE5A17A1A8EDC6C16E73431F993499?sequence=1>

### Priority Assistive Products List (APL)

[http://www.who.int/phi/implementation/assistive\\_technology/global\\_survey-apl/en/](http://www.who.int/phi/implementation/assistive_technology/global_survey-apl/en/)

### Rehabilitation 2030

<http://www.who.int/rehabilitation/rehab-2030/en/>

### Rehabilitation in Health Systems

[https://www.who.int/rehabilitation/rehabilitation\\_health\\_systems/en/](https://www.who.int/rehabilitation/rehabilitation_health_systems/en/)

### Rehabilitation in Health Systems: Guide for Action

<https://www.who.int/rehabilitation/rehabilitation-guide-for-action/en/>

### Standards for Prosthetics and Orthotics

<https://www.who.int/rehabilitation/prosthetics-and-orthotics-standards/en/>



## Key definitions

### Assistive products

Any external product, including devices, equipment, instruments and software, specially produced or generally available, the primary purpose of which is to maintain or improve an individual's functioning and independence and thereby promote well-being. Assistive products are also used to prevent impairment and secondary health conditions (82).

### Functioning

The sum total of all body functions, body structures and domains of activities and participation. It denotes the positive aspects of the interaction between an individual with a health condition and that individual's contextual factors, both environmental and personal (72).

### Health conditions

All acute and chronic diseases, disorders, injuries and trauma. Health conditions may also include other circumstances, such as pregnancy, ageing, stress, congenital anomaly or genetic predisposition (50).

### Occupational therapy

Promoting health and well-being through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by enabling people to do things that will enhance their ability to participate, or by modifying the environment to better support participation (4).

### Physical and rehabilitation medicine clinicians

Provide services to diagnose health conditions, assess functioning and prescribe medical and technological interventions that treat health conditions and optimize functional capacity. Also known as physiatrists (4).

### Physiotherapy

Services to develop, maintain and maximize movement potential and functional ability throughout the lifespan (3).

### Prosthetist-orthotists

Provide prosthetic and orthotic care and other mobility devices aimed at improving functioning in people with physical impairments. Orthotic care involves external appliances designed to support, straighten or improve the functioning of a body part; prosthetic interventions involve an artificial external replacement for a body part (4).



## References

1. World report on ageing and health. Geneva: World Health Organization; 2015 (<https://www.who.int/ageing/events/world-report-2015-launch/en/>, accessed 25 November 2019).
2. Rehabilitation: key for health in the 21st century. Geneva: World Health Organization; 2017 (<http://www.who.int/disabilities/care/KeyForHealth21stCentury.pdf?ua=1>, accessed 25 November 2019).
3. Rehabilitation in health systems. Geneva: World Health Organization; 2017 (<https://apps.who.int/iris/bitstream/handle/10665/254506/9789241549974-eng.pdf?sequence=8/>, accessed 25 November 2019).
4. World Health Organization, World Bank. World report on disability. Geneva: World Health Organization; 2011 ([https://www.who.int/disabilities/world\\_report/2011/report.pdf](https://www.who.int/disabilities/world_report/2011/report.pdf), accessed 25 November 2019).
5. Dalal HM, Doherty P, Taylor RS. Cardiac rehabilitation. *BMJ*. 2015;351:h5000.
6. Scott DA, Mills M, Black A, Cantwell M, Campbell A, Cardwell CR et al. Multidimensional rehabilitation programmes for adult cancer survivors. *Cochrane Database Syst Rev*. 2013;(3):CD007730.
7. McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2015;(2):CD003793.
8. Khan F, Ng L, Turner-Stokes L. Effectiveness of vocational rehabilitation intervention on the return to work and employment of persons with multiple sclerosis. *Cochrane Database Syst Rev*. 2009;(1):CD007256.
9. Pollock A, Baer G, Campbell P, Choo PL, Forster A, Morris J et al. Physical rehabilitation approaches for the recovery of function and mobility after stroke: major update. *Database Syst Rev*. 2014;(4):CD001920.
10. Crowther R, Marshall M, Bond G, Huxley P. Vocational rehabilitation for people with severe mental illness. *Cochrane Database Syst Rev*. 2001;(2):CD003080.
11. Williams R, Westmorland M, Lin C, Schmuck G, Creen M. Effectiveness of workplace rehabilitation interventions in the treatment of work-related low back pain: a systematic review. *Disabil Rehabil*. 2007;29(8):607–624.
12. European Physical and Rehabilitation Medicine Bodies Alliance. White Book on physical and rehabilitation medicine in Europe. Chapter 2. Why rehabilitation is needed by individual and society. *Eur J Phys Rehabil Med*. 2018;54(2):166–176.
13. Howard-Wilsher S, Irvine L, Fan H, Shakespeare T, Suhrcke M, Horton S et al. Systematic overview of economic evaluations of health-related rehabilitation. *Disabil Health J*. 2016;9(1):11–25.
14. Kamenov K, Mills JA, Chatterji S, Cieza A. Needs and unmet needs for rehabilitation services: a scoping review. *Disabil Rehabil*. 2019;41(10):1227–1237.
15. World population ageing 2015. New York: United Nations Department of Economic and Social Affairs Population Division; 2015 (<https://www.un.org/en/development/desa/population/theme/ageing/WPA2015.asp>, accessed 25 November 2019).
16. Bloom DE, Chatterji S, Kowal P, Lloyd-Sherlock P, McKee M, Rechel B et al. Macroeconomic implications of population ageing and selected policy responses. *Lancet*. 2015;385(9968):649–657.
17. Chatterji S, Byles J, Cutler D, Seeman T, Verdes E. Health, functioning, and disability in older adults: present status and future implications. *Lancet*. 2015;385(9967):563–575.
18. The global burden of disease: generating evidence, guiding policy. European Union and Free Trade Association regional edition. Seattle (WA): University of Washington Institute for Health Metrics and Evaluation; 2013 ([http://www.healthdata.org/sites/default/files/files/policy\\_report/2013/The%20Global%20Burden%20of%20Disease\\_Generating%20Evidence%2C%20Guiding%20Poliy%20-%20European%20Union%20and%20Free%20Trade%20Association.pdf](http://www.healthdata.org/sites/default/files/files/policy_report/2013/The%20Global%20Burden%20of%20Disease_Generating%20Evidence%2C%20Guiding%20Poliy%20-%20European%20Union%20and%20Free%20Trade%20Association.pdf), accessed 25 November 2019).
19. Bjarnason-Wehrens B, McGee H, Zwisler A-D, Piepoli MF, Benzer W, Schmid J-P et al. Cardiac rehabilitation in Europe: results from the European Cardiac Rehabilitation Inventory survey. *Eur J Cardiovasc Prev Rehabil*. 2010;17(4):410–418.
20. Dalal HM, Wingham J, Palmer J, Taylor R, Petre C, Lewin R. Why do so few patients with heart failure participate in cardiac rehabilitation? A cross-sectional survey from England, Wales and Northern Ireland. *BMJ Open*. 2012;2(2):e000787.
21. Batty AK, Carr-White G, Martin FC, Glaser K, Lowton K. Limited availability of cardiac rehabilitation for heart failure patients in the United Kingdom: findings from a national survey. *Eur J Prev Cardiol*. 2014;21(8):928–940.
22. Grahame R. The decline of rehabilitation services and its impact on disability benefits. *J R Soc Med*. 2002;95(3):114–117.
23. Hanga K, DiNitto D, Leppik L. Initial assessment of rehabilitation needs using the WHODAS 2.0 in Estonia. *Disabil Rehabil*. 2016;38(3):260–267.
24. Cremer R, Leclerc F, Lacroix J, Ploin D. Children with chronic conditions in pediatric intensive care units located in predominantly French-speaking regions: prevalence and implications on rehabilitation care need and utilization. *Crit Care Med*. 2009;37(4):1456–1462.
25. Multiple sclerosis barometer 2015: raising the voice of people with MS. Brussels: European Multiple Sclerosis Platform; 2015 (<http://www.emsp.org/wp-content/uploads/2017/02/BAROMETER-2015-Final-10.05.2017.pdf>, accessed 25 November 2019).

26. The need to scale up rehabilitation. Geneva: World Health Organization; 2017 (Background paper for Rehabilitation 2030: A Call for Action; <http://www.who.int/disabilities/care/NeedToScaleUpRehab.pdf?ua=1>, accessed 25 November 2019).
27. Galera O, Grimal G, Bajon D, Darolles Y. Identification des freins à la prescription de la réhabilitation respiratoire pour les patients atteints de BPCO en médecine générale. *Rev Pneumol Clin.* 2017;73(3):115–119.
28. Pulignano G, Tinti MD, Del Sindaco D, Tolone S, Minardi G, Lax A et al. Barriers to cardiac rehabilitation access of older heart failure patients and strategies for better implementation. *Monaldi Arch Chest Dis.* 2016;84(1–2):732.
29. Fradgley E, Paul C, Bryant J. A systematic review of barriers to optimal outpatient specialist services for individuals with prevalent chronic diseases: what are the unique and common barriers experienced by patients in high income countries? *Int J Equity Health.* 2015;14(1):52.
30. New PW, Scivoletto G, Smith E, Townson A, Gupta A, Reeves RK et al. International survey of perceived barriers to admission and discharge from spinal cord injury rehabilitation units. *Spinal Cord.* 2013;51(12):893–897.
31. Hughes A-M, BurrIDGE JH, Demain SH, Ellis-Hill C, Meagher C, Tedesco-Triccas L et al. Translation of evidence-based assistive technologies into stroke rehabilitation: users' perceptions of the barriers and opportunities. *BMC Health Serv Res.* 2014;14(1):1–12.
32. Wiklund M, Fjellman-Wiklund A, Stålnacke B-M, Hammarström A, Lehti A. Access to rehabilitation: patient perceptions of inequalities in access to specialty pain rehabilitation from a gender and intersectional perspective. *Glob Health Action.* 2016;9:31542.
33. Viana M, Borges A, Araujo C, Rocha A, Ribeiro AI, Laszczynska O et al. Inequalities in access to cardiac rehabilitation after an acute coronary syndrome: the EPIHeart cohort. *BMJ Open.* 2018;8(1):e018934.
34. Burstrom B, Nylen L, Clayton S, Whitehead M. How equitable is vocational rehabilitation in Sweden? A review of evidence on the implementation of a national policy framework. *Disabil Rehabil.* 2011;33(6):453–466.
35. Langhammer B, Becker F, Sunnerhagen KS, Zhang T, Du X, Bushnik T et al. Specialized stroke rehabilitation services in seven countries. *Int J Stroke.* 2015;10(8):1236–1246.
36. Putman K, De Wit L, Schupp W, Baert I, Brinkmann N, Dejaeger E et al. Variations in follow-up services after inpatient stroke rehabilitation: a multicentre study. *J Rehabil Med.* 2009;41(8):646–653.
37. Putman K, De Wit L, Schupp W, Beyens H, Dejaeger E, De Weerd W et al. Inpatient stroke rehabilitation: a comparative study of admission criteria to stroke rehabilitation units in four European centres. *J Rehabil Med.* 2007;39(1):21–26.
38. Cnossen MC, Lingsma HF, Tenovuo O, Maas AIR, Menon D, Steyerberg EW et al. Rehabilitation after traumatic brain injury: a survey in 70 European neurotrauma centres participating in the CENTER-TBI study. *J Rehabil Med.* 2017;49(5):395–401.
39. Quality of care: a process for making strategic choices in health systems. Geneva: World Health Organization; 2006 ([https://apps.who.int/iris/bitstream/handle/10665/43470/9241563249\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/43470/9241563249_eng.pdf?sequence=1&isAllowed=y), accessed 25 November 2019).
40. World Health Organization, Organisation for Economic Co-operation and Development, World Bank. Delivering quality health services: a global imperative for universal health coverage 2018. Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/bitstream/handle/10665/272465/9789241513906-eng.pdf?ua=1>, accessed 25 November 2019).
41. The world health report: health systems financing – the path to universal coverage. Geneva: World Health Organization; 2010 ([http://apps.who.int/iris/bitstream/10665/44371/1/9789241564021\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44371/1/9789241564021_eng.pdf), accessed 26 November 2019).
42. Watkins DA, Jamison DT, Mills T, Atun T, Danforth K, Glassman A et al. Universal health coverage and essential packages of care. In: Jamison DT, Gelband H, Horton S, Jha P, Laxminarayan R, Mock CN et al., editors. *Disease control priorities: improving health and reducing poverty*, 3rd edition. Washington (DC): International Bank for Reconstruction and Development, World Bank; 2018:3–22.
43. Transforming our world: the 2030 Agenda for sustainable development. New York: United Nations; 2015 (United Nations General Assembly resolution 70/1; [http://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E), accessed 26 November 2019).
44. Political declaration of the High-level Meeting of the General Assembly on the prevention and control of non-communicable diseases. New York: United Nations; 2012 (United Nations General Assembly resolution A/RES/66/2; [https://www.who.int/nmh/events/un\\_ncd\\_summit2011/political\\_declaration\\_en.pdf](https://www.who.int/nmh/events/un_ncd_summit2011/political_declaration_en.pdf), accessed 25 November 2019).
45. Rehabilitation 2030: a call for action. Geneva: World Health Organization; 2017 (<https://www.who.int/disabilities/care/Rehab2030MeetingReport2.pdf?ua=1>, accessed 25 November 2019).
46. Mills JA, Marks E, Reynolds T, Cieza A. Rehabilitation: essential along the continuum of care. In: Jamison DT, Gelband H, Horton S, Jha P, Laxminarayan R, Mock CN et al., editors. *Disease control priorities: improving health and reducing poverty*, 3rd edition. Washington: World Bank; 2018:285–297.
47. Clayton S, Bamba C, Gosling R, Povall S, Misso K, Whitehead M. Assembling the evidence jigsaw: insights from a systematic review of UK studies of individual-focused return to work initiatives for disabled and long-term ill people. *BMC Public Health.* 2011;11(1):170.
48. Désiron HA, de Rijk A, Van Hoof E, Donceel P. Occupational therapy and return to work: a systematic literature review. *BMC Public Health.* 2011;11(1):615.

49. Donker-Cools BH, Daams JG, Wind H, Frings-Dresen MH. Effective return-to-work interventions after acquired brain injury: a systematic review. *Brain Inj.* 2016;30(2):113–131.
50. Lambeek LC, van Mechelen W, Knol DL, Loisel P, Anema JR. Randomised controlled trial of integrated care to reduce disability from chronic low back pain in working and private life. *BMJ.* 2010;340:c1035.
51. Sarajuuri JM, Kaipio M-L, Koskinen SK, Niemelä MR, Servo AR, Vilkki JS. Outcome of a comprehensive neurorehabilitation program for patients with traumatic brain injury. *Arch Phys Med Rehabil.* 2005;86(12):2296–2302.
52. The return on work reintegration. Geneva: International Social Security Association; 2017 (<https://www.issa.int/en/details?uuid=f8ded415-513e-4326-9ecf-00231eb2a279>, accessed 1 December 2019).
53. Kerbl R, Sperl W, Strassburg HM, Pettoello-Mantovani M, Ehrich J. Overview of habilitation and rehabilitation for children and adolescents in Europe. *J Pediatr.* 2016;172:233–235.e2.
54. Wettergren B, Blennow M, Hjern A, Söder O, Ludvigsson JF. Child health systems in Sweden. *J Pediatr.* 2016;177:S187–S202.
55. Scrutinio D, Giardini A, Chiovato L, Spanevello A, Vitacca M, Melazzini M et al. The new frontiers of rehabilitation medicine in people with chronic disabling illnesses. *Eur J Intern Med.* 2019;61:1–8.
56. Schiel R, Stachow R, Hermann T, Satzke I, Buttner T, Koch S et al. Rehabilitation in Germany 2004–2016: a multicenter analysis over a period of 13 years in children and adolescents with diabetes mellitus. *Exp Clin Endocrinol Diabetes.* 2019; doi: 10.1055/a-0594-9311 (Epub ahead of print).
57. Assistive technology for children with disabilities: creating opportunities for education, inclusion and participation. A discussion paper. Geneva: World Health Organization; 2015 (<http://apps.who.int/medicinedocs/en/m/abstract/Js22478en/>, accessed 25 November 2019).
58. Ostensjø S, Carlberg EB, Vøllestad NK. The use and impact of assistive devices and other environmental modifications on everyday activities and care in young children with cerebral palsy. *Disabil Rehabil.* 2005;27(14):849–861.
59. Henderson S, Skelton H, Rosenbaum P. Assistive devices for children with functional impairments: impact on child and caregiver function. *Dev Med Child Neurol.* 2008;50(2):89–98.
60. Huang IC, Sugden D, Beveridge S. Children's perceptions of their use of assistive devices in home and school settings. *Disabil Rehabil Assist Technol.* 2009;4(2):95–105.
61. Weinstein AG, McKee L, Stapleford J, Faust D. An economic evaluation of short-term inpatient rehabilitation for children with severe asthma. *J Allergy Clin Immunol.* 1996;98(2):264–273.
62. Jones S, Davis N, Tyson SF. A scoping review of the needs of children and other family members after a child's traumatic injury. *Clin Rehabil.* 2018;32(4):501–511.
63. Jurgensen M, Grossmann N, Thyen U. "Das wurde ich gar nicht erst beantragen!" Barrieren der Inanspruchnahme einer kinder- und jugend-rehabilitations-massnahme aus sicht der familien. *Rehabilitation.* 2017;56(2):109–118.
64. Thyen U, Sperner J, Morfeld M, Meyer C, Ravens-Sieberer U. Unmet health care needs and impact on families with children with disabilities in Germany. *Ambul Pediatr.* 2003;3(2):74–81.
65. Investing in children: the European child and adolescent health strategy 2015–2020. Copenhagen: WHO Regional Office for Europe; 2014 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0010/253729/64wd12e\\_InvestCAHstrategy\\_140440.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0010/253729/64wd12e_InvestCAHstrategy_140440.pdf?ua=1), accessed 25 November 2019).
66. Strengthening people-centred health systems in the WHO European Region: framework for action on integrated health services delivery. Geneva: World Health Organization; 2016 (EUR/RC66/15; [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/315787/66wd15e\\_FFA\\_IHSD\\_160535.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0004/315787/66wd15e_FFA_IHSD_160535.pdf?ua=1), accessed 25 November 2019).
67. WHO global disability action plan 2014–2021: better health for all people with disability. Geneva: World Health Organization; 2015 ([https://apps.who.int/iris/bitstream/handle/10665/199544/9789241509619\\_eng.pdf;jsessionid=4FAF83641CF3514A03F567F39685DD8A?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/199544/9789241509619_eng.pdf;jsessionid=4FAF83641CF3514A03F567F39685DD8A?sequence=1), accessed 25 November 2019).
68. Disability. In: Sixty-sixth World Health Assembly, Geneva, 27 May 2013. Geneva: World Health Organization; 2013 (WHA66.9, [http://apps.who.int/gb/ebwha/pdf\\_files/WHA66/A66\\_R9-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R9-en.pdf), accessed 25 November 2019).
69. International classification of functioning, disability and health (ICF). Geneva: World Health Organization; 2001 (<https://www.who.int/classifications/icf/en/>, accessed 25 November 2019).
70. Mishra S, DeMuth S, Sabharwal S, Watts HG, Lentz KL, Huber M et al. Disability and rehabilitation in Tajikistan: development of a multisectoral national programme to leave no one behind. *Public Health Panorama.* 2018; 4(2):202–209 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0006/375081/Disability\\_Tajikistan.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0006/375081/Disability_Tajikistan.pdf?ua=1), accessed 25 November 2019).
71. Fekri O, Macarayan ER, Klazinga N. Health system performance assessment in the WHO European Region: which domains and indicators have been used by Member States for its measurement? Copenhagen: WHO Regional Office for Europe; 2018 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/365386/hen-55-eng.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0004/365386/hen-55-eng.pdf?ua=1), accessed 29 November 2019).
72. Stucki G, Bickenbach J. Functioning: the third health indicator in the health system and the key indicator for rehabilitation. *Eur J Phys Rehabil Med.* 2017;53(1):134–138.

73. Availability of national health services delivery data across the WHO European Region: scanning survey results. Copenhagen: WHO Regional Office for Europe; 2018 (<http://www.euro.who.int/en/health-topics/Health-systems/health-services-delivery/publications/2018/availability-of-national-health-services-delivery-data-across-the-who-european-region-scanning-survey-results-2018>, accessed 25 November 2019).
74. Rehabilitation in health systems: guide for action. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/bitstream/handle/10665/325607/9789241515986-eng.pdf?ua=1>, accessed 30 November 2019).
75. World Health Organization, International Disability and Development Consortium. Capturing the difference we make: community-based rehabilitation indicators manual. Geneva: World Health Organization; 2015 (<https://apps.who.int/iris/handle/10665/199524>, accessed 29 November 2019).
76. Accountability as a driver of health equity. Copenhagen: WHO Regional Office for Europe; 2019 (<http://www.euro.who.int/en/publications/abstracts/accountability-as-a-driver-of-health-equity-2019>, accessed 29 November 2019).
77. Skempes D, Melvin J, von Groote P, Stucki G, Bickenbach J. Using concept mapping to develop a human rights based indicator framework to assess country efforts to strengthen rehabilitation provision and policy: the Rehabilitation System Diagnosis and Dialogue framework (RESYST). *Glob Health*. 2018;14(1):96.
78. The Ljubljana statement on health equity. Accelerating progress towards healthy and prosperous lives for all in the WHO European Region. In: the High-level Conference, Ljubljana, 11–13 June 2019. Copenhagen: WHO Regional Office for Europe; 2019 (<http://www.euro.who.int/en/publications/policy-documents/ljubljana-statement-on-health-equity-2019>, accessed 29 November 2019).
79. Model disability survey. In: Disability and rehabilitation [website]. Geneva: World Health Organization; 2019 (<http://www.who.int/disabilities/data/mds/en/>, accessed 29 November 2019).
80. Second rehabilitation 2030: a call for action meeting. Geneva: World Health Organization; 2019 (<https://www.who.int/rehabilitation/Meeting-report-Rehab2030-251119-web.pdf?ua=1>, accessed 29 November 2019).
81. Global cooperation on assistive technology. . In: Public health, innovation, intellectual property and trade [website]. Geneva: World Health Organization; 2018 ([http://www.who.int/phi/implementation/assistive\\_technology/phi\\_gate/en/](http://www.who.int/phi/implementation/assistive_technology/phi_gate/en/) accessed 25 November 2019).
82. Priority assistive products list (APL). . In: Public health, innovation, intellectual property and trade [website]. Geneva: World Health Organization; 2018 ([http://www.who.int/phi/implementation/assistive\\_technology/global\\_survey-apl/en/](http://www.who.int/phi/implementation/assistive_technology/global_survey-apl/en/), accessed 25 November 2019).
83. Improving access to assistive technology: report by the Secretariat. In: Executive Board 139th session, Geneva, 13 May 2016. Geneva: World Health Organization; 2016 ([http://www.who.int/phi/implementation/assistive\\_technology/Improving\\_access\\_to\\_assitive\\_technology.pdf?ua=1](http://www.who.int/phi/implementation/assistive_technology/Improving_access_to_assitive_technology.pdf?ua=1), accessed 25 November 2019).

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