



## INCORPORATING EVIDENCE-BASED REHABILITATION INTO CLINICAL PRACTICE GUIDELINES

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**Objective:** Rehabilitation is often neglected in clinical practice guidelines, even when there is evidence for its effectiveness. The Current Rehabilitation development project, documented in this article, aimed to develop processes and structures to incorporate evidence and good practice on rehabilitation and functional capacity into the Finnish national Current Care Guidelines.

**Design:** Descriptive assessment.

**Methods:** The 3-year Current Rehabilitation development project was launched in 2012. It began with an assessment of existing rehabilitation evidence on the Current Care Guideline database and a query to Finnish rehabilitation experts. The project group developed and compiled tools for Current Care editors and guideline panels. The editorial team continued to monitor changes in rehabilitation evidence in the guidelines.

**Results:** During the years 2012–2014, a total of 54 guidelines were published, and rehabilitation was incorporated into 31 of them. The number of rehabilitation-related evidence summaries increased from 49 to 164. During the next 3 years an additional 41 guidelines were published. Rehabilitation was incorporated to 24 of them, and the number of rehabilitation-related evidence summaries increased from 78 to 136.

**Conclusion:** The level of evidence criteria used for rehabilitative interventions were the same as for symptomatic or curative interventions. Evidence showing the effectiveness of rehabilitation increased substantially during the project.

**Key words:** rehabilitation; clinical practice guidelines; evidence-based medicine.

Accepted Sep 10, 2019; Epub ahead of print Sep 20, 2019

J Rehabil Med 2019; 51: 841–846

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Current Care Guidelines (CCGs) are evidence-based clinical practice guidelines (CPGs) for healthcare in Finland, produced by the Finnish Medical Society Duodecim since 1994 (1, 2). A detailed process description is required for developing CPGs using uniform guideline standards. The national CCGs cover medical

### LAY ABSTRACT

Current Care Guidelines are national clinical practice guidelines produced in Finland for the use of health-care professionals and lay people. This article describes the 3-year “Current Rehabilitation” development project, which aimed to develop processes and structures to include rehabilitation in Current Care Guidelines. The results of the project were monitored for a further 3 years. The project group developed tools and provided training for guideline editors and guideline panels. The guideline panels drafted new or updated guidelines and included rehabilitation, when appropriate, with the help of the new tools. A total of 54 guidelines were published during the 3-year project, and 31 included a chapter on rehabilitation. The number of evidence summaries increased by 115 (from 49 to 164). This project shows that, through targeted action, more evidence of rehabilitation interventions can be included in clinical practice guidelines.

treatment as well as diagnostics and prevention of diseases. CCGs are intended as a basis for treatment decisions, and can be used by physicians, other health-care professionals and citizens.

Although the need for rehabilitation increases when striving to improve impaired functional and work capacity, rehabilitation has traditionally not been an essential part of CPGs in Finland or globally. This is due to the common belief that the effects of rehabilitation have seldom been studied with randomized controlled trials (RCTs). However, the methodology of evidence-based medicine (EBM) provides assessment processes for many types of studies in addition to RCTs. Furthermore, the number of RCTs in the field of rehabilitation has increased during the past decades, although the methodological quality of these RCTs varies (3–5).

Because rehabilitation has been a neglected field in CPGs, targeted efforts are needed. In 2012–2014, the Current Care editorial team carried out a development project entitled “Current Rehabilitation”, supported by the Social Insurance Institution of Finland. The main objective of the project was to incorporate rehabilitation and functional capacity into CCGs. During 2015–2017 we monitored how evidence on rehabilitation and functional capacity continued to be incorporated into CCGs after the project.

The aim of this paper is to report the results and experience gained from this development work.

## METHODS

### Project objectives and stakeholders

Project planning started in 2011, also consisting of plans for evaluation and communication. The main objective was to develop processes and structures to incorporate evidence and good practices of rehabilitation and functional capacity into CCGs, and to use those methods in developing and updating the CCGs. The project roadmap is described in Fig. 1.

A project group of 10 members was compiled from the CC editorial team and its partners, the Social Insurance Institution of Finland and the Finnish Association of Physiotherapists. A steering group of 6 members was nominated, consisting of representatives of the Finnish Medical Society Duodecim and the Social Insurance Institution of Finland.

CC editors (as evidence-based medicine (EBM) methodology experts) and members of the voluntary guideline panels (usually approximately 10 clinicians), who compose and update CCGs with support from the editorial team, were identified as the main target groups of this development work. Development of a CCG usually lasts for 2 years. The need for updating a CCG is evaluated approximately every 3 years, and the updating process usually lasts for 1 year (detailed process descriptions are available from the CCG website: <https://www.kaypahoito.fi/en/about-current-care-guidelines/process-descriptions>).

### Project methods and development actions

Using the CCG database, the project group first surveyed how rehabilitation and functional capacity were incorporated to the existing 101 CCGs. In addition, the project group contacted 15 Finnish rehabilitation experts through a web survey to survey their views on the need for rehabilitation-related evidence in those CCGs that were lacking it.

The definition of rehabilitation was discussed at length in the project and steering groups, as well as in the guideline panels. The World Health Organization (WHO) definition, "... appropriate measures, including through peer support, to enable

**Table I.** Questions for Current Care Guideline panels when considering if rehabilitation is relevant for the guideline contents

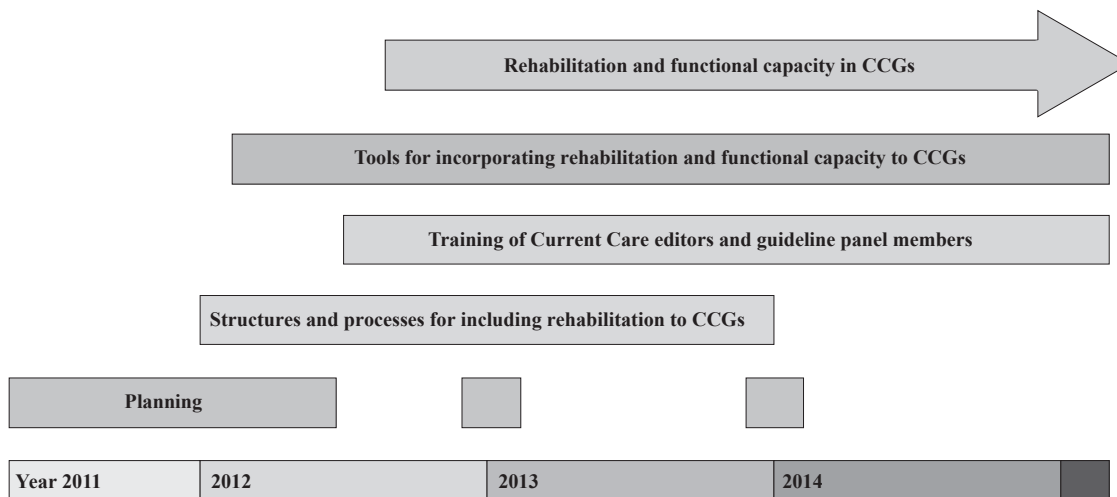
1a. Does improvement in functional capacity require the person's own activity?	No	Somewhat	A lot
1b. Does improvement in functional capacity require some technical aid or special measures directed at the person's environment?	No	Somewhat	A lot
2. Does the person need guidance from healthcare professionals for planning the contents of these measures?	No	Somewhat	A lot
3. Does the person need healthcare professionals for carrying out these measures?	No	Somewhat	A lot

persons with disabilities to attain and maintain their maximum independence, full physical, mental, social and vocational ability, and full inclusion and participation in all aspects of life" (6), was modified. To be more suitable for the needs of guideline panels, the definition of rehabilitation was phrased as "... all measures that help patients (or persons with reduced functional capacity) to help themselves, in comparison to pharmacotherapy or surgery where the patient is a passive recipient of care".

A web-based handbook for guideline panel members was updated to include rehabilitation-related evidence, where applicable, in the CCG development process. Also, evidence table templates for rehabilitation trials were added.

The key statements of a CCG are supported by evidence summaries of the best available research. The PICO framework (Patient, Intervention, Control intervention, Outcome) is used (7), and depending on the quality of the original studies, the quality of evidence of the key statements is graded from A (high) to D (very low) (2). A detailed process description for developing CCGs can be found at the CCG website: <https://www.kaypahoito.fi/en/about-current-care-guidelines/process-descriptions>.

Training of the CC editors and guideline panels consisted of critical appraisal of rehabilitation studies and writing evidence summaries. The project group offered CC editors a set of tools to use when informing and training guideline panels about the project. The tools included a definition of rehabilitation for CCGs, a list of questions to be answered when considering the relevance of rehabilitation to the guideline topic (Table I), information on how the CC information specialists conduct the literature searches focusing on rehabilitation, training on critical appraisal of rehabilitation studies and a process description flow chart for incorporating rehabilitation to CCGs (Fig. 2).



**Fig. 1.** Roadmap describing different phases of Current Rehabilitation development project on incorporating rehabilitation-related evidence into Current Care Guidelines (CCGs).

Particularly strong efforts were made to improve strategies for rehabilitation-related literature searches. CC information specialists tested several search strategies to identify the most sensitive one (see Table S1<sup>1</sup>). For example, to identify publications on rehabilitation of multiple sclerosis, searches were performed in MEDLINE, in 2 further generalized medical databases (EMBASE and Cochrane Library), in 6 specialized databases (CINAHL (nursing), PsycINFO (psychiatry, psychology), PEDro (physiotherapy), OT-Seeker (occupational therapy), Rehabdata (rehabilitation), Cirrie (rehabilitation)) and in one general science database (Web of Science).

During the third year of the project the focus was broadened to incorporate functional capacity. In particular, the International Classification of Functioning disability and Health (ICF) framework started to be applied to the CCGs (8). An ICF framework matrix was drafted and piloted (Table II). Some training on the ICF framework was also offered to CC editors.

<sup>1</sup><http://www.medicaljournals.se/jrm/content/?doi=10.2340/16501977-2607>

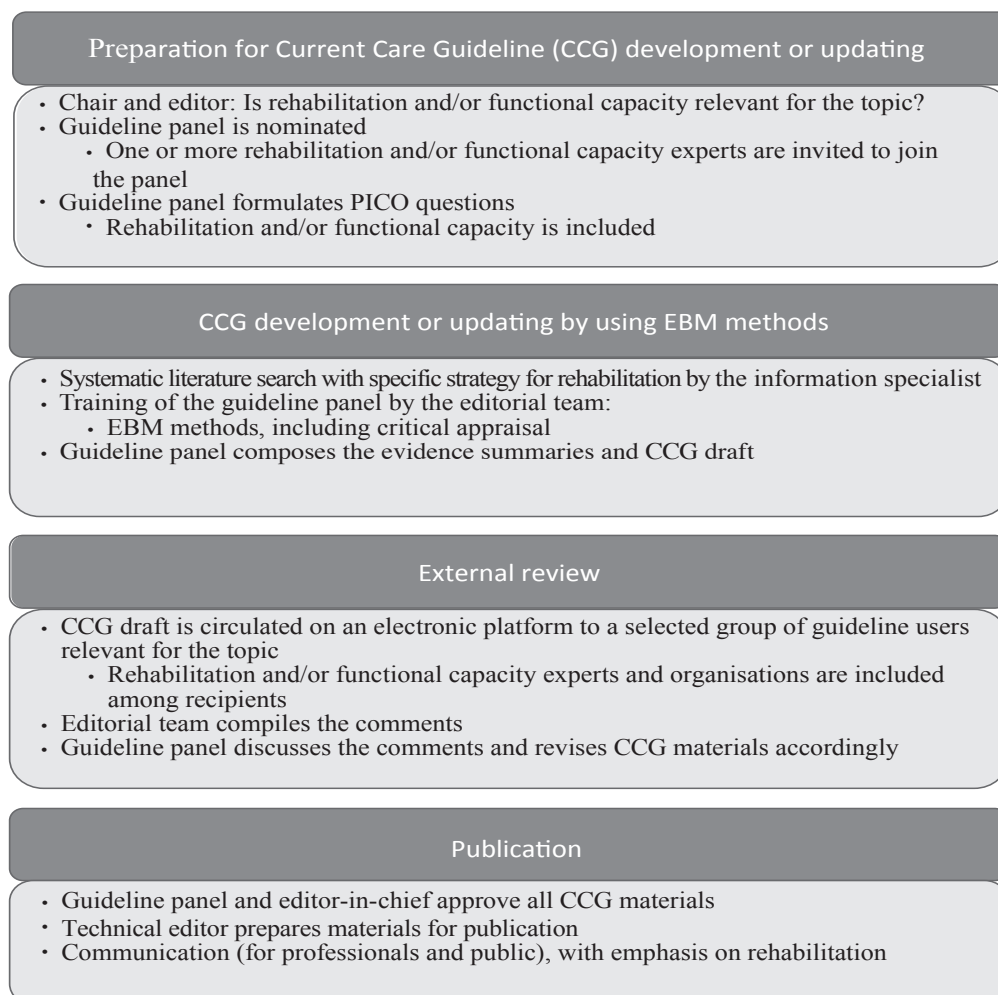
### Project evaluation

Project evaluation was carried out by assessing quantitative changes in rehabilitation subtitles and evidence summaries of CCGs biannually from 2012 to 2017. Feedback on the fulfilment of the project aims was gathered from CC editors after publication of a CCG. Also, the benefits and shortcomings of the project were surveyed annually with a questionnaire to the CC board and editorial team.

## RESULTS

At baseline with 101 published CCGs, there was a chapter entitled “Rehabilitation” in 34 CCGs, and by using search terms “rehabilitation” and “functional capacity” another 28 CCGs where rehabilitation was discussed in the text were identified. Altogether CCGs included 56 evidence summaries on rehabilitation. In 39 CCGs rehabilitation was not mentioned.

The project group contacted 15 Finnish rehabilitation experts who were asked to assess the need for a



**Fig. 2.** Process of incorporating rehabilitation and functional capacity to develop and update the Current Care Guidelines (CCGs). EBM: evidence-based medicine; PICO: Patient, Intervention, Control intervention, Outcome.

**Table II.** Example of applying International Classification of Functioning Disability and Health (ICF) classification. Neck pain: functioning, treatment and rehabilitation

Prognosis: During the preceding month 27% of Finnish men over 30 years of age and 41% of women of the same age have experienced neck pain. The prognosis of neck pain is usually good. In the management it is essential to place emphasis on the prevention of chronic pain after serious illnesses have been ruled out.

ICF categories	Key problems	Assessment of key problems (outcome measures)	Contributing factors <sup>a</sup>	Drugs of choice <sup>a</sup>	Rehabilitation methods of choice <sup>(a,b)</sup>
Sensory functions and pain	Pain may hamper all activities of daily living and sleeping. Vertigo may hamper mobility	Intensity of pain (VAS, NRS) and a pain drawing as a background for disability classifications	Long-standing sitting (level of evidence B) Overweight (level of evidence B)	Paracetamol Non-steroidal anti-inflammatory drugs (level of evidence C)	Information and continuation of ordinary daily activities despite pain Leisure-time physical activity reduces risk for chronic neck pain (level of evidence C)
Functions related to musculoskeletal organs and movements	Difficulties in turning head for example when driving	Assessment of disability due to neck-shoulder pain NDI-FI questionnaire (neck pain index)	Low level of physical activity Psychosocial factors at work (level of evidence C)	(Trigger-point injections in chronic myofascial pain (level of evidence C))	Support for continuing at work (changes in work content) and for return to work (e.g. partial sick-leave or work trial <sup>c</sup> )
Functions of mind Movements	Low mood and anxiety Difficulties in loading of upper extremities, rarely in walking. Difficulties both at leisure and at work	WHODAS-2 assessment of health and disabilities	Nature of work (level of evidence B)		
Taking care of oneself	Difficulties in e.g. combing, washing oneself, clothing				Specific exercises for neck and shoulder muscles to increase muscle strength, endurance, flexibility and coordination (level of evidence C)
Home life	Difficulties in home chores and in shopping				Mobilization treatment does not provide benefit in comparison to usual treatment (level of evidence C)
Communication between persons and human relationships	Seclusion from contacts, difficulties in hobbies				In whiplash injuries an early return to ordinary activities is recommended (level of evidence B)
Central parts of life	Total or partial ability to work or study				

<sup>a</sup>Level of evidence is graded from A (high) to D (very low) (2).

<sup>b</sup>Discrimination between treatment and rehabilitation depends on the context. In this table rehabilitation interventions mean actions, where rehabilitees' (those with neck pain) self-motivated activity is crucial.

<sup>c</sup>Can be executed by a decision from occupational healthcare, Social Insurance Institution or pension fund.

NDI-FI: neck pain index; NRS: numeric rating scale; VAS: visual analogue scale; WHODAS-2: World Health Organization Disability Assessment Schedule.

chapter on rehabilitation in those CCGs where it was not incorporated at that time (in 2012). According to this survey, an additional 24 CCGs were suggested. Of these 24 CCGs, 11 were considered as very important to include rehabilitation recommendations. These 11 guidelines were on diabetes, obesity (both in adults and in children), peripheral arterial disease, diabetic foot, arterial hypertension, physical activity and exercise

training, memory diseases, neck pain, psoriasis (skin and joints) and urinary incontinence in women.

A total of 54 new or updated CCGs were published in the years 2012–2014. In 31 of those, rehabilitation and functional capacity were incorporated as a chapter, otherwise in the text or in evidence summaries (Table III). The number of evidence summaries on rehabilitation increased by 115, from 49 to 164 (Table IV).

**Table III.** Text chapters or other mentions of rehabilitation and functional capacity in Current Care Guidelines (CCGs) published during years 2012–2017. The number of chapters is given separately during the project in 2012–2014 and during the follow-up in 2015–2017, each year referring to those guidelines in the process of drafting or update (before and after publication, respectively)

Year	Before CCG publication or update	After CCG publication or update	Rehabilitation otherwise included <sup>a</sup>
2012–2014			
2012	8	8	1
2013	3	4	3
2014	9	13	1
Subtotal	20	25	5
2015–2017			
2015	5	6	1
2016	4	5	1
2017	5	9	2
Subtotal	14	20	4
Total	34	45	9

<sup>a</sup>Mentioned as a part of other text chapters (e.g. driving health instructions, non-pharmacological treatments, self-care).

**Table IV.** Number and level of evidence of rehabilitation evidence summaries (grading A–D) in Current Care Guidelines (CCGs) published during 2012–2017 (the development project in 2012–2014 and the follow-up in 2015–2017)

Year	Level of evidence (A = high, B = moderate, C = low, D = very low)									
	Before CCG publication or update					After CCG publication or update				
	A	B	C	D	Total	A	B	C	D	Total
2012–2014										
2012	1	3	15	0	19	4	11	37	7	59
2013	0	0	2	1	3	7	9	5	3	24
2014	4	6	13	4	27	18	29	28	6	81
Subtotal					49					164
2015–2017										
2015	5	10	12	3	30	6	16	11	1	34
2016	8	8	9	4	29	30	16	17	3	66
2017	7	5	5	2	19	8	12	13	3	36
Subtotal					78					136
Total					127					300

During the follow-up in 2015–2017, an additional 41 CCGs were published (mostly updates), and in 24 of these rehabilitation and functional capacity was incorporated (Table III). The number of evidence summaries on rehabilitation in those guidelines increased by 58, from 78 to 136 (Table IV). For a detailed description of CCGs published during 2012–2017 and rehabilitation-related evidence summaries in them, see Table SII<sup>1</sup>.

## DISCUSSION

With a carefully planned and targeted development project, it is possible to systematically incorporate evidence of effectiveness of rehabilitation into relevant CPGs. Furthermore, the project results were sustained for 3 subsequent years.

Drafting and updating a CPG is a process of 1–2 years, and therefore it has taken time for the methods developed during this project to be implemented in relevant CCGs. The first year of the development project was used for planning, as well as developing tools for the guideline panels. This explains why there were fewer new rehabilitation chapters and evidence summaries in the first 2 years of the Current Rehabilitation project compared with year 2014.

There are several reasons for the success of this project. First, management was highly committed to the project. Both time and personnel resources were allocated, and the aims and achievements of the project were highlighted repeatedly to CC editors and guideline panels. Secondly, the turnover of the editorial team during the project was minimal, allowing the whole team to commit to the project. Thirdly, the practical tools developed for the CC editors and guideline panels made it easier to change practices. According to the experiences of the CC editorial team, discussions in the guideline panels about similarities and differences between medical care and rehabilitation helped to influence rehabilitation into CCGs. Furthermore, rehabilitation has become a more discussed topic in recent years in health sciences (9).

One of the main results on the Current Rehabilitation project is the increase in the number of rehabilitation-related evidence summaries in the CCGs. Critically appraised rehabilitation evidence was compiled or updated for 31 CCGs, and rehabilitation is now an equal topic with prevention, diagnostics and treatment. Ten of the 24 CCGs that the Finnish rehabilitation experts considered to lack a rehabilitation chapter or evidence summaries were updated during the development work.

Rehabilitation was incorporated into 7 of these. It was left out of 3 CCGs due to timetable issues, i.e. these CCGs had mainly been drafted before the project started. During the follow-up in 2015–2017, another 8 CCGs out of the 24 were updated and rehabilitation was incorporated into 5 more. At present, 4 more are being updated and 2 have been withdrawn from publication.

During 2012–2014, the level of evidence was assessed as high (A) to moderate (B) in nearly half (47%) of rehabilitation-related evidence summaries (Table IV). The proportion was further increased during the follow-up in 2015–2017, when in 55% of the 300 rehabilitation-related evidence summaries the evidence was graded as high or moderate. This reflects an increase in high-quality RCTs in the field of rehabilitation. It also demonstrates that efficacy of rehabilitation interventions should be assessed with similar criteria to other interventions in healthcare.

It has been discussed whether the RCT is the optimal study type to examine the effectiveness of rehabilitation interventions and processes (10, 11). Without changing our methods in assessing the quality of evidence, we found no major problems in grading the level of evidence for rehabilitation-related recommendations. The policy of the CCGs is to include high-level observational studies in evidence summaries where justified after critical assessment.

This is a case study of a development project. The aim of this publication is to share experiences and offer ideas for further work. We have shown that it is possible for CPG producers to systematically incorporate assessment and recommendations regarding rehabilitation into guidelines.

The care of many, if not most, chronic health problems consists of diagnosis, medical or surgical treatment, rehabilitation and follow-up. Furthermore, seamless care pathways including all these components are needed to achieve high-quality healthcare services. Thus, rehabilitation needs to be incorporated as an essential component in CPGs.

## Conclusion

With a carefully planned and targeted procedure, including targeted literature searches and critical assessment of studies, CPGs can be extended to include rehabilitation. The efficacy of rehabilitation interventions can be assessed with similar methods to those used with treatment interventions. The evidence base for rehabilitation will increase substantially.

## ACKNOWLEDGEMENTS

The search strategy for literature on rehabilitation, functional capacity and work capacity (Table SI) was drawn up by Current Care information specialists Leena Lodenius, MSc, and Tiina Lamberg MSc(Health Sci).

The CC editorial team would like to thank the Finnish Association of Physiotherapists for their contribution to this project.

This project was funded by the Social Insurance Institute of Finland.

*The authors have no conflicts of interest to declare.*

## REFERENCES

1. Current Care Guidelines. The Finnish Medical Society Duodecim, 2019. Available from: <https://www.kaypa-hoito.fi/en/>.
2. Ketola E, Kaila M, Honkanen M. Guidelines in context of evidence. *Qual Saf Health Care* 2007; 16: 308–312.
3. McIntyre A, Richardson M, Janzen S, Hussein N, Teasell R. The evolution of stroke rehabilitation randomized controlled trials. *Int J Stroke* 2014; 9: 789–792.
4. McIntyre A, Campbell N, Vermeer J, Mays R, Janzen S, Teasell R. Methodological quality of motor intervention randomized controlled trials in stroke rehabilitation. *J Stroke Cerebrovasc Dis* 2016; 25: 248–253.
5. Gonzalez GZ, Moseley AM, Maher CG, Nascimento DP, Costa LDCM, Costa LO. Methodologic quality and statistical reporting of physical therapy randomized controlled trials relevant to musculoskeletal conditions. *Arch Phys Med Rehabil* 2018; 99: 129–136.
6. World Health Organization (WHO). World report on disability. Chapter 4. Rehabilitation. Geneva: WHO; 2011. Available from: [http://www.who.int/disabilities/world\\_report/2011/chapter4.pdf](http://www.who.int/disabilities/world_report/2011/chapter4.pdf).
7. Higgins JPT, Green S, editors. Cochrane handbook for systematic reviews of interventions. Version 5.1.0. The Cochrane Collaboration; March 2011. Available from: <http://handbook-5-1.cochrane.org/>, chapter 5.1.1.
8. World Health Organization (WHO). International Classification of Functioning, Disability and Health (ICF). Geneva: WHO; 2018. Available from: <http://www.who.int/classifications/icf/en/>.
9. Stucki G, Bickenbach J, Gutenbrunner C, Melvin J. Rehabilitation: the health strategy of the 21st century. *J Rehabil Med* 2018; 50: 309–316.
10. Malmivaara A. Clinical impact research – how to choose experimental or observational intervention study? *Ann Med* 2016; 5: 1–4.
11. Malmivaara A. Assessing the effectiveness of rehabilitation and optimizing effectiveness in routine clinical work. *J Rehabil Med* 2018; 50: 849–851.