Journal of Nursing, Social Studies, Public Health and Rehabilitation 3–4, 2011, pp. 229–238

POSSIBILITIES OF USING THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) BY GONIOMETRY AND MUSCLE TESTING IN PHYSIOTHERAPY

Zuzana Drábová[1], **Marek Zeman**[1], **Miriam Ištoňová**[2], **Ludmila Brůhová**[1]

[1]*University of South Bohemia, Faculty of Health and Social Studies, Department of Clinical and Praeclinical Branches, České Budějovice, Czech Republic*
[2]*University of Presov, Faculty of Health Care, Department of Physiotherapy, Slovak Republic*

Submitted: 2011-08-02 **Accepted:** 2011-11-01 **Published online:** 2011-12-15

Abstract

Introduction: International Classification of Functioning, Disability and Health (ICF) is the evaluation that has been elaborated by the World Health Organisation (WHO) and forms the conceptual frame for description of the disability. Today, relevant classification codes for persons with disability must be specified in the patient healthcare documentation in accordance with Communication No. 431/2009 Coll. (introduced into clinical practice in the Czech Republic by ICF starting from 1 July 2010). The objective of the article is to show or suggest, as appropriate, the options of assignment of ICF qualifier codes according to examinations performed in physiotherapy, specifically in goniometry and muscle test.

Material and methods: Research was performed using the method of case study in Bertiny lázně Třeboň in 2011; the tested set consists of 3 respondents. Entrance and final examinations were performed using the given methods and ICF codes were assigned to the examination results according to suggested schemes.

Results: For the sake of clear arrangement, the results were processed in a form of table schemes. As no similar thesis on this theme has been published yet, the only suggestion was to assign codes and their qualifiers to individual results of performed examinations, naturally supposing an ensuing broader discussion.

Conclusion: In physiotherapy we use for examination various specific methods most of which are subjective ones. Still, we need to find a way to make the information obtained in the examination objective according to a uniform scheme. The ICF classification is a certain option offered to us. Transformation of results of specific examinations in physiotherapy into simple schemes of ICF qualifiers is undoubtedly very useful for the other members of the multidisciplinary team. The reason is that they subsequently have the possibility, on the basis of multidimensional assessment of the given individual's condition, to understand at least a little or to be able to imagine the severity of determined examinations in an issue, which they alone do not understand.

Key words: *ICF; physiotherapy; disability; qualifiers; goniometry; muscle test*

ORIGINAL ARTICLE

INTRODUCTION

Several years ago, the abbreviation ICF would have probably tell much to many of the Czech physiotherapists, ergotherapists, doctors, students in healthcare and medical subjects and others. Today, however, the situation is the opposite. From all quarters, we can hear positive or negative responses to the classification which, according to the Communication No. 431/2009 Coll., at the beginning of June of the last year became the evaluation tool for measurement of disability on both individual and population levels. Although the World Health Organisation approved ICF *(International Classification of Functioning, Disability and Health)* as soon as in 2001, we seem until today to have problems in using and even generally understanding it (Brunthansová et al. 2009).

Physiotherapy is a therapeutic procedure using various forms of energies (including the kinetic one) to influence pathological conditions therapeutically (Stucki et al. 2007). It deals primarily with locomotor system, its analysis using specific diagnostic methods and possibilities to influence it therapeutically (Kolář 2009).

The ICF international classification has undertaken to provide a universal language to the rehabilitation disciplines covering physiotherapy (Peterson and Rosenthal 2005). With components of body fiction and body structure, the classification really reflects the basis of the physiotherapists´ clinical practice (Allet et al. 2008). In clinical practice, we can use the ICF frame primarily to evaluate the condition and plan the therapy, to evaluate the outputs of therapy and to develop the research (Stucki et al. 2003).

High-quality input evaluation is a basis of clinical practice, which can be used e.g. to plan the therapy or monitor changes (improvement or impairment of the condition, as appropriate). With the growing healthcare demand, attention has been increasingly focused also on results and measurement of therapy results, respectively (Peterson et al. 2010). With regard to the fact that ICF encodes all aspects of human functioning, for complete evaluation of therapy outputs it necessary not only to determine the degree of handicap ("body level outcomes"); emphasis is put also on evaluation of the level of the capability to fulfil tasks and activities ("person level outcomes") and the ability of participation in the environment, in which the patient normally moves around ("social level monitoring"). Activities and participation form an important part of the assessment process, but as a tradition they fail to be used sufficiently in physiotherapy (Sykes 2008).

With regard to the fact that ICF has become an integral part of rehabilitation, we can assume that current tools for its evaluation will be adapter in the future in order to be fully compatible with the encoding system according to ICF (Stucki et al. 2002).

Most examination methods used in physiotherapy focus on function of the locomotor system. These are specialised examinations of locomotor system evaluating primarily the condition of the particular system, neuromuscular system and soft tissues (skin, fascia, etc.).

In Chapter 7 regarding the body function component (b7), the ICF international classification offers the possibility to encode neuromuscular functions and locomotion-related functions (WHO 2008).

We can find here the codes for functions of joints and bones (b710-b729), codes for the functions of muscles (b730-b749) and codes for the function of locomotion as such (b750-b799). ICF encodes also the locomotion-related structures; these are contained in Chapter 7 regarding the body structure classification (s7). Here are the codes for the structures of head and neck area (s710), structures of shoulder area (s720), structures of upper limbs (s730), structures of pelvic area (s740), structures of lower limbs (s750), structures of trunk (s760), and other myoskeletar locomotion-related structures (s770).

Apart from this, ICF classifies an individual's mobility in Chapter 4 regarding the components of activity and participation (d4). Specifically, we can find here the codes for changing and maintaining the posture (d410-d429), for carrying, motion and handling of items (d430-d449), for walking and moving (d450-d469), and/or codes for using transportation (d470-d499).

MATERIAL AND METHODS

The objective of the article is to show or suggest, as appropriate, the options of assignment of ICF qualifier codes according to examinations performed in physiotherapy, specifically in goniometry and functional muscle test.

Research was performed using the method of case study in Bertiny lázně Třeboň in 2011; the tested set consists of 3 respondents. Entrance and final examinations were performed using goniometry and functional muscle test and ICF codes were assigned to the examination results according to suggested schemes.

Goniometry

Using goniometric measurement on human body we determine either the angle, in which the joint is, or the angle which can be achieved in the joint, whether through active or passive motion. Uniform measurement method is significant not only for the clinician, but also for understanding among various experts (Haladová and Nechvátalová 2008). When assigning qualifiers to results of goniometric examinations, it is necessary to know the normal (physiological) scope of movement in the given joint. There is a significant allowance for this scope, depending e.g. on quality of ligamentary system, which is conditioned both individually and, for instance, racially. This may explain certain ambiguity in values of the norm, which is reported by foreign literature as well.

In Chapter b710, ICF describes functions of articular mobility, and the value of the assigned qualifier is subject to a single percental scale (0% for no problem – qualifier 0, up to 100% for complete problem – qualifier 4). So, if we wish to determine the disorder degree (or severity of the problem) according to ICF in an examination of ventral flexion in shoulder joint (see Fig. 1), where the standard is 90°, we will divide 90° into five groups according to percental scope of qualifiers (where 90° is qualified as no disorder and 0°, on the contrary, represents a one-hundred percent or complete disorder). Therefore, with shoulder joint flexion achieving 60° we can classify the scope of this motion with b7100.2 (medium disorder of mobility of one joint).

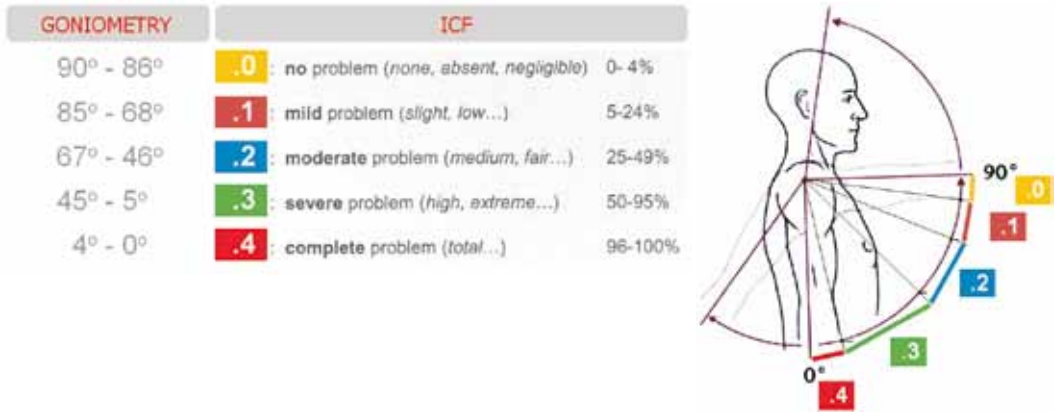

Fig. 1. Visualisation of the possibility to assign qualifiers in classification of ventral flexion of the shoulder joint (Kolář 2009)

Examinations of the other joints may continue in a similar way. The following table provides an overview of classification of joint mobility according to ICF classification qualifiers in individual localisations used to examine the respondents.

Table 1. Overview of possibilities to assign qualifiers in classification of b7100 code (mobility of a single joint) in individual localisations according to degrees of range of movement in the joint

Localization	Qualifier and extent of degree in goniometry				
	0	**1**	**2**	**3**	**4**
Hip flexion	90-86	85-68	67-46	45-5	4-0
Hip extension	15-14	13-11	10-8	7-2	1-0
Hip ext., int. rotation	45-43	42-34	33-23	22-3	2-0
Hip abduction	45-43	42-34	33-23	22-3	2-0
Hip adduction	30-28	27-23	22-16	15-2	1-0
Knee flexion	130-125	124-99	98-66	65-7	6-0
Ankle plantar flexion	50-48	47-38	37-26	25-3	2-0
Ankle dorsal flexion	15-14	13-11	10-8	7-2	1-0
Shoulder ventral flexion	90-86	85-68	67-46	45-5	4-0
Shoulder dorsal flexion	20-19	18-15	14-11	10-2	1-0
Shoulder ext., int. rotation	90-86	85-68	67-46	45-5	4-0
Shoulder abduction	90-86	85-68	67-46	45-5	4-0
Elbow flexion	140-135	134-106	105-71	70-7	6-0
Wrist palm., dors. flexion	90-86	85-68	67-46	45-5	4-0
Wrist radial duction	30-28	27-23	22-16	15-2	1-0
Wrist ulnar duction	45-43	42-34	33-23	22-3	2-0
Hand MP joint	90-86	85-69	68-46	45-5	4-0
Hand IP1 joint	120-115	114-91	90-61	60-6	5-0
Hand IP2 joint	90-86	85-68	67-46	45-5	4-0

Muscle test

Muscle tests inform about the strength of individual muscles or muscle groups. The strength scale has been modified for several times, but the one dating back to 1946 has remained the most widespread one. It evaluates muscle strength in six degrees which, at the same time, express their specification in percents (Janda 2004).

Degree 5 (normal, N) – corresponds to normal muscle or muscle with a very good function, as appropriate. Therefore, it is adequate to 100% of the normal. Degree 4 (good, G) – corresponds approximately to 75% of strength of normal muscle. Degree 3 (fair, F) – expresses approx. 50% of strength of normal muscle. The muscle reports this value when it is able to make a movement in full scope with overcoming the gravity, i.e. against the weight of the tested part of body. Degree 2 (poor, P) – identifies approx. 25% of strength of normal muscle. The muscle reporting this strength is able to make a movement in full scope; still, it cannot overcome even such a small resistance which is represented by the weight of the tested part of body. Degree 1 (trace, T) – expresses preservation of approx. 10% of muscle strength. The muscle contracts in an attempt to make a movement, but its strength is not sufficient to move the tested part. Degree 0 – he muscle appear to report no signs of contraction in an attempt to make a movement.

ICF classification evaluates the muscle strength functions in the same manner as the functions of articular mobility, i.e. in five degrees. Unlike the muscle test, it does not differentiate between zero activity of muscle and muscle jerk. Percental evaluation is not identical, either. As Janda reports, however, evaluation of muscle strength in percents is disputable; at manual performance of tests

it is substantially impossible to quantify it accurately, and therefore its character is rather an orientational one (Janda 2004). Degrees 3, 4 and 5 of the muscle test are quite compatible with qualifiers 2, 1 and 0. The other three degrees of muscle test (0, 1 and 2) do not correspond with two qualifiers 3 and 4; therefore, the examination results have been encoded so that qualifier 3 has been assigned where the muscle was able to make the movement with exclusion of gravity only (degree 2 according to muscle test). Degree 1 and 0 of muscle test were qualified as complete disorder, i.e. qualifier 4.

Fig. 2. Visualisation of the possibility to assign qualifiers in classification of muscle strength according to muscle test

RESULTS

Respondent No. 1 – basic information:
A man, 67 years old, after implanted total endoprosthesis of hip joint on the right side, coxarthrosis on the left side, both-sided gonarthrosis, vertebrogenic algic syndrome of lumbar spine. He feels no difficulties in normal life; he has recovered swiftly from the operation of endoprosthesis, reports only pain in lumbar spine with limited mobility of left lower limb.

Table 2. Overview of ICF qualifiers assigned in classification of code b7100 (mobility of a single joint) in individual localisations for respondent No. 1. Nrm. identifies an average physiological range of movement in the given joint, bold letters identify a change in qualifier values, X identifies the impossibility to measure the given angle in the joint in post-operation period.

	nrm.	Imput				Output			
		Goniometry		ICF qualifier		Goniometry		ICF qualifier	
		R	L	R	L	R	L	R	L
Hip flexion	90	90	78	0	1	90	83	0	1
Hip extension	15	10	8	2	2	12	10	**1**	2
Hip ext. rotation	45	X	30	X	2	X	30	X	2
Hip int. rotation	45	X	14	X	3	X	16	X	3
Hip abduction	45	43	26	0	2	45	32	0	2
Hip adduction	30	X	11	X	3	X	12	X	3
Knee flexion	130	105	96	1	2	110	105	1	**1**
Ankle plantar flexion	50	44	43	1	1	48	45	**0**	1
Ankle dorsal flexion	15	15	15	0	0	15	15	0	0

Table 3. Overview of ICF qualifiers assigned in classification of code b7300 (power of isolated muscles and muscle groups) in individual localisations for respondent No. 1. Nrm. identifies an average degree of muscle strength, bold letters identify a change in qualifier value, X identifies the impossibility to measure the given angle in the joint in post-operation period.

	nrm.	Imput				Output			
		Muscle test		ICF qualifier		Muscle test		ICF qualifier	
		R	L	R	L	R	L	R	L
Hip flexion	5	5	4	0	1	5	5	0	**0**
Hip extension	5	5	4	0	1	5	4	0	1
Hip ext. rotation	5	X	3	X	2	X	3	X	2
Hip int. rotation	5	X	3	X	2	X	3	X	2
Hip abduction	5	4	3	1	2	4	4	1	**1**
Hip adduction	5	X	3	X	2	X	3	X	2
Knee flexion	5	4	3	1	2	4	4	1	**1**
Ankle plantar flexion	5	5	5	0	0	5	5	0	0
Ankle dorsal flexion	5	5	5	0	0	5	5	0	0

Respondent No. 2 – basic information:
A woman, 71 years old, rheumatoid arthritis; the patient reports that her condition had been much worse before gold injection were applied (she was unable to hold items in her hand, she suffered from pains); now she feels good, suffers from no major difficulties, she suffers from pain (mostly in her right hand) from time to time.

Table 4. Overview of ICF qualifiers assigned in classification of code b7100 (mobility of a single joint) in individual localisations for respondent No. 2. Nrm. identifies an average physiological range of movement in the given joint, bold letters identify a change in qualifier value.

	nrm.	Imput				Output			
		Goniometry		ICF qualifier		Goniometry		ICF qualifier	
		R	L	R	L	R	L	R	L
Shoulder ventral flexion	90	90	90	0	0	90	90	0	0
Shoulder dorsal flexion	20	30	30	0	0	30	30	0	0
Shoulder ext. rotation	90	72	83	1	1	76	85	1	1
Shoulder int. rotation	90	58	77	2	1	65	79	2	1
Shoulder abduction	90	68	69	0	0	70	70	0	0
Elbow flexion	140	135	138	0	0	137	138	0	0
Wrist palmar flexion	90	78	84	1	1	82	84	1	1
Wrist dorsal flexion	90	47	45	2	3	49	48	2	**2**
Wrist radial duction	30	17	19	2	2	18	21	2	2
Wrist ulnar duction	45	28	31	2	2	29	32	2	2
MP joint of 2. flexion	90	90	90	0	0	90	90	0	0
IP1 joint of 2. flexion	120	70	80	2	2	70	80	2	2
IP2 joint of 2. flexion	90	65	70	2	1	65	70	2	1

Table 5. Overview of ICF qualifiers assigned in classification of code b7300 (power of isolated muscles and muscle groups) in individual localisations for respondent No. 2. Nrm. identifies an average degree of muscle strength, bold letters identify a change in qualifier value.

	nrm.	Imput				Output			
		Muscle test		ICF qualifier		Muscle test		ICF qualifier	
		R	L	R	L	R	L	R	L
Shoulder ventral flexion	5	5	5	0	0	5	5	0	0
Shoulder dorsal flexion	5	4	4	1	1	4	4	1	1
Shoulder ext. rotation	5	4	4	1	1	4	5	1	**0**
Shoulder int. rotation	5	4	5	1	0	4	5	1	0
Shoulder abduction	5	4	4	1	1	4	5	1	**0**
Elbow flexion	5	5	5	0	0	5	5	0	0
Elbow extension	5	5	5	0	0	5	5	0	0
Elbow pronation	5	4	4	1	1	4	4	1	1
Elbow supination	5	4	4	1	1	4	4	1	1
Wrist palmar flexion	5	3	3	2	2	4	4	**1**	**1**
Wrist dorsal flexion	5	3	3	2	2	4	4	**1**	**1**
MP joint of 2. flexion	5	4	4	1	1	4	4	1	1
IP1 joint of 2. flexion	5	4	4	1	1	4	4	1	1
IP2 joint of 2. flexion	5	4	4	1	1	4	4	1	1

Respondent No. 3 – basic information:
A man, 28 years old, condition after complicated dislocation of the right hock; he perceives immobility of the right hock, instability in standing position and during walk, he report blunt pain particularly in the area of outer ankle after prolonged walk (still wearing a fixateur).

Table 6. Overview of ICF qualifiers assigned in classification of code b7100 (mobility of a single joint) in individual localisations for respondent No. 3. Nrm. identifies an average physiological range of movement in the given joint, bold letters identify a change in qualifier value.

	nrm.	Imput				Output			
		Goniometry		ICF qualifier		Goniometry		ICF qualifier	
		R	L	R	L	R	L	R	L
Hip flexion	90	95	127	2	0	108	130	**1**	0
Hip extension	15	12	15	1	0	13	15	1	0
Hip ext. rotation	45	40	40	0	0	40	40	0	0
Hip int. rotation	45	34	39	1	0	38	39	**0**	0
Hip abduction	45	32	40	1	0	36	40	1	0
Hip adduction	30	35	43	1	0	40	45	1	0
Knee flexion	130	108	120	1	1	116	127	1	**0**
Ankle plantar flexion	50	5	48	3	0	11	48	3	0
Ankle dorsal flexion	15	5	15	3	0	8	15	**2**	0

Table 7. Overview of ICF qualifiers assigned in classification of code b7300 (power of isolated muscles and muscle groups) in individual localisations for respondent No. 3.
Nrm. identifies an average degree of muscle strength, bold letters identify a change in qualifier value.

	nrm.	Imput				Output			
		Muscle test		ICF qualifier		Muscle test		ICF qualifier	
		R	L	R	L	R	L	R	L
Hip flexion	5	4	5	1	0	5	5	**0**	0
Hip extension	5	4	5	1	0	5	5	**0**	0
Hip ext. rotation	5	4	4	1	1	4	5	1	**0**
Hip int. rotation	5	4	4	1	1	4	5	1	**0**
Hip abduction	5	4	5	1	0	5	5	**0**	0
Hip adduction	5	4	5	1	0	5	5	**0**	0
Knee flexion	5	5	5	0	0	5	5	0	0
Knee extension	5	4	5	1	0	5	5	**0**	0
Ankle plantar flexion	5	2	5	3	0	3	5	**2**	0
Ankle dorsal flexion	5	2	5	3	0	3	5	**2**	0

DISCUSSION

The presented article offers a certain proposal for the method of assignment of qualifiers for classification of articular mobility (according to goniometric examination) and muscle strength (according to muscle test).

Goniometric examination is complicated primarily in method of identification of normal scope of movement in the joint. It is necessary to have regard to "structural synkinetic movements" (typically e.g. in shoulder joint), which change the scope of movement in the joint in a substantial manner. In case of the above-mentioned shoulder joint, the average physiological value of the scope of ventral flexion is 90° without synkinetic movement of the blade-bone, but already 180° with this synkinetic movement (Haladová and Nechvátalová 2008). Difference of results of the examination remains to be another problem provided that an active movement is performed in the joint as compared with the passive one. And last, but not least, there is the difference of the reported "normal" scopes in individual joints among various authors. For instance, maximum scope of 45° is the most commonly reported internal station in hip joint, but according to Hoppenfeld it is 35° and according to Kapandji even 30° only. Providing for accuracy in decision-making regarding the subdivision of the scope of movement in individual joint according to ICF qualifiers may be another problem. The reason is that every movement in the joint has various scopes and, for instance, the subdivision of the scope of 130 degrees in knee joint flexion should be similar to that for the scope of 45 degrees of outer rotation of the hip joint. This point certainly requires a broader discussion.

Results of assignment of ICF classification qualifiers to the given scope of movement according to suggested schemes for individual respondents have shown the following. In respondent No. 1, for instance, the scope of flexion of his left knee joint improved significantly (from 96 to 105), which was manifested by reduced qualifier value by one degree (see Table 2). Reduction of the qualifier value may subsequently be evaluated by other members of the multidisciplinary team as well regardless of whether they do or do not have any knowledge of physiotherapy or testing by means of goniometric examination. In final consequence, the difference between the input and final examination, or the differing value of qualifiers is what matters. Final evaluation of functional deficit of the given individual using other clinical examinations remains the question, however.

Transformation of muscle test results into the value of ICF qualifiers has proved to be much simpler than in the goniometric

examination. In respondent No. 3, for instance, the muscle strength of both plantar and dorsal flexion of the right hock improved (from degree 2 to degree 3), which was manifested by reduced value of qualifier by one degree (see Table 7). There is an interesting finding here that in the same patient the results of goniometric examination showed an improvement in scope of movement into dorsal flexion only. This may be a valuable information for a clinician, which here serves as an evidence of swifter improvement of the function of muscle strength as compared to function of mobility in the joint.

CONCLUSION

Physiotherapy is applied in many disciplines of medicine and makes use of numerous specific diagnostic procedures in order to identify pathological conditions (Kolář 2009). For the greater part, however, these are subjective examinations, where experience of the physiotherapist and their approach to the given problem are literally what matters. Still, we need to find a way to make the information obtained in the examination objective according to a uniform scheme. The ICF classification is a certain option offered to us. Transformation of results of specific examinations in physiotherapy into simple schemes of ICF qualifiers is undoubtedly very useful for the other members of the multidisciplinary team. The reason is that they subsequently have the possibility, on the basis of multidimensional assessment of the given individual's condition, to understand at least a little or to be able to imagine the severity of determined examinations in an issue, which they alone do not understand.

Two basic examination methods have been used for the research, to wit goniometry and muscle test according to Janda. These are one of the basal examinations, which are used often and at most centres because they provide basic information about the condition of the locomotor system.

As no similar thesis on this theme has been published yet, the only suggestion was to assign codes and their qualifiers to individual results of performed examinations, naturally supposing an ensuing broader discussion.

In goniometric examination we start from physiological scope of movement in the joint, which we can measure. If the respondent achieves the complete scope of movement, it is obvious that there is no disorder of articular mobility (qualifier 0). As to the values measured, we can easily recalculate the scopes of qualifiers according to percental ICF scale, thus identifying the degree of disorder.

The muscle strength scale according to Janda had to be adjusted for assignment of qualifiers to the results of muscle tests. As muscle tests evaluate muscle strength in six degrees and the ICF qualification in five degrees only, zero activity and muscle jerk (degrees 0 and 1 according to muscle test) were evaluated jointly by qualifier 4, the percental scope of which avers both degrees.

It is natural that in order to identify the adequate therapy we have to know not only the degree of disability of the function and structures (components **b** and **s**), but also the capacity and performance of the given individual (components **d**), all of this in relation to the environment in which they move around (components **e**). This thesis is an attempt to contribute to the discussion on methods of assessing disability using the ICF qualification. Specifically – to transform the outputs of certain existing examination methods in physiotherapy into the values of ICF qualifiers so that these are understandable and primarily usable for further processing in terms of a multidisciplinary team.

REFERENCES

1. Allet L, Bürge E, Monnin D (2008). ICF: Clinical relevance for physiotherapy? A critical review. Advances in Physiotherapy. 10/3: 127–137.
2. Bruthansová D, Červenková A, Jeřábková V (2009). Nová klasifikace nemoci a zdraví [New classification of disease and health]. Česká geriatrická revue. 7/2: 90–96 (Czech).

3. Haladová E, Nechvátalová L (2008). Vyšetřovací metody hybného systému [Examination methods for locomotor system]. Brno: Národní centrum ošetřovatelství a nelékařských oborů. 135 p. (Czech).
4. Janda (2004). Svalové funkční testy [Muscle function tests]. Praha: Grada. 328 p. (Czech).
5. Kolář P (2009). Rehabilitace v klinické praxi [Rehabilitation in clinical practice]. Praha: Galén. 713 p. (Czech).
6. Peterson DB, Rosenthal DR (2005). The International Classification of Functioning, Disability and Health (ICF) as an allegory for history and systems in rehabilitation education. Rehabilitation Education. 19/ 2: 75–80.
7. Peterson DB, Mpofu E, Oakland TD (2010). Concepts and models in disability, functioning, and health. In: Rehabilitation and health assessment: applying ICF guidelines. New York: Springer Publishing Company. 733 p.
8. Stucki G, Cieza A, Ewert T (2002). Application of the International Classification of Functioning, Disability and Health (ICF) in clinical practice. Disability and Rehabilitation. 24/10: 281–282.
9. Stucki G, Ewert T, Cieza A (2003). Value and application of the ICF in rehabilitation medicine. Disability and Rehabilitation. 25/3: 628–634.
10. Stucki G, Cieza A, Melvin J (2007). The international classification of functioning, disability and health: A unifying model for the conceptual description of the rehabilitation strategy. Journal of Rehabilitation Medicine. 39/4: 279–285.
11. Sykes C (2008). The International Classification of Functioning, Disability and Health: Relevance and applicability to physiotherapy. Advances in Physiotherapy. 10/3: 110–118.
12. WHO (2008). Mezinárodní klasifikace funkčních schopností, disability a zdraví [International classification of functional abilities, disability and health]. Praha: Grada. 280 p. (Czech).

Contact:

Marek Zeman, University of South Bohemia, Faculty of Health and Social Studies, Department of Clinical and Praeclinical Branches, České Budějovice, Czech Republic
E-mail: marek-zeman@seznam.cz