



## Impact of training on the use of the International Classification of Functioning, Disability and Health

### *Impacto de um treinamento para o uso da Classificação Internacional de Funcionalidade, Incapacidade e Saúde*

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#### ABSTRACT

Training aimed at professionals could be a simple and effective approach for increasing the use of International Classification of Functioning, Disability and Health (ICF) as a tool for practice by professionals. In this case, training was crucial for its correct use as a classification as well as showing its usefulness in daily clinical practice, particularly in multidisciplinary teams. **Objective:** The aim of the present study was to verify the impact of a training course on ICF in the knowledge of physical therapists and occupational therapists. **Methods:** This was an experimental study that used a structured questionnaire to evaluate the knowledge of professionals about the ICF before and after participating in a training course. Data from both moments were compared using the percentage of correct answers and the chi-square test ( $\alpha=0.05$ ). **Results:** 434 professionals were investigated, with graduation time of  $9.3\pm 7.2$  years. It was observed that the course was effective, since there was a higher percentage of correct answers in the post course; additionally, the statistical analysis showed a significant difference between the two course moments in most of the questions ( $18.91 < \chi^2 < 292.90$ ,  $p < 0.01$ ). **Conclusion:** The training course was able to significantly increase the level of knowledge of these professionals, who are currently able to understand and use the ICF, however, the absence of a follow up period does not allow the measurement of the content retained by the participants.

**Keywords:** International Classification of Functioning, Disability and Health, Physiotherapy, Occupational Therapy, Training

#### RESUMO

O treinamento voltado para profissionais poderia ser uma abordagem simples e eficaz para aumentar o uso da Classificação Internacional de Funcionalidade, Incapacidade e Saúde (CIF) como uma ferramenta para a prática dos profissionais. Nesse caso, o treinamento pode ser crucial para seu uso correto como uma classificação, além de mostrar sua utilidade na prática clínica diária, principalmente em equipes multidisciplinares. **Objetivo:** O objetivo do presente estudo foi verificar o impacto de um curso de formação em CIF no conhecimento de fisioterapeutas e terapeutas ocupacionais. **Métodos:** Estudo experimental que utilizou questionário estruturado para avaliar o conhecimento dos profissionais sobre a CIF antes e depois de participar de um curso de treinamento. Os dados dos dois momentos foram comparados com o percentual de acertos e o teste do qui-quadrado ( $\alpha = 0,05$ ). **Resultados:** foram investigados 434 profissionais, com tempo de graduação de  $9,3 \pm 7,2$  anos. Observou-se que o curso foi eficaz, pois houve maior percentual de respostas corretas no pós-curso; além disso, a análise estatística mostrou uma diferença significativa entre os dois momentos do curso na maioria das perguntas ( $18,91 < \chi^2 < 292,90$ ,  $p < 0,01$ ). **Conclusão:** O curso de treinamento foi capaz de aumentar significativamente o nível de conhecimento desses profissionais, que atualmente são capazes de entender e usar a CIF, contudo a ausência de um período de follow up não permite a mensuração do conteúdo retido pelos participantes.

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**Palavras-chave:** Classificação Internacional de Funcionalidade, Incapacidade e Saúde, Fisioterapia, Terapia Ocupacional, Capacitação

## INTRODUCTION

The International Classification of Functioning, Disability and Health (ICF) is an instrument put forth by the World Health Organization (WHO) with the objective of creating a unified language to describe health aspects of people and populations.<sup>1</sup> Adoption of this model could streamline thinking processes and clinical decision making by health teams.<sup>2</sup> Use of ICF could also improve multi-professional communication, strengthen the positions of physiotherapy and occupational therapy within health teams, and improve service resolution.<sup>2,3</sup>

Despite the advantages associated with the use of ICF in the clinical context, observations to date reveal limited and incipient use of the classification system by health professionals, including physical therapists and occupational therapists.<sup>2,4</sup>

Professionals claim an inability to integrate ICF into their daily routine, citing a high workload combined with superficial knowledge of the instrument and the need to invest time and money to learn to use it.<sup>5-7</sup> Inadequate use of ICF can result in incomplete applications, oversimplification and incomprehension of the complexity of classification, and misuse of ICF as an evaluating tool rather than for classification.<sup>8</sup>

Training aimed at professionals could be a simple and effective approach for increasing the use of ICF as a tool for practice by professionals.<sup>9,10</sup> However, its complexity requires a rigorous teaching methodology that incorporates both technical aspects and the ethical implications of its use.<sup>8</sup>

In addition to the implementation of ICF training courses, evaluation of the impact of these courses is necessary to obtain feedback on errors of concept and use among participants, as well as determine the best strategies for teaching and distribution. The goal in this study is to evaluate the adequacy of course content and minimize misunderstandings in professional practice.

A study carried out in Europe pointed out that the main drawback observed before trainings commenced was misapprehension of ICF as an evaluation tool. In this case, training was crucial for its correct use as a classification as well as showing its usefulness in daily clinical practice, particularly in multidisciplinary teams.<sup>8</sup>

## OBJECTIVE

To verify the impact of a training course on the knowledge about and use of ICF by physiotherapists and occupational therapists the state of Minas Gerais, Brazil.

## METHODS

This is an experimental study, with evaluations conducted pre- and post-training on the use of ICF. This research was approved by the Human Research Ethics Committee of UNIFOR-MG, n. 1.429.054.

### Instrument and data collect

Eight trainings were carried out in seven cities in the state of Minas Gerais, Brazil, to obtain data from different macro-regions of the state; cities where the training was given were specified by the Regional Council of Physical Therapy and Occupational Therapy of the 4<sup>th</sup> Region (CREFITO-4).

Sites, dates, and times of the training were divulged via email to the professionals enrolled in the official website of the municipality. Informed, written, signed consent was obtained from all individuals who participated in the training courses and who voluntarily agreed to respond to the questionnaires given before and after training.

The questionnaire applied specifically to training participants (Figure 1) and contained questions related to the individual's time and professional training as well as ICF knowledge. The questionnaire was structured as a set of 15 multiple choice questions, each with four

possible answers, and was developed by three professionals directly involved in the use and teaching of ICF.

The questionnaire was administered twice; once in advance of the training and once immediately after completion of the course. References to bibliographic materials or other notes were not permitted during the filling out of the questionnaire.

<b>1) Gender</b>	<b>2) How old are you?</b>	<b>3) How long have you been graduated?</b>
( ) Male ( ) Female ( ) Other	_____	_____
<b>4) What kind of institution did you graduate in?</b>		
( ) Private ( ) Public		
<b>5) What is your highest level of academic education?</b>		
( ) Higher education ( ) Graduate – Lato Sensu ( ) Master ( ) Doctorate		
<b>6) When did you first get in touch with ICF?</b>		
( ) Never ( ) During the graduation ( ) After graduation ( ) Other		
<b>7) What does the acronym ICF mean?</b>		
( ) Integrated Physiotherapy Clinics		
( ) International Classification of Functioning, Disability and Health		
( ) International Classification of Role Activity and Participation		
( ) International Classification of Physical Therapy and Occupational Therapy		
<b>8) What are the components of the ICF?</b>		
( ) Activity and restriction, participation and functional disability		
( ) Activity of daily living, cognitive activity, practical activity and well-being		
( ) Body structure and function, activity and restriction		
( ) Body functions and structures, activity and participation, contextual factors		
<b>9) What are the meanings of the letters that initiate each category of the CIF?</b>		
( ) b - Well being, s - Health, d - Pain, and - Structure		
( ) b - Function, s - Structure, d - Activity and Participation, e - Environmental Factors		
( ) b - Quality of life, s - Security, d - Domain, e - Studies		
( ) b - Well-being, s - Environmental Factors, d - Diagnosis, and - Structure and Function		
<b>10) Which of the following categories represents a second level category?</b>		
( ) b1 ( ) b11 ( ) b110 ( ) b1101		
<b>11) What are the negative aspects related to the components of the ICF?</b>		
( ) Disability, limitation, restriction, barrier		
( ) Difficulty, disability, problem and disability		
( ) Disease, disability, disorders and limitation		
( ) Disability, problem, impact and limitation		
<b>12) Which of the numbers below does not represent a ICF qualifier?</b>		
( ) 1 ( ) 9 ( ) 10 ( ) 0		
<b>13) What is the suggested number of qualifiers for coding body structures?</b>		
( ) 1 ( ) 2 ( ) 3 ( ) 4		
<b>14) In relation to capacity and performance, mark the correct alternative:</b>		
( ) Performance is what the person does only in a standardized environment		
( ) Capacity is what one can do in their natural environment		
( ) Capacity is what the person can do in a standardized environment		
( ) Performance is when the person is fully functional		
<b>15) Which of the following categories refers to the sensation of pain?</b>		
( ) b280 ( ) d220 ( ) s430 ( ) e570		

Figure 1. Questionnaire applied specifically to training participants

Each training course lasted six hours and included the following topics: conceptualization, history, objectives, scope, organization, biopsychosocial model, coding system, ICF usage modes and exercises

for practice in ICF coding. Comprehensive and summarized core sets, validated assessment tools, coded assessment sheets and checklists were presented, their positive and negative points were discussed.

Issues related to public policies were worked, essentially through the scientific articles. During the course, the teaching method predominantly used was that of lectures, but at times it was encouraged to read and discuss scientific articles according to the Team Based Learning (TBL) methodology.<sup>11</sup>

### Data analysis

Descriptive statistics were used to characterize the sample and to compare percentages of correct answers pre- and post-training. Measures of central tendency and dispersion were used (mean, standard deviation) as well as absolute (n) and relative (%) values.

A chi-square test ( $\chi^2$ ) was used to evaluate if observed frequencies differed from expected frequencies in the questions on the knowledge of the ICF questionnaire. All analyses were performed with the Statistical Package for Social Sciences (SPSS) 19.0, with a significance level set at  $\alpha = 0.05$ .

### RESULTS

The sample consisted of 434 professional physiotherapists and occupational therapists, 81% female and 19% male, with a mean age of  $34.3 \pm 7.9$  [22-60] years and a mean time since graduation of  $9.3 \pm 7.2$  [1-37] years.

The vast majority of professionals (74%) completed their higher education in a private institution. More than half (59%) reported having Post-Graduation *Lato Sensu* and 41% of professionals reported that their first contact with the ICF was following graduation.

Of the 434 professionals who took the course, 419 (96.5%) individuals answered the pre-course questionnaire and 388 (89.4%) answered the post-course questionnaire resulting in an average of 92.6% professionals who answered the questionnaire before or after completion of training.

Regarding the question "what is the meaning of the acronym ICF?" It was observed that 98% (411) individuals answered correctly pre-course and the same percentage of volunteers correctly answered this question at the end of the training. The chi-square test revealed no statistically significant differences in the frequencies observed versus frequencies expected in this question ( $\chi^2 = 3.10$ ;  $p = 0.37$ ).

Regarding the components of the ICF, it was observed that 55% (223) of the individuals selected the correct answer pre-course, and 82% (311) of the individuals answered this question correctly post-course. There were statistically significant differences in frequencies observed versus expected frequencies in this question ( $\chi^2 = 90.68$ ;  $p < 0.01$ ), and professionals selected the correct answer significantly more times than anticipated.

When questioned about the meanings of the letters that corresponded to different categories of ICF, 74% (288) of the individuals selected the correct answer pre-course and 99% (382) selected the correct answer post-course. The chi-square test revealed statistically significant differences in the frequencies observed versus expected frequencies in this question, and the professionals were correct more frequently ( $\chi^2 = 107.40$ ,  $p < 0.01$ ) in the post course.

Regarding a question that represented a second level category, 19% (63) answered correctly pre-course and 67% (249) answered correctly post-course. There were statistically significant differences in the frequencies observed versus expected frequencies in this question ( $\chi^2 = 171.29$ ;  $p < 0.01$ ), and the professionals selected the correct answer significantly more times post-course.

Regarding the question about the negative aspects related to ICF, it was observed that pre-course 35% (123) answered correctly, while post course the percentage of correct answers was 82% (300). Again, the chi-square test revealed that this frequency was significantly higher than the expected frequency ( $\chi^2 = 89.74$ ,  $p < 0.01$ ).

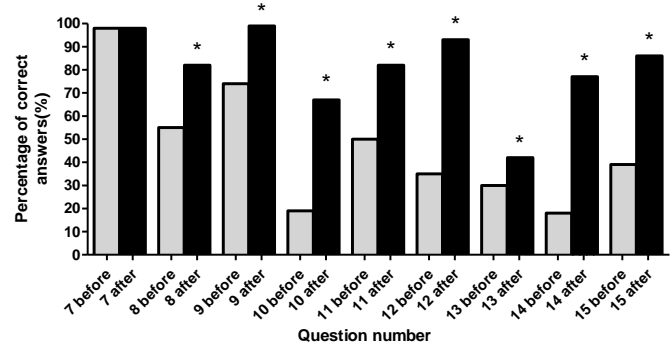
When questioned about an answer that did not represent a suitable qualifier, 35% (123) of the individuals selected the correct answer pre-course, and 93% (350) of the individuals chose the correct answer regarding this question post-course. This difference between frequencies observed versus expected frequencies was significant ( $\chi^2 = 275.07$ ,  $p < 0.01$ ).

When questioned about the minimum number of qualifiers for the body structure category, it was observed that 18% (70) of the individuals selected the correct answer pre-course, and post-course the percentage of correct answers was 77% (289 individuals). There were statistically significant differences in the frequencies observed versus frequencies expected in this question ( $\chi^2 = 18.91$ ,  $p < 0.01$ ). The professionals selected the correct answer significantly more times in the post course.

Concerning the question related to the correct meaning of capacity and performance, it was observed that 18% (70) of the professionals selected the correct answer pre-course and 77% (289) answered the question correctly post-course; the observed frequency was significantly higher than the expected frequency ( $\chi^2 = 292.90$ ,  $p < 0.01$ ).

When questioned about which of the categories represented "pain," 39% (123) of the professionals selected the correct answer pre-course and 86% (324) did so post-course. The chi-square test revealed statistically significant differences in the frequencies observed versus the frequencies expected in this question ( $\chi^2 = 172.23$ ;  $p < 0.01$ ). Again, the professionals selected the correct answers more frequently at the end of the course.

Correct answers for each question on the pre- and post-course questionnaires can be found in Figure 2. The asterisks signal as marker differences  $p \leq 0.05$  in the chi-square test.



**Figure 2.** Percentage of correct responses marked in the pre and post training period

### DISCUSSION

This study demonstrated that the training course for physical therapists and occupational therapists in the state of Minas Gerais on the use of ICF examined in this study could be effective, with the chi-square test demonstrating a significant increase in the number of correct answers post-course compared with pre-course. The only question for which a difference was not observed was "what does acronym ICF stand for?" which was correctly answered at the same frequency both pre- and post-course.

Although the use of ICF is recommended by the World Health Organization (WHO),<sup>12</sup> determined by the National Health Council (CNS) - Resolution 452/<sup>12,13</sup> and regulated by the Federal Council of Occupational Therapy and Therapy (COFFITO) - Resolution COFFITO 370/2009,<sup>14</sup> the data from the present study, obtained at the pre-course stage, showed that physical therapists and occupational therapists lack adequate knowledge about ICF. If we are unable to expand the knowledge of these professionals about ICF, it will remain impracticable in clinical practice, research, or otherwise.<sup>15</sup>

The WHO which created and recommended the use of the ICF has already identified problems related to the instrument. According to WHO, diversity of resources, and the breadth and complexity of the components of this instrument, associated with a lack of adequate training, make it difficult to use by professionals.<sup>1,15</sup>

To alleviate this problem, a training course was prepared and offered free of charge to physiotherapists and occupational therapists in the state of Minas Gerais. Because this is the fourth largest state in the federation and the second most populous state in Brazil,<sup>16,17</sup> a strategy of dividing the state into six mesoregions (North, South, East, West, Central and Triangle Mineiro) was adopted.

A city polo of each mesoregion received the face-to-face training course (Montes Claros, Poços de Caldas, Juiz de Fora, Governador Valadares, Belo Horizonte, and Uberlândia), with the city of Belo Horizonte being part of the most populous mesoregion and offering two course opportunities.

There are currently 21,864 physical therapists and 1,939 occupational therapists enrolled in Minas Gerais.<sup>18</sup> The profile of the professionals included in the present study corroborates data on the profile of university students in Brazil presented by the Census on Higher Education in 2012 by the Ministry of Education and Culture, where the average student is female (55.5%), studies at a private institution (73%), attends face-to-face courses (84.2%), and opts for baccalaureate courses (67.1%). It is important to highlight that in Brazil, physiotherapy and occupational therapy courses are offered exclusively in the classroom and for baccalaureate study.<sup>19</sup>

Several professionals answered that their first contact with the ICF occurred upon graduation. The state of Minas Gerais offers 62 physical therapy courses and three courses of occupational therapy.<sup>20</sup> Despite the large number of courses authorized in the state, ICF teaching in undergraduate courses does not seem to meet the needs of students.

This statement can be supported by data from a previous study,<sup>10</sup> which observed that most of the professionals who participated in the study reported intending to use ICF but not having done so because of lack of knowledge or difficulty in understanding the instrument.<sup>10</sup>

The superficial approach to this instrument in undergraduate courses was revealed in the present study; 98% of respondents pre-course knew the meaning of the acronym ICF, but this success rate dropped off precipitously as the questions grew more complex.

Pre-course, only 19% of the volunteers were able to identify a second-level category, and only 35% of the participants correctly answered questions related to ICF qualifiers or negative aspects of the instrument. The greatest lack of knowledge was observed regarding the minimum number of qualifiers for body structures and the meaning of capacity and performance, both with only 18% accuracy in the pre-course period. These data suggest that a systematized and in-depth treatment of ICF in undergraduate courses is sorely needed.<sup>9</sup>

It is important to highlight that the training course had a positive impact on ICF knowledge in the participants. In fourteen of the fifteen questions evaluated, the post-course success rate was significantly higher than the pre-course rate. Only for one of the questions (what is the meaning of ICF?) did the level of knowledge remain unchanged; however, as to be expected, pre-course knowledge of this acronym was quite high (98%).

The highest percentage of improvement was observed in questions related to the number of qualifiers used for body structures and a question regarding capacity and performance. In both, the success rate improved from 18% in the pre-course period to 77% in the post-course period, an addition of 59% more correct answers.

The questions that presented the least improvement after the end of the training were related to the components of ICF and to the letters that signify the categories of ICF. In this first question, the percentage of correct answers rose from 55% to 82%, an improvement of 27% and in the second question, the percentage of correct answers rose from 74% to 99%, an improvement of 25%.

It should be noted that pre-course correct answers were more frequent for these questions than others, such that even though the

percentage of hits increased to a lesser degree, it was still an important improvement.

Evaluating the impact of the training course on participants' responses makes it possible to make adjustments to the content provided in future trainings to further improve course outcomes and minimize misconceptions by professionals in clinical practice.<sup>8</sup>

Studies with similar objectives are rare in the literature, which prevents confirmation or disagreement among findings. In the only study that sought to assess the impact of an ICF training in Italy, main difficulties encountered were the use of qualifiers and an erroneous view of ICF as an evaluation tool. The authors highlight as the main positive effect of the course the improvement in understanding and use of ICF in daily practice, particularly in multidisciplinary teams.<sup>8</sup>

In the present study, both the course and the questionnaire were based on basic knowledge related to the ICF and therefore did not address complex issues related to the use of the instrument in clinical practice. However, it is noteworthy that the acquisition of knowledge, even basic, is a basic premise for those who wish to delve into the subject and or use the classification in clinical practice.

Moreover, it should be noted that the increase in the frequency of correct answers after participating in training does not necessarily represent that participants really absorbed the course content, after all, the absence of a follow-up period prevents the measurement of retained content.

Although no data were collected about the region of training of the professionals included in the present study, it is assumed that most of them graduated from programs in state of Minas Gerais. Thus, results regarding pre-course knowledge cannot be definitively extended to other states of the country. However, the results presented here demonstrate that professionals who have undergone training have improved their knowledge about ICF and that this is a plausible strategy to improve knowledge and use in the rest of the country.

The main limitations of this study were the absence of a follow-up period to detect the amount of knowledge retained by participants. The inability to discuss more in-depth content, especially those related to the use of ICF in clinical practice, given the logistics and workload of the courses, as well as the limited prior knowledge of participants. In addition, it is believed that the choice of lectures in relation to active teaching methodologies, can be pointed as a limitation of the study, since knowledge acquisition can be done more effectively through active methodologies.

## CONCLUSION

The present study demonstrated that the training course for physical therapists and occupational therapists in the state of Minas Gerais on the use of ICF was effective, and a significant increase in the number of correct answers was observed when comparing post-course to pre-course results. The absence of a follow-up period does not allow the measurement of the content retained by participants over time. In the future, it is intended to implement a follow-up period, as well as to elaborate a new course with more in-depth content based on active teaching methodologies.

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