








# Translation and Content Validation of the Plastic Surgery Milestones Project 2.0 for the Portuguese Language

## *Tradução e validação de conteúdo do Plastic Surgery Milestones Project 2.0 para a língua portuguesa*

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### Abstract

**Introduction** The assessment of skills acquired during plastic surgery residency remains challenging. The present study aimed to validate The Plastic Surgery Milestones Project 2.0—a tool used to assess the competencies developed by plastic surgery residents in programs accredited by the Accreditation Council for Graduate Medical Education (ACGME)—to enable its use in plastic surgery residency programs in Brazil.

**Materials and Methods** The process involved obtaining authorization from the ACGME, translating the instrument into Portuguese, adaptation by plastic surgery experts, content validation based on theoretical frameworks, and back translation to assess semantic equivalence.

**Results** The adapted instrument remained similar to the original after considerations and adjustments made by Brazilian experts. With the back translation, which was evaluated by a medical education expert and the ACGME, the adequacy of the translation was confirmed, which enabled the validation of the content of the instrument for the context of plastic surgery in Brazil. The similarity between Brazilian and international competencies facilitated this successful adaptation.

**Conclusion** The translation and adaptation of the Milestones instrument for the Brazilian culture was successful, since it maintained the original's psychometric properties. The adapted version is ready for application. However, additional studies are necessary to validate its accuracy and reliability in Brazilian programs.

### Keywords

- ▶ clinical competence
- ▶ education
- ▶ medical
- ▶ internship and residency
- ▶ surgery
- ▶ plastic
- ▶ translation

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## Resumo

**Introdução** A avaliação das competências adquiridas durante a residência médica em cirurgia plástica permanece desafiante. O objetivo deste estudo foi validar o instrumento The Plastic Surgery Milestones Project 2.0, ferramenta utilizada para avaliar as competências desenvolvidas pelos médicos residentes em cirurgia plástica dos programas credenciados no Conselho de Acreditação de Cursos de Graduação em Educação Médica (Accreditation Council for Graduate Medical Education, ACGME, em inglês) dos Estados Unidos, para possibilitar o uso nos programas de residência médica em cirurgia plástica no Brasil.

**Materiais e Métodos** O processo envolveu autorização do ACGME, tradução do instrumento para o português, adaptação por especialistas em Cirurgia Plástica, validação do conteúdo com base em referencial teórico e retrotradução para avaliar a equivalência semântica.

**Resultados** Os resultados indicaram que o instrumento adaptado se manteve semelhante ao original após considerações e ajustes realizados pelos especialistas brasileiros. Com a retrotradução, avaliada tanto por um especialista em educação médica quanto pelo ACGME, precursor do instrumento, atestou-se a adequação da tradução, o que permitiu a validação do conteúdo do instrumento para o contexto da Cirurgia Plástica no Brasil. A semelhança entre as competências brasileiras e internacionais possibilitou essa adaptação bem-sucedida.

**Conclusão** A tradução e adaptação do instrumento Milestones para a cultura brasileira foi bem-sucedida, e manteve as propriedades psicométricas do original, com a versão adaptada pronta para aplicação, embora estudos adicionais sejam necessários para validar sua acurácia e confiabilidade nos programas brasileiros.

### Palavras-chave

- ▶ cirurgia plástica
- ▶ competência profissional
- ▶ educação médica
- ▶ internato e residência
- ▶ tradução

## Introduction

Plastic surgery is a medical specialty that has gained increasing significance in Brazil. According to the Brazilian Society of Plastic Surgery (Sociedade Brasileira de Cirurgia Plástica, SBCP, in Portuguese), Brazil is the second country in the world regarding the number of plastic surgeries performed, after the United States. These two countries have the largest absolute number of plastic surgeons, representing more than 30% of the world's total.<sup>1</sup>

Surgeon Ivo Pitanguy is one of the main people responsible for the development of plastic surgery in Brazil. Pitanguy founded the School of Plastic Surgery of Rio de Janeiro (Escola de Cirurgia Plástica do Rio de Janeiro, in Portuguese) in 1960 and trained many renowned Brazilian plastic surgeons, becoming a world reference.<sup>2</sup> From then on, plastic surgery in Brazil evolved rapidly, with the introduction of modern techniques and significant advances in the field.<sup>3</sup> Today, the country is a center of excellence in plastic surgery, attracting patients from all over the world.<sup>4</sup>

To become a plastic surgeon in Brazil, one needs to complete a 6-year medical degree, pass the selection process for the general surgery residency program, which lasts 3 years, and then go through another selection process to enter the residency or specialization in plastic surgery. The program lasts 3 years and consists of theoretical and practical classes, in addition to internships in services accredited by SBCP.<sup>5</sup>

During the plastic surgery residency, which is regulated by the Brazilian Ministry of Education and the Brazilian National Commission for Medical Residency, the resident physician has the opportunity to learn about several surgical techniques and aesthetic and reconstructive procedures, in addition to developing skills such as leadership, decision-making, teamwork, and communication.<sup>6</sup>

It is worth noting that the plastic surgery residency is extremely demanding, requiring a lot of effort and dedication from physicians who wish to become specialists. Moreover, it requires constant updating and continuous improvement regarding the surgical techniques and procedures. The training of qualified plastic surgeons is essential to ensure patient safety and the quality of the services provided in plastic surgery.

Currently, few methods are employed to evaluate resident physicians in Brazil. However, in the United States, there is a gradual interest in the “milestones” system in residency. These milestones are required to train a specialist physician in a given residency program.

The milestones are knowledge, skills, and attitudes regarding each competency of the Accreditation Council for Graduate Medical Education (ACGME), which are organized in levels with an ascending order, from the most basic to the most advanced.<sup>1-5</sup> These levels intend to ensure that the resident physician achieves all the standards expected for specialized medical practice before the end of the residency

**Diagrama Exemplo**

O diagrama abaixo apresenta um exemplo de um conjunto de marcos para uma subcompetência, no mesmo formato da planilha da ACGME. Em cada período de avaliação, a performance do residente/fellow nos marcos de cada sub-competência será indicado pela seleção do nível que melhor descreve sua performance em relação a estes marcos.

Assistência ao Paciente 1: Fraturas				
Nível 1	Nível 2	Nível 3	Nível 4	Nível 5
Desenvolve um plano de tratamento para fratura simples, com assistência.  Maneja o cuidado de fraturas simples, com assistência.  Identifica os pacientes com seguimento pós-operatório anormal	Desenvolve um plano de tratamento para fratura simples.  Maneja o cuidado de fraturas simples.  Maneja complicações simples	Desenvolve um plano de tratamento para fratura moderadamente complexa.  Executa aspectos críticos do cuidado de fraturas moderadamente complexas.  Identifica e formula um plano para complicações que requerem abordagem cirúrgica.	Desenvolve um plano de tratamento para fratura complexa.  Executa aspectos críticos do cuidado de fraturas complexas.  Selecionar a caixa de resposta na linha que divide dois níveis significa que os marcos nos níveis abaixo foram consideravelmente demonstrados, assim como alguns marcos do nível acima.	Desenvolve um plano de tratamento para cirurgia revisional complexa.  Realiza cirurgias revisionais complexas.  Realiza a abordagem cirúrgica de complicações complexas.
Comentários:				
			Nível 1 ainda não completo	<input type="radio"/>
			Não avaliável	<input type="radio"/>

**Fig. 1** Example diagram translated into Portuguese with recommendations on how to complete the assessment instrument.

program. For each predefined evaluation period, the student is allocated to one level of the residency milestones based on their performance. Allocation to a given level implies that the student has substantially reached the milestones of that level as well as the milestones of the more basic levels before it (► Fig. 1).<sup>7</sup>

Considering the evolution of residency programs abroad that follow the internationally-validated milestones of the instrument The Plastic Surgery Milestones Project 2.0, aiming to enable such assessment methods in plastic surgery residency in Brazil, and knowing that the direct application of this instrument in different cultural contexts requires careful adaptations to ensure its validity and suitability in each specific environment, the present study aimed to translate and validate the content of this instrument to certify that plastic surgery residents completing the program are prepared for the job market and have all the required skills to be considered specialists. This instrument will enable an analysis of the student’s progression throughout the residency and, as a result, lead to a better standardization of professional training in Brazil.

**Objective**

The present study aimed to translate and validate the content of The Plastic Surgery Milestones Project 2.0—a tool to assess the skills developed by plastic surgery residents in ACGME-accredited programs—for use in plastic surgery residency programs in Brazil.

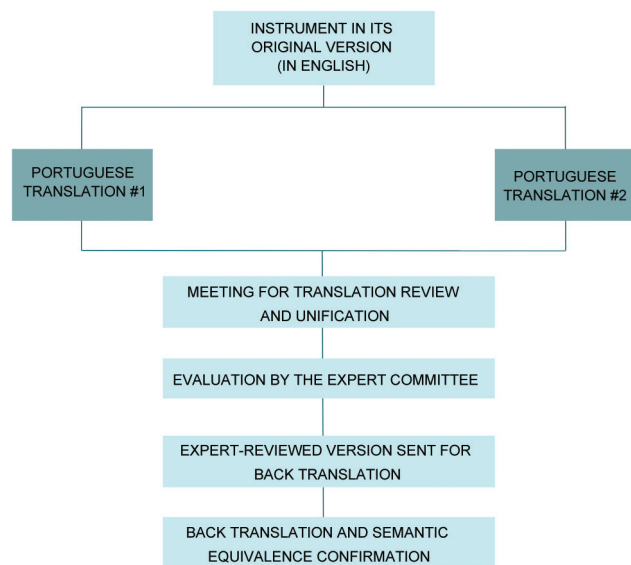
**Materials and Methods**

The methodology adopted for this study began with obtaining authorization from the ACGME to use The Plastic Surgery Milestones Project 2.0 to evaluate plastic surgery residents in Brazil. Subsequently, the instrument was translated from the original language (English) into Portuguese by two translators trained in English and with experience in the health field.<sup>8</sup> In cases of discrepancy between the translations, we synthesized the versions to ensure the coherence and accuracy of the translation.<sup>9</sup>

After the translation, an expert panel consisting of plastic surgery specialists and medical educators received the instrument to adapt it per their experience and practical knowledge.<sup>10</sup>

The instrument items underwent a detailed review, considering criteria such as clarity, relevance, and semantic equivalence. We assessed whether the items kept their comprehensibility and cultural relevance. To this end, the instrument was back translated into the original language (English) to compare and reconcile the translated items, thus ensuring semantic equivalence.

A qualified translator fluent and proficient in English, residing in the target country of the study, performed the back translation.<sup>11</sup> Next, the instrument underwent a semantic check by a medical educator to confirm its adequate adaptation to the specific context of the study. In addition, the ACGME reviewed the back translation and provided us with positive feedback regarding it, corroborating the adapted instrument’s fidelity and adequacy.



**Fig. 2** Methodology for the translation and content validation study of The Milestones in Plastic Surgery 2.0 instrument.

### Results

► **Fig. 2** shows the translation into Portuguese and content validation stages of The Plastic Surgery Milestones Project 2.0.

It is worth noting that the back translation demonstrated that the Portuguese version corresponded to the English version, reiterating the lack of significant semantic divergence between the two translations.

The initial translations into Portuguese presented semantic similarity, that is, there was agreement regarding

the meaning of the words and the relationship between them in the two independent versions. However, in some circumstances, the different translators chose different words with similar meanings when translating the same term (such as “the milestones were created” versus “the milestones were developed”). We reviewed the translations in a meeting and selected and unified the best-translated version in terms of understanding and adaptation to the Brazilian scenario. The unified translation was presented to plastic surgery preceptors from all over Brazil, who pointed out potential errors in the translation of specific words within the scope of plastic surgery. Next, a final version was prepared.

The final version was sent, with the required corrections, for back translation by a specialized translator to enable its analysis by the ACGME and confirm the semantic equivalence of the project.

The Plastic Surgery Milestones Project, in its original version, is a 22-page document containing several clinical situations in aesthetic and reconstructive plastic surgery. It addresses issues related to the doctor–patient interaction and theoretical and practical medical knowledge (► **Figs. 3–5**).

### Discussion

The lack of instruments to assess medical skills in plastic surgery in Portuguese led us to identify The Plastic Surgery Milestones Project 2.0 as an appropriate internationally-validated instrument available in English. The methodology employed ensures that the translated version may be Applied in experimentally to plastic surgery residency programs in Brazil to effectively assess the competencies and skills of residents.

Assistência ao Paciente 1: Fraturas				
Nível 1	Nível 2	Nível 3	Nível 4	Nível 5
Desenvolve um plano de tratamento para fratura simples, com assistência.  Maneja o cuidado de fraturas simples, com assistência.  Identifica os pacientes com seguimento pós-operatório anormal.	Desenvolve um plano de tratamento para fratura simples.  Maneja o cuidado de fraturas simples.  Maneja complicações simples.	Desenvolve um plano de tratamento para fratura moderadamente complexa.  Executa aspectos críticos do cuidado de fraturas moderadamente complexas.  Identifica e formula um plano para complicações que requerem abordagem cirúrgica.	Desenvolve um plano de tratamento para fratura complexa.  Executa aspectos críticos do cuidado de fraturas complexas.  Realiza a abordagem cirúrgica de complicações de rotina.	Desenvolve um plano de tratamento para cirurgia revisional complexa.  Realiza cirurgias revisionais complexas.  Realiza a abordagem cirúrgica de complicações complexas.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comentários:			Nível 1 ainda não completo <input type="checkbox"/>	<input type="checkbox"/>
			Não avaliável <input type="checkbox"/>	<input type="checkbox"/>

**Fig. 3** Excerpt from the instrument after translation and expert review on the topic of “fractures”.

Assistência ao Paciente 3: Retalhos e Enxertos				
Nível 1	Nível 2	Nível 3	Nível 4	Nível 5
<p>Discute a escada reconstrutiva.</p> <p>Coleta enxertos de pele, com assistência.</p> <p>Identifica a cicatrização anormal de enxertos de pele e aborda as complicações, com assistência.</p>	<p>Desenvolve um plano de tratamento que inclui retalho local.</p> <p>Executa retalhos locais ou enxertos de osso/tendão, com assistência.</p> <p>Maneja complicações pós-operatórias de rotina de retalhos locais.</p>	<p>Desenvolve um plano de tratamento que inclui retalho regional e pediculado.</p> <p>Executa retalhos regionais e pediculados, com assistência; coleta enxerto de tecidos complexos.</p> <p>Formula planos para complicações, incluindo autonomização de retalho; identifica e inicia tratamento para complicações.</p>	<p>Desenvolve um plano de tratamento incluindo retalho complexo (ex., retalho da artéria interóssea posterior).</p> <p>Executa fechamento com retalhos regionais e pediculados.</p> <p>Executa a abordagem cirúrgica de complicações de rotina.</p>	<p>Desenvolve um plano de tratamento para retalho complexo de tecido composto ou cirurgia revisional.</p> <p>Executa retalho complexo de tecido composto ou cirurgia revisional.</p> <p>Executa o manejo cirúrgico de complicações de tecido complexo ou cirurgia revisional.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comentários:			Nível 1 ainda não completo <input type="checkbox"/>	Não avaliável <input type="checkbox"/>

Fig. 4 Excerpt from the instrument after translation and expert review on the topic of “flaps and grafts”.

The assessment instrument was translated and adapted after approval by the ACGME, following previously-established translation and content-validation standards. There were no difficulties in understanding any of

the questions during this process. The instrument is recognized and widely used in the United States in various medical services and subspecialties, and is efficiently applied in clinical settings, enabling the assessment of

Conhecimento Médico 2: Mamas				
Nível 1	Nível 2	Nível 3	Nível 4	Nível 5
<p>Discute como o câncer de mama afeta globalmente o risco cirúrgico da paciente (ex. risco de trombose venosa profunda).</p> <p>Discute a embriologia e anatomia da mama.</p> <p>Descreve as propriedades materiais de expansores de tecido/implantes, matrizes dérmicas acelulares e injetáveis, como enxertos de gordura.</p>	<p>Descreve o sistema de estadiamento de mamografias Breast Imaging-Reporting and Data System (BIRADS).</p> <p>Identifica e descreve patologias benignas da mama (ex. hipoplasia, hiperplasia, ginecomastia).</p> <p>Descreve as opções de tratamento (ex: reconstrução com grande dorsal e TRAM) e implantes (ex. tamanho de expansor de tecido e implante).</p>	<p>Diferencia subtipos e estadiamento e como afetam a terapia adjuvante.</p> <p>Descreve indicações e técnicas de cirurgia não-oncológica da mama (ex. diretrizes da World Professional Association for Transgender Health, padrões de incisão, pedículos).</p> <p>Descreve complicações de curto e longo-prazo da cirurgia de reconstrução mamária (ex. contratatura capsular, linfoma anaplásico de células grandes associado a implante mamário, <i>bottoming out</i>).</p>	<p>Explica os resultados esperados da paciente de acordo com o tumor e cirurgia de reconstrução de mama realizada.</p> <p>Descreve as implicações fisiológicas, anatômicas e hormonais do tratamento das doenças da mama.</p> <p>Explica a indicação e o planejamento de um procedimento cirúrgico realizado em mais de uma etapa, incluindo cirurgia revisional (ex. expansores de tecido, matriz dérmica acelular).</p>	<p>Explica algoritmos de tratamento específicos em conjunto com outros serviços de oncologia.</p> <p>Antecipa e articula as implicações de cirurgia e tratamento prévios no risco cirúrgico e planejamento.</p> <p>Mantém-se atualizado sobre as recomendações da FDA/ANVISA sobre próteses e materiais (ex. implantes, matriz acelular dérmica).</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comentários:			Nível 1 ainda não completo <input type="checkbox"/>	Não avaliável <input type="checkbox"/>

Fig. 5 Excerpt from the instrument after translation and expert review on the topic of “breast”.

professionalism, communication skills, and medical knowledge.

Residents undergo an assessment and receive grades on competency scales and developmental milestones throughout the year, which enables them to recognize limitations and deficiencies to improve them. Furthermore, competency-based training enables a more uniform curriculum development for medical residency schools.<sup>12</sup> The purpose is to make specialist training programs more appropriate regarding current demands, making specialist physicians competent to work in public and private services, whether in large centers or not.

We used translation and content-validation methodologies to ensure the semantic and conceptual accuracy of the instrument. In addition to the ACGME, we consulted a native Portuguese-speaking medical educator to review the back translation and confirm semantic equivalence. The limitations of the present study included regional differences and particularities in Brazil and the need for additional instrument validation as a pretest to ensure the generalizability of the results.

The possibility of using this instrument as a method to evaluate and improve the quality of teaching in medical residency services provides society with better-prepared professionals. The Brazilian version of The Plastic Surgery Milestones Project 2.0 will enable the evaluation of the main deficiencies in plastic surgery services in the country and potentially improve medical education.

## Conclusion

The translation and adaptation of The Plastic Surgery Milestones Project 2.0 to the Brazilian culture was successful. We did not include or exclude items from the original questionnaire, preserving its psychometric properties. The adapted version is easy to administer, and we propose its annual application to residents in their 3-year residency, similar to the annual test proposed by the Department of Teaching and Accredited Services (Departamento de Ensino e Serviços Credenciados, DESC, in Portuguese) of the SBCP. Although there is no evidence against the adequate translation and content validation of The Plastic Surgery Milestones Project 2.0 to the Brazilian version, further studies are required to verify its accuracy and reliability in plastic surgery residency programs in Brazil.

### Authors' Contributions

DV: data analysis and/or interpretation, data collection, conceptualization, project management, investigation, methodology, writing – original draft preparation, and writing – review and editing; API: data collection and investigation; JMS: final manuscript approval, project management, investigation, and supervision; CFC: data

analysis and/or interpretation, and final manuscript approval; DYS: data collection and conceptualization; SM: data collection, methodology, and visualization; and BLP: resource management.

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### Clinical Trials

None.

### Conflict of interests

The authors have no conflict of interests to declare.

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