Thieme

ESPRAS Survey on Continuing Education in Plastic, Reconstructive and Aesthetic Surgery in Europe

ESPRAS Umfrage zur Weiterbildung in der Plastischen Rekonstruktiven und Ästhetischen Chirurgie in Europa

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Key words

ESPRAS, Training, Specialization, Reconstructive Surgery, Aesthetic Surgery, Europe

Schlüsselwörter

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ABSTRACT

Background Specialty training in plastic, reconstructive and aesthetic surgery is a prerequisite for safe and effective provision of care. The aim of this study was to assess and portray similarities and differences in the continuing education and specialization in plastic surgery in Europe.

Material and Methods A detailed questionnaire was designed and distributed utilizing an online survey administration software. Questions addressed core items regarding continuing education and specialization in plastic surgery in Europe. Participants were addressed directly via the European Leadership Forum (ELF) of the European Society of Plastic, Reconstructive and Aesthetic Surgery (ESPRAS). All participants had detailed knowledge of the organization and management of plastic surgical training in their respective country.

Results The survey was completed by 29 participants from 23 European countries. During specialization, plastic surgeons in Europe are trained in advanced tissue transfer and repair and aesthetic principles in all parts of the human body and within several subspecialties. Moreover, rotations in intensive as well as emergency care are compulsory in most European countries. Board certification is only provided for surgeons who have had multiple years of training regulated by a national board, who provide evidence of individually performed operative procedures in several anatomical regions and subspecialties, and who pass a final oral and/or written examination.

Conclusion Board certified plastic surgeons meet the highest degree of qualification, are trained in all parts of the body and in the management of complications. The standard of continuing education and qualification of European plastic surgeons is high, providing an excellent level of plastic surgical care throughout Europe.

ZUSAMMENFASSUNG

Hintergrund Die Facharzt-Weiterbildung für Plastische und Ästhetische Chirurgie ist eine Grundvoraussetzung für sichere und effektive Patientenversorgung. Ziel der vorliegenden Studie war die Darstellung von Gemeinsamkeiten und Unterschieden in der Weiterbildung für Plastische Chirurgie innerhalb von Europa.

Materialien und Methoden Ein internetbasierter Fragebogen wurde mit Hilfe eines kostenlosen Formularerstellungstools erstellt und verteilt. Die Fragen betrafen Kernpunkte der Weiterbildung für Plastische Chirurgie in Europa. Die Teilnehmer wurden direkt über das European Leadership Forum (ELF) der European Society of Plastic, Reconstructive and Aesthetic Surgery (ESPRAS) kontaktiert. Alle Teilnehmer hatten weitreichende Kenntnisse über die Organisation und Struktur der plastisch-chirurgischen Weiterbildung in ihrem jeweiligen Land.

Ergebnisse 29 Teilnehmer*innen aus 23 europäischen Ländern nahmen an der Umfrage teil. Die Weiterbildung für Plastische Chirurgie beinhaltet grundlegende Prinzipien und Techniken zur Wiederherstellung von Form und Funktion innerhalb der verschiedenen Säulen der Plastischen Chirurgie, sowie in allen Körperregionen. In den meisten europäischen Ländern ist eine Rotation in der Intensiv- und Notfallmedizin und die Behandlung kritisch kranker Patienten obligatorisch. Voraussetzung für die Facharztbezeichnung ist die mehrjährige, national organisierte Weiterbildung, der Nachweis einer festgelegten Anzahl selbstständig durchgeführter Operationen, sowie die mündliche und/oder schriftliche Abschlussprüfung.

Schlussfolgerung Fachärzte für Plastische und Ästhetische Chirurgie sind hochqualifiziert und auch im Umgang mit Komplikationen geschult. Der Standard der Weiterbildung der europäischen Plastischen Chirurgen ist hoch, so dass innerhalb Europas eine hohe Qualität plastisch-chirurgischer Versorgung gewährleistet ist.

Introduction

Specialty training is an integral part of becoming a plastic, reconstructive and aesthetic surgeon. In European countries, it is organized by national training programs with defined curricula and training pathways. Above all lies patient safety: the aim of specialization is to provide patients with highly trained and skilled board-certified Plastic Surgeons. The European Union of Medical Specialists (UEMS) section of Plastic, Reconstructive and Aesthetic Surgery (PRAS) states that Plastic, Reconstructive and Aesthetic Surgery is a specialty "concerned with acute and non-acute conditions which may be congenital or acquired as a result of trauma, disease, degeneration or ageing in patients of both sexes and all ages. Its aim is the restoration or improvement of function and the normalization of appearance and well-being" [1]. The section of PRAS has stipulated European training requirements for the specialty, including reconstructive procedures of the entire body, burns and aesthetic surgery; although the exact content of the speciality training varies somewhat between different countries. The speciality is tech-

nical and non-organ specific. Many years of training in the limitations and possibilities of tissue transfer and tissue handling are fundamental to produce surgeons who are competent in plastic, reconstructive, and aesthetic surgery. Adequate specialty training is a prerequisite for both efficient and safe provision of care. In addition, it allows the specialized surgeon to independently perform certain diagnostic and therapeutic procedures that are limited to the specialty of plastic, reconstructive and aesthetic surgery.

Unfortunately, specialties without basic training in plastic surgery have started to perform advanced tissue transfers and aesthetic surgery. It is, however, a misconception that specific procedures can be learned in isolation without a solid foundation training in plastic, reconstructive, and aesthetic techniques. For example, the field of aesthetic surgery, as a distinct part of the plastic, reconstructive and aesthetic surgery specialty, is confronted by so called "Beauty Doctors" who perform surgical, as well as minimally-invasive aesthetic procedures without substantial training in the field. These practitioners are not specialized within the field of plastic, reconstructive and aesthetic surgery, and therefore have a limited skill set, and even more important a lack of awareness of possible complications and complication management. Importantly, there is currently no legal basis to prevent or regulate entry of non-surgical specialists, medical doctors without appropriate specialization, nurses, and paramedics into this field of medicine. Other examples include advanced tissue transfers performed by surgical disciplines without comprehensive training in plastic, reconstructive and aesthetic surgery, such as general surgeons, gynecologists or otolaryngologists. This ultimately impacts patient safety negatively and casts a bad light onto the specialty of plastic, reconstructive and aesthetic surgery itself, as patients and the public are often not aware of these circumstances.

The national societies of plastic surgery in Europe jointly face these challenges. Therefore, the European Society of Plastic, Reconstructive and Aesthetic Surgery (ESPRAS), which is the overarching European society for Plastic Surgery, has set out to increase the awareness of these shortcomings and to highlight the relevance of adequate training in plastic, reconstructive and aesthetic surgery for patient safety. Therefore, as a first step, the aim of the presented study was to assess and portray similarities and differences in the continuing education and specialization in plastic surgery in Europe. The goal is to evaluate the standard of continuing education and qualification of European plastic surgeons, and, as a next step, to achieve European alignment and harmonization.

Materials and Methods

Study Design

A detailed questionnaire was designed and distributed utilizing an online survey administration software (Google Forms, Google, California, U.S.). Questions addressed core items regarding continuing education and specialization in plastic surgery in Europe after full registration. These included items on organization of entry into plastic surgical training, details about plastic surgical training, such as core rotations and treatment spectrum, in addition to requirements for board certification, such as examinations and proof of performed procedures. The study was initiated in March 2022 and data entry was discontinued in April 2022.

Sample

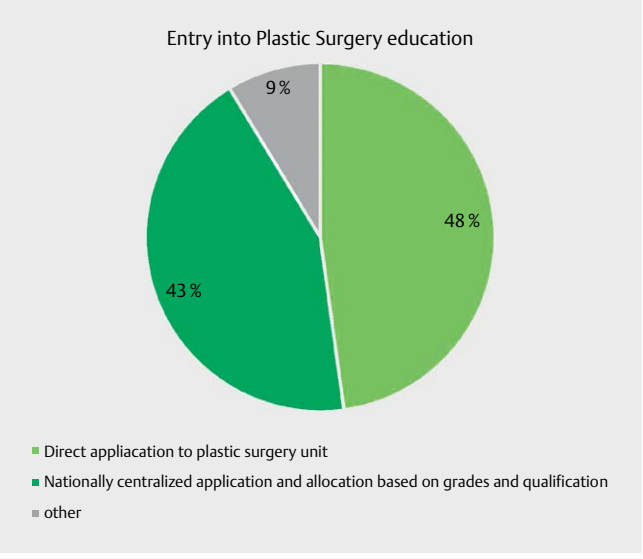
Participants were addressed directly via the European Leadership Forum (ELF). These included members of the ESPRAS Executive committee (ExCo), delegates to ESPRAS, as well as members of the board (presidents, vice presidents, secretary generals) of national plastic surgery societies in Europe, other European societies for subspecialties of plastic surgery and sole member societies. All participants therefore had detailed knowledge of organization and management of plastic surgical training in their respective country. One completed questionnaire for each national society was included.

Data analysis

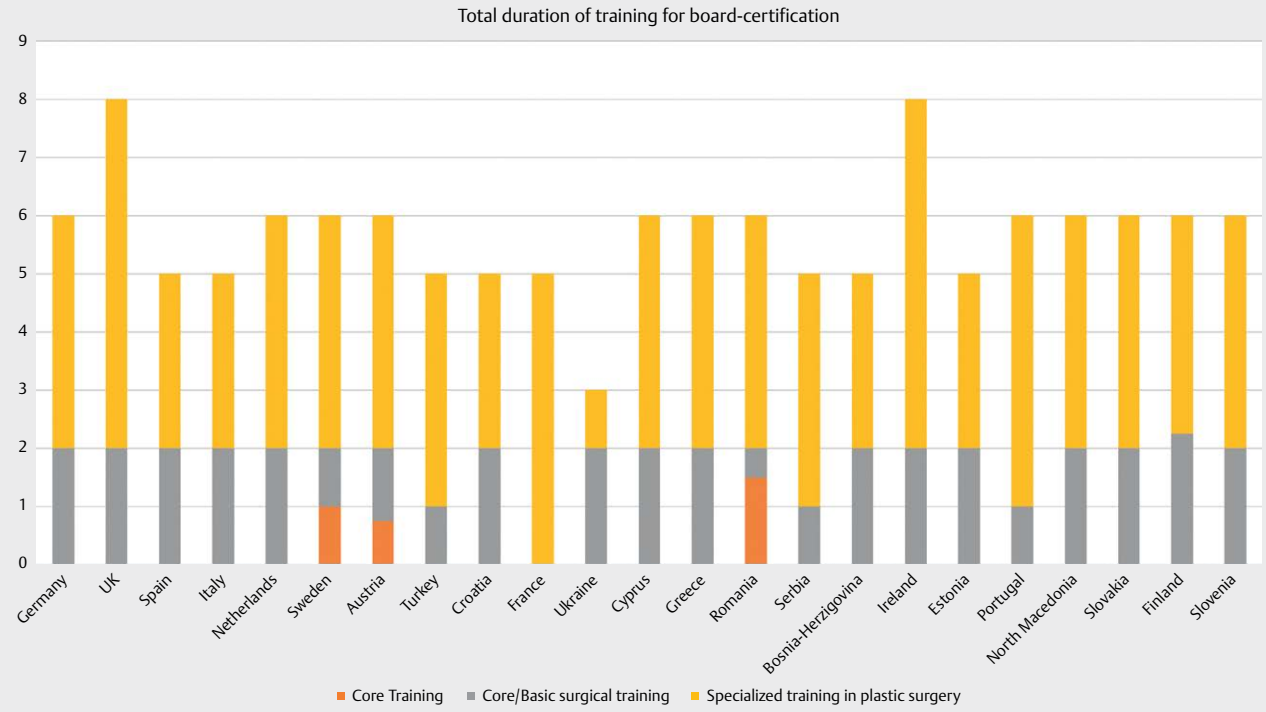
Data is presented as absolute and relative frequencies. Answers to free text questions were clustered into groups and reported as absolute and relative frequencies. All calculations were performed using Microsoft Excel (Microsoft, Redmond, WA, USA). Graphical analysis was performed using Google Forms (Google, California, U.S.) and Microsoft Excel (Microsoft, Redmond, WA, USA). A color-code was generated ranking performance of individual European countries with regard to the questioned items from red (worst) to green (best). Countries were then highlighted on a publicly accessible Europe MapChart (https://www.mapchart.net/europe.html).

Ethics

This study was conducted in accordance with the Declaration of Helsinki. Personal data were treated in accordance with European General Data Protection Regulation. Data was analyzed anonymously. Participants were informed in detail regarding the scope of the study and provided informed consent prior to initiation.



▶ **Fig. 1** Pie chart depicting participants response to item addressing the levels of entry into plastic surgery education.



▶ **Fig. 2** Bar graph depicting the total duration (in years) and structure of training required for board certification as a plastic surgeon in European countries. * Undergraduate training, foundation year before full registration, elective periods, or similar are not included.

Results

The survey was completed by 29 participants from 23 European countries.

Training, core rotations and treatment spectrum

Entry into plastic surgery education is commonly controlled via two different routes (▶ **Fig. 1**). Firstly, 48 % of participants stated that applications are directly forwarded toward the plastic surgery unit of choice by the medical doctor. Secondly, and according to 43 % of respondents, entry into plastic surgery education is organized via a centralized national program with allocation being based on an algorithm considering grades and qualifications of the applicant. The total duration of plastic surgical training continues for a mean of 5.7 ± 1.0 years with a range between 3 and 8 years within European countries (▶ **Fig. 2**).

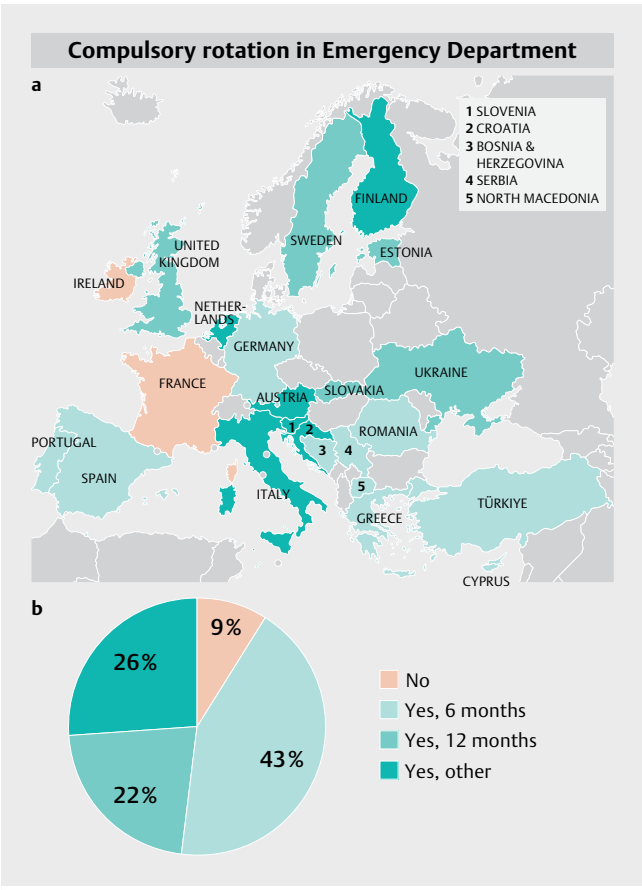
Core training and/or basic surgical training as part of plastic surgery specialization were reported by 96 % of respondents (▶ **Fig. 2**). This can involve training in a surgical emergency department (range < 3 months to 24 months), as reported by 91 % of respondents (▶ **Fig. 3**), as well as training in an intensive care unit (▶ **Fig. 4**), as reported by 70 % of participants (range: 1 to 12 months). Treatment of severely burnt patients was compulsory for board certification in 83 % of respondents´ countries (▶ **Fig. 5**).

Training is not limited to a hospital facility but can also be performed in a plastic surgical practice, as reported by 41 % of participants (▶ **Fig. 6a**). Thereby, the accepted time-period varies between European countries, with a range of 3 months to 3 years of training being possible within a practice. In most countries, research and teaching are important parts of plastic surgical training during residency (▶ **Fig. 6b**). This was claimed by 70 % of respondents. An interim evaluation during training is performed annually (65 %), whereas no interim evaluations are performed according to 35 % of respondents (▶ **Fig. 6c**).

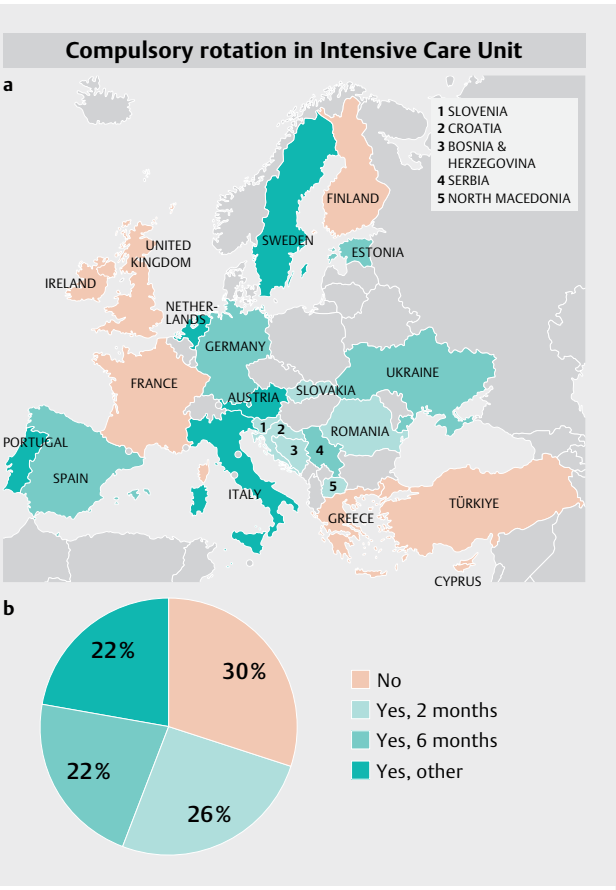
Requirements for board certification

According to 87 % of participants, the fulfillment of a predefined plastic surgical operation catalogue was required for board certification (▶ **Fig. 7**). In addition, a high majority of respondents report that final examination is required for board certification (91 %) (▶ **Fig. 8**). In most cases, this examination includes both oral and written assessments (65 %). Requirements for board certification include proof of surgical training in procedures performed within the subspecialties of breast surgery (91 %), reconstructive surgery (91 %), burn surgery (87 %), hand surgery (78 %), cranio-facial surgery (65 %) and various other disciplines such as pediatrics, otorhinolaryngology and skin cancer (all 4 %) (▶ **Fig. 9a**). Proof of training also included procedures performed in all parts of the body, including the head- and neck (91 %), breast (91 %), the trunk (91 %), as well as upper- and lower extremities (87 %) (▶ **Fig. 9b**). Mandatory proof of procedures performed in aesthetic surgery was reported by 87 % of respondents.

Board certification is issued either by a medical association (52 %), an assigned federal ministry (i. e., ministry of health, ministry of education) or other government agencies (22 %), the university or medical school itself (17 %), or the respective national society of plastic surgery (9 %) (▶ **Fig. 10a**). Most European countries



▶ **Fig. 3** (**a**) Map chart of European countries that participated in the survey marked according to a color-code ranking performance with regard to the questioned item. (**b**) Pie chart depicting participants response to item addressing rotation in emergency medicine during plastic surgical specialization.; * yes, other: Croatia: „5 years including general and plastic surgery"; Austria: „module system"; Italy: „3 to 6 months"; Finland: „Less than three consecutive months. On call duty in emergency department during the entire training"; Netherlands: „Variable on hospital and experience out of training period"; Slovenia: „2 years, followed by emergency department night shifts".



▶ **Fig. 4** (**a**) Map chart of European countries that participated in the survey marked according to a color-code ranking performance with regard to the questioned item. (**b**) Pie chart depicting participants response to item addressing rotation in intensive care during plastic surgical specialization.; * yes, other: Austria: „module system"; Portugal: „3 months"; Italy: „3 to 6 months"; Sweden: „6 weeks"; Netherlands: „some centers".

do not recognize the European Board Examination in Plastic Surgery (EBOPRAS) as an equivalent to board certification in plastic surgery in their respective country (65 %) (▶ **Fig. 10b**).

Discussion

Specialization in plastic, reconstructive and aesthetic surgery continues to rank amongst the most popular specialties in medicine, attracting high-potential candidates [2, 3]. Places for specialty training are limited, further propelling competition. Optimization and adaptation of plastic surgical training curricula has been ongoing for a considerable time, since plastic, reconstructive, and aesthetic surgery emerged as an independent specialty in Europe in the 1940s [4–7].

Previously, the ExCo of ESPRAS shared solutions on relevant matters common to national societies under the umbrella of ESPRAS in different survey-based studies [8–11]. Following this example, this study aimed at establishing the status quo of continuing education in plastic surgery in Europe. Aim was to raise awareness of the importance of high-quality specialization in order to perform safe, efficient and effective treatments for patients requiring care in the field of plastic, reconstructive and aesthetic surgery.

While this study found some differences in the organization and practice of plastic surgical training across European countries, the data show that the overall standard of continuing education is high. During specialization, plastic surgeons in Europe are trained in reconstructive and aesthetic techniques, including advanced tissue transfer in all parts of the human body and several subspecialties, such as hand surgery, burn surgery, and aesthetic surgery. Moreover, rotations in intensive, as well as emergency care further elevate the skill set of a plastic surgeon to treatment of critically ill patients.

Board certification in plastic, reconstructive and aesthetic surgery is only provided for surgeons who have multiple years of training regulated by a national board, who provide evidence of individually performed operative procedures in all aforementioned anatomical regions and surgical fields, and who pass a final oral and/

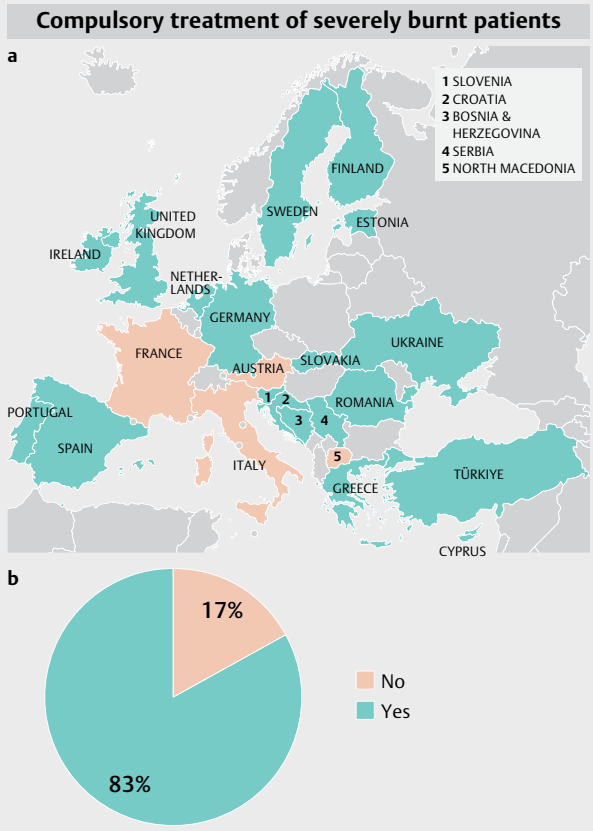
or written examination. Board certified plastic surgeons therefore meet the highest degree of qualification, are trained in all parts of the body and in the management of complications (▶ **Fig. 11**).

Many years of training in plastic, reconstructive, and aesthetic surgery are needed to grasp the possibilities and limitations of tissue transfer and to avoid and manage complications. The procedures cannot be isolated and learned as single procedures without these years of fundamental training. Therefore, it is not safe for surgeons and doctors without board certification in plastic surgery to perform these procedures, neither aesthetic nor reconstructive. The phenomenon can be described as a surgical Dunning-Kruger effect [12–14], where surgeons who do not have the proper specialist training might not grasp the difficulty of performing reconstructive and aesthetic surgery to a high standard and in a way that is safe for the patient.

Obtaining competence in both reconstructive and aesthetic surgery is key in the process of training to be a plastic surgeon. The competencies are closely linked to each other and both are necessary to perform plastic surgery. Given the popularity of aesthetic procedures, both surgical and minimally invasive, patient safety and a high standard are pressing issues [15]. In this field of medicine, patient safety is of pivotal importance and it can be endangered by underqualified practitioners from different specialties, or without any medical specialty at all, entering the field foremost for financial reasons, lacking adequate training in aesthetic surgery and complication management. Studies have identified a paucity in academic aesthetic facilities, and it should be the aim of plastic surgeons to establish these, in order to remain at the forefront of aesthetic surgery [16], and guarantee a high level of patient safety.

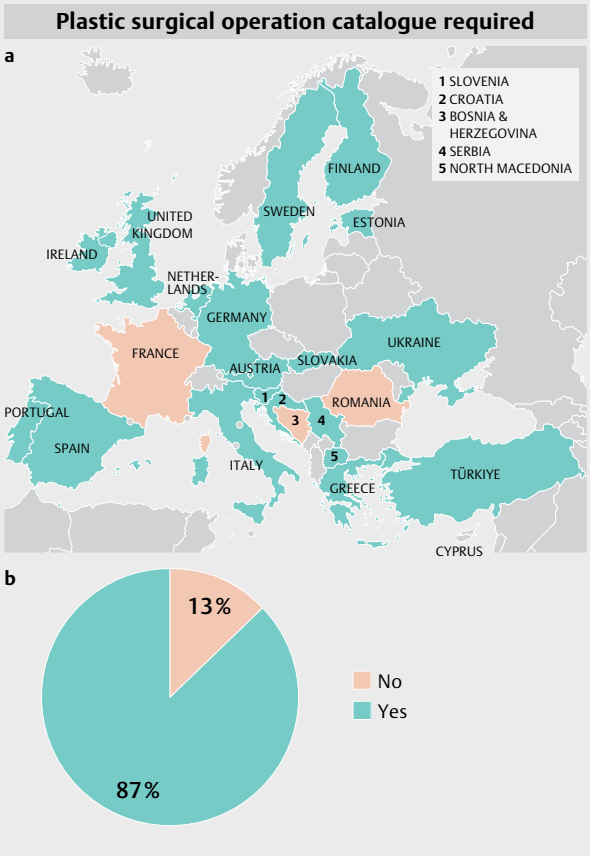
Patient care is strongly linked to science [17], and engaging in plastic surgery research lays the groundwork for being at the cutting edge of innovation in the field, defining new treatment strategies, expanding therapeutic options and improving patient outcomes [3]. Importantly, 70 % of respondents in this study claimed that research and teaching are tightly integrated into specialization. Hence, plastic surgeons are also trained academically, driving innovation in tissue engineering, regenerative medicine, transplantation, microcirculation, basic science, surgical technique development, outcomes research and more. A recent study showed that the highest publication volumes in the field of aesthetic surgery and breast reconstruction were contributed by plastic surgeons [18].

After having established the current structure and organization of plastic surgical continuous training in European countries, aim

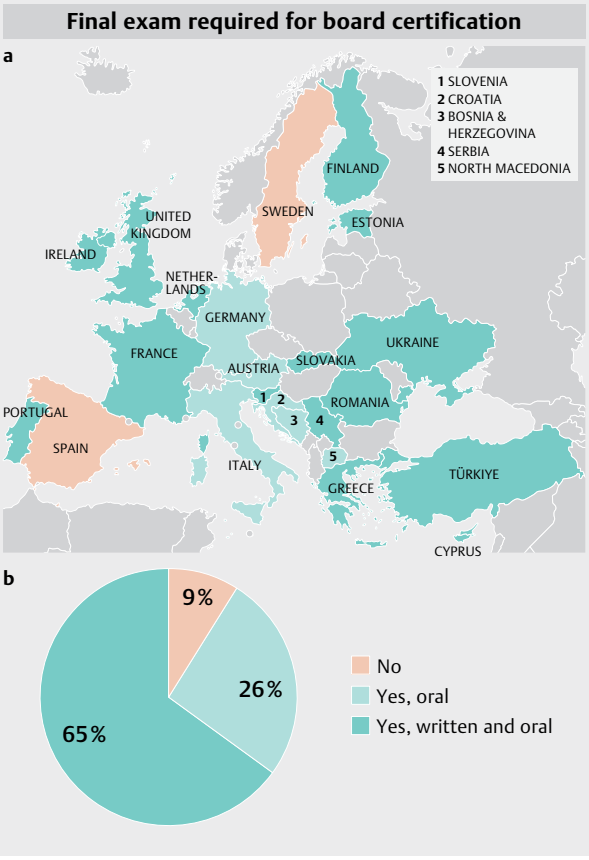


▶ **Fig. 5** (**a**) Map chart of European countries that participated in the survey marked according to a color-code ranking performance with regard to the questioned item. (**b**) Pie chart depicting participants response to item addressing the necessity of treatment of severely burnt patients during plastic surgical specialization.

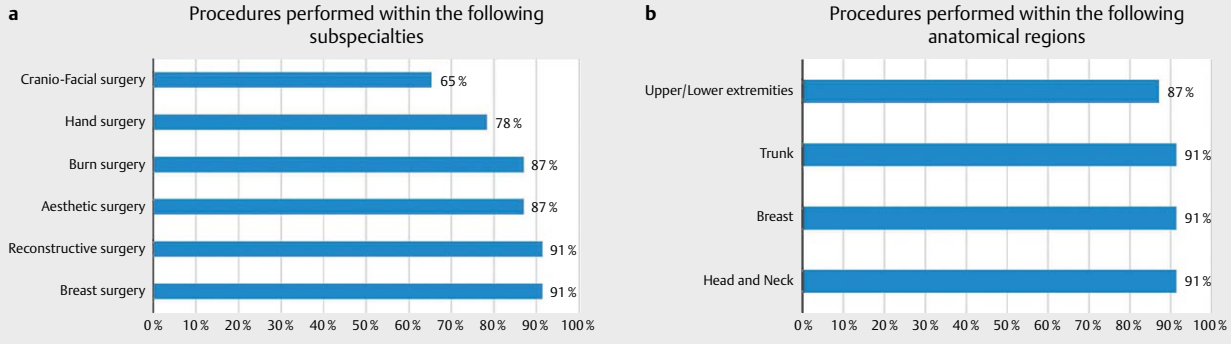
▶ **Fig. 6** Pie charts depicting participants response to items addressing research and teaching in plastic surgical training across European countries.



▶ **Fig. 7** (**a**) Map chart of European countries that participated in the survey marked according to a color-code ranking performance with regard to the questioned item. (**b**) Pie chart depicting the requirements for board certification in plastic surgery across European countries.



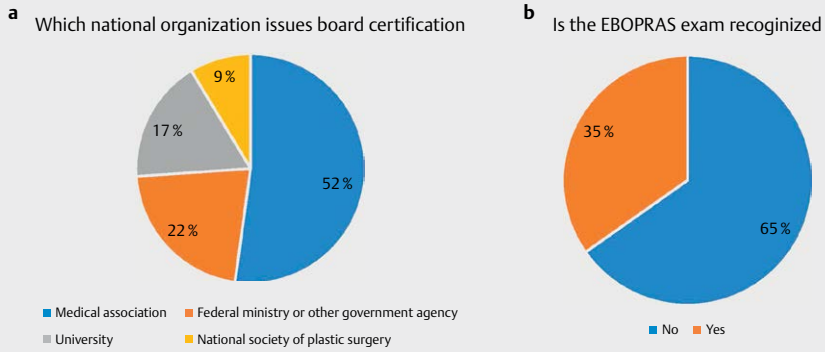
▶ **Fig. 8** (**a**) Map chart of European countries that participated in the survey marked according to a color-code ranking performance with regard to the questioned item. (**b**) Pie chart depicting the requirements for board certification in plastic surgery across European countries.



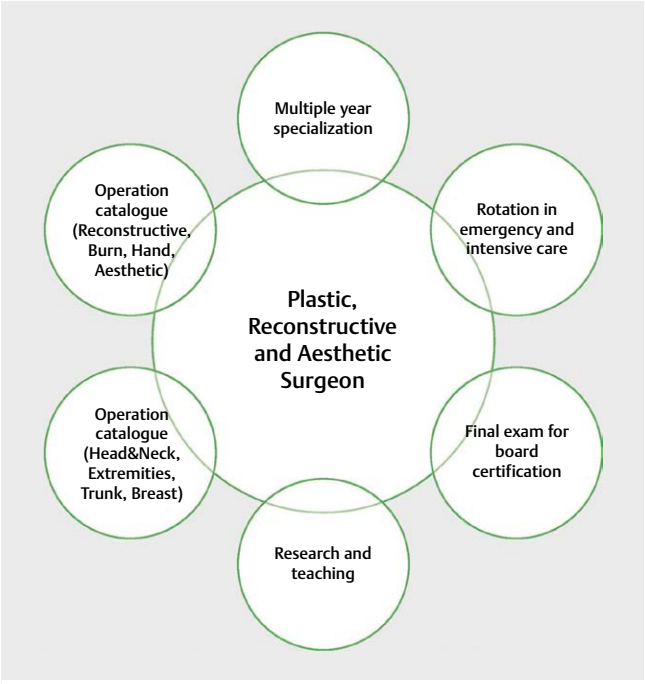
▶ **Fig. 9** Bar charts depicting the requirements for board certification in plastic surgery across European countries.

should be to achieve international harmonization. This will ascertain standards common to all European plastic surgeons and increase comparability between the level of qualification. Interestingly, a majority of approximately two out of three European countries do not accept the EBOPRAS examination for board certification, which is by definition *"intended both as a quality mark, and to help in the harmonisation of standards in EU (…) countries"* [19]. It is regarded more as a further distinction of plastic surgeons that demonstrate high educational standards. As a first step of European harmonization, and in order to increase European alignment, including EBOPRAS examination as a requirement for board-certification could be an important issue to pursue.

Overall, the data presented here demonstrate the high-level of training and qualification required for board-certification within



▶ **Fig. 10** Pie charts depicting the national organizations responsible for board certification across European countries.



▶ **Fig. 11** Qualifications of a board-certified plastic and reconstructive surgeon.

the field of plastic, reconstructive and aesthetic surgery all over Europe. The standardized continuing education ensures that board certified plastic surgeons can safely and effectively perform state-of-the art procedures in all subspecialties of plastic surgery, reconstructive, and aesthetic surgery, are aware of potential complications and possess the skill-set to handle these. It is vital to continue to increase patients´ awareness of the qualifications of medical professionals, in order for them to make informed decisions on who they select to be treated by.

Limitations

The limitations of this study are mainly related to the study design and the use of survey instruments. The data provided is merely descriptive and is self-reported. The study sample is an extremely narrow population, addressed specifically through channels of the ELF, which can be regarded both a weakness and a strength of the study, as respondents were all experts in the field of plastic surgery with detailed knowledge of organization and management of plastic surgical training in their respective country. In addition, pie charts depict results according to responses of individual European countries. These responses were weighted equally, without taking into account the size of the individual plastic surgical national societies and communities within these countries, in addition to the number of specialized surgeons. Some of the countries that participated in this study are not part of the European Union, however their societies of plastic surgery are under the umbrella of ESPRAS which is why they were not evaluated separately. In some European countries, parts of training can be performed outside of a hospital facility and within a practice. Unfortunately, the survey fails to further specify the nature of this training and the requirements of these practices or offices, exemplary whether they offer aesthetic training alone, or must include reconstructive surgery and whether this is performed within a private or public insurance-based setting. Last but not least, the study could be criticized as the included plastic surgeons might be biased towards underlining the importance of their own training. However, no other specialty comprises comprehensive skills in both reconstructive and aesthetic techniques.

Conflict of Interest

The authors declare that they have no conflict of interest.

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