

How we achieve satisfaction in training – A German-wide survey on preferred training conditions among trainers and trainees for board certification in gastroenterology

Wie erreichen wir Zufriedenheit bei der Weiterbildung – Deutschlandweite Umfrage zu bevorzugten Weiterbildungsbedingungen zum Facharzt für Gastroenterologie aus Sicht von Ausbilder:innen und Auszubildenden



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ABSTRACT

Background a majority of resident physicians in Germany are not satisfied with their training conditions. However, training satisfaction is important for physician retention and patient care. Although federal and state laws define the general training regulations and conditions, considerable variability still exists concerning their implementation in the healthcare units. Little is known about the expectations concerning training for gastroenterology board certification by trainers and trainees in Germany. This lack of data hinders discussion on and improvement of training in gastroenterology in Germany.

Aim assessment of preferred training conditions among trainers and trainees for board certification in gastroenterology in Germany.

Methods an anonymous, voluntary survey consisting of single- and multiple-choice questions utilizing the Likert scale and fill-in responses was circulated to all members of the German Society for Digestive and Metabolic Diseases (DGVS – Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselerkrankungen), as well as through the student council mailing lists of all German medical schools. The survey aimed to assess the consent regarding the ideal implementation of training regulations for gastroenterology board certification. Department heads, senior physicians, board-certified physicians, and outpatient-care physicians were classified as trainers and residents and students as trainees. Subgroups defined by place of work, age, gender, professional

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position, employment status, and parental status were investigated.

Results 958 responses were included in the final analysis. We found a broad consensus among trainers and trainees on most aspects of our survey. Considerable differences were seen in items on part-time work, overtime, protected time for research, and advanced endoscopy training.

Conclusion the broad consensus seen in this survey is indicative of a shared vision for training conditions among trainers and trainees. However, the areas of dissent identified in this survey may assist trainers to better understand the expectations of trainees. Furthermore, this survey creates a sound basis upon which training conditions for board certification in gastroenterology in Germany can be discussed and improved.

ZUSAMMENFASSUNG

Hintergrund Die Mehrheit der Weiterbildungsassistent:innen in Deutschland sind mit der Weiterbildung unzufrieden. Eine Verbesserung der Weiterbildungszufriedenheit ist sowohl für eine Verbesserung der Patientenversorgung als auch der Arbeitnehmerbindung wichtig. Trotz Limitationen aufgrund der Weiterbildungsordnungen bestehen Gestaltungsräume mit Hinsicht auf die Umsetzung der Regulationen und Ausgestaltung der Weiterbildung. Bislang ist wenig über die Ansichten und Wünsche von Ausbilder:innen und Auszubildenden mit Hinsicht auf die Weiterbildung zum Facharzt für Gastroenterologie bekannt. Dieser Mangel an Daten behindert die Diskussion über und die Verbesserung der Weiterbildung in Deutschland.

Ziel Diese Studie untersucht die von Ausbilder:innen und Auszubildenden bevorzugten Weiterbildungsbedingungen für die Weiterbildung zum Facharzt für Gastroenterologie.

Methoden Ein anonymer, freiwilliger Fragebogen mit Single- und Multiple-Choice Fragen, Likert-Skalen und Freifeldantworten wurde an alle Mitglieder der Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselerkrankungen (DGVS) und die E-Mail-Verteiler aller Fachschaften deutscher Medizinfakultäten versandt. Der Fragebogen wurde erstellt, um Konsens und Dissens mit Hinsicht auf ideale Umsetzung der Weiterbildungsordnung zum Facharzt für Gastroenterologie zu identifizieren. Chefärzt:innen, Oberärzt:innen, Fachärzt:innen sowie Ärztinnen und Ärzte in Niederlassung wurden als Ausbilder definiert, Studierende und Assistenzärzt:innen als Auszubildende. In Subgruppenanalysen wurde der Einfluss von Alter, Geschlecht, Arbeitsplatz, Position, Teilzeittätigkeit und Elternschaft untersucht.

Ergebnisse 958 Antworten wurden in der finalen Analyse berücksichtigt. Es zeigte sich ein breiter Konsens bei Ausbilder:innen und Auszubildenden in Hinsicht auf die meisten Aspekte, welche in unserer Umfrage abgefragt wurden. Signifikante Unterschiede zeigten sich jedoch etwa bei der Frage, ob eine gute klinische Ausbildung ohne Überstunden funktioniert, wie Forschungszeiten im Dienstplan wiedergegeben werden sollten und mit Hinsicht auf die Ausbildung von fortgeschrittenen Endoskopietechniken.

Schlussfolgerung Der breite Konsensus, welcher sich in unserer Studie zeigt, deutet auf eine gemeinsame Vision für die Weiterbildung bei Ausbilder:innen und Auszubildenden hin. Der aufgezeigte Dissens mit Hinsicht auf manche Aspekte könnte dazu dienen, dass Ausbilder:innen die Erwartungen der Auszubildenden verstehen. Diese Umfrage legt damit den Grundstein damit die Ausbildung zum Facharzt für Gastroenterologie diskutiert und verbessert werden kann.

Introduction

High-quality training of future gastroenterologists is important for improving patient care and reducing physician turnover [1]. The contents and regulations of further training in gastroenterology are laid down in Germany in both state and federal law. To achieve uniform training legislation in the medical associations of the federal states, the German Medical Congress adopts a training regulation, which is recommended to the federal state medical associations for adoption. Nevertheless, there is considerable variability in implementation. In Germany, satisfaction with conditions in residency training remains low, with up to 60% of trainees not being satisfied with their training conditions [2, 3, 4]. Around one-third of residents in Germany are considering changing their field of work, and more than half want to reduce working hours to part-time [5]. Specific data on physician training satisfaction in gastroenterology in Germany are lacking.

Conversely, around 80% of gastroenterology residents in Canada report being satisfied with their training programs [6]. Furthermore, training conditions are an important reason for physician emigration, in addition to increased salary and improved work-life balance [7]. These data underline the importance of training

conditions for physician retention, which is essential regarding the projected lack of physicians in Germany [8].

Staff shortage, high workload, and suboptimal work-life balance are commonly cited reasons for low trainee satisfaction [3, 4, 9]. Although these issues are being increasingly addressed, solutions, such as increased training of physicians or shifting the workload from physicians to other healthcare workers (e. g., administrative staff, nurse practitioners, or physician assistants), remain a policy challenge. Nevertheless, single institutions still have at least some degree of freedom regarding the organization of their physician training program.

Unfortunately, data on expectations and wishes regarding training for gastroenterology board certification in Germany are lacking. In the US, training conditions are seen more favorably by program directors compared to trainees in gastroenterology programs, pointing toward a disconnect in perception and expectations between trainers and trainees [10].

This study assesses the views of trainers and trainees in gastroenterology and medical students. We surveyed members of the biggest German Gastroenterology Society, the German Society for Gastroenterology, Digestive, and Metabolic Disorders (Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechsel-

erkrankungen, DGVS) and German medical students. The survey aims to identify possibilities to improve training conditions. Training is not formally organized in programs in Germany. Still, physicians in training rotate through different wards and specialties. One of this survey's focuses is determining the best way to organize these rotations. We also hypothesize that there would be significant differences concerning the position in a medical hierarchy structure, age, parental status, gender, and place of work.

Methods

An anonymous questionnaire (original survey **supplemental 1**, English translation of questions **supplemental 2**) using SoSci Survey software (Version 3.1.06) was circulated among trainers and trainees in gastroenterology and medical students in Germany; 6396 members of the DGVS were asked to participate via email. Invitations were additionally circulated through the student council mailing lists of all German medical schools. The survey was accessible from April 6th through May 7th, 2022, in the German language. The survey consisted of both single- and multiple-choice questions, and Likert-scale and fill-in responses were utilized [11]. Response to all questions was voluntary, and every question was skippable. Query logic branched depending on the response to the current position and part-time status and included 21 to 25 items. The spatial alignment of Likert scales was randomly alternated to exclude the possibility of left bias [12]. The authors of this paper jointly created the survey, which was subsequently pre-tested in March 2022 among members of the Young Gastroenterology Task Force (Arbeitsgruppe Junge Gastroenterologie) of the DGVS.

Responses and data censoring

There were 1136 participants, 139 of whom did not answer all questions. Incomplete surveys were excluded from further analysis. Additionally, we excluded the responses from physicians currently looking for jobs ($n=3$) because of small case numbers and respondents who decided not to disclose their training status. Another 18 responses without answers to single questions were censored. Ultimately, 958 responses were used for the final analysis. Given that 158 students answered our survey, the response rate for the DGVS was approximately 8%. The response rate for students was not calculable but most probably was considerably lower.

Ethics approval

Ethics approval was sought and granted before the circulation of the survey at the ethics committee of the Martin-Luther-Universität Halle-Wittenberg (2022-051). The study protocol adhered to all relevant data security and ethics guidelines.

Statistical analysis and representative study sample size calculation

Data cleaning, aggregation, descriptive analysis, and visualizations were realized in Python (version 3.7). The full raw data and annotated code are available for reproduction in a Google Colab document, which can be accessed via a GitHub repository:

https://github.com/GeneralGrube/JUGA_survey. A graphical overview over the responses to all questions can be found in **supplemental 3**. The sample size needed for a representative sample was calculated following Kotlik et al. [13]. Given the 6396 members of the DGVS with active email addresses, a margin of error = 0.05, and a confidence interval of 95%, a sample of $n=364$ was calculated. The sample size is therefore sufficient for DGVS members. Students currently enrolled at a German medical school were also included in this survey, but the sample size in this group is insufficient. Before analysis, the following subgroups were defined: workplace (university hospital, maximum provider, primary provider, and outpatient centers), age (≥ 42 years, <42 years), sex, professional position (physician in an outpatient center, department head, senior physician, board-certified physician, resident physician, or student), employment status (full-time or part-time), and parental status. Board-certified physicians (German: Facharzt) are physicians who passed the board exam. Generally, physicians in Germany are able to take the exam after a minimum of 5–6 years of training, depending on the field of board certification and additional prerequisites, which are different between federal states in Germany. 'Senior physicians' (German: Oberarzt) are physicians in an inpatient setting with a leadership role, promoted to senior physician, with being board-certified being a criteria that must be fulfilled in most cases, along with heterogeneous informal criteria depending on settings Department heads, senior physicians, board-certified physicians, and outpatient-care physicians were defined as trainers and residents and students as trainees.

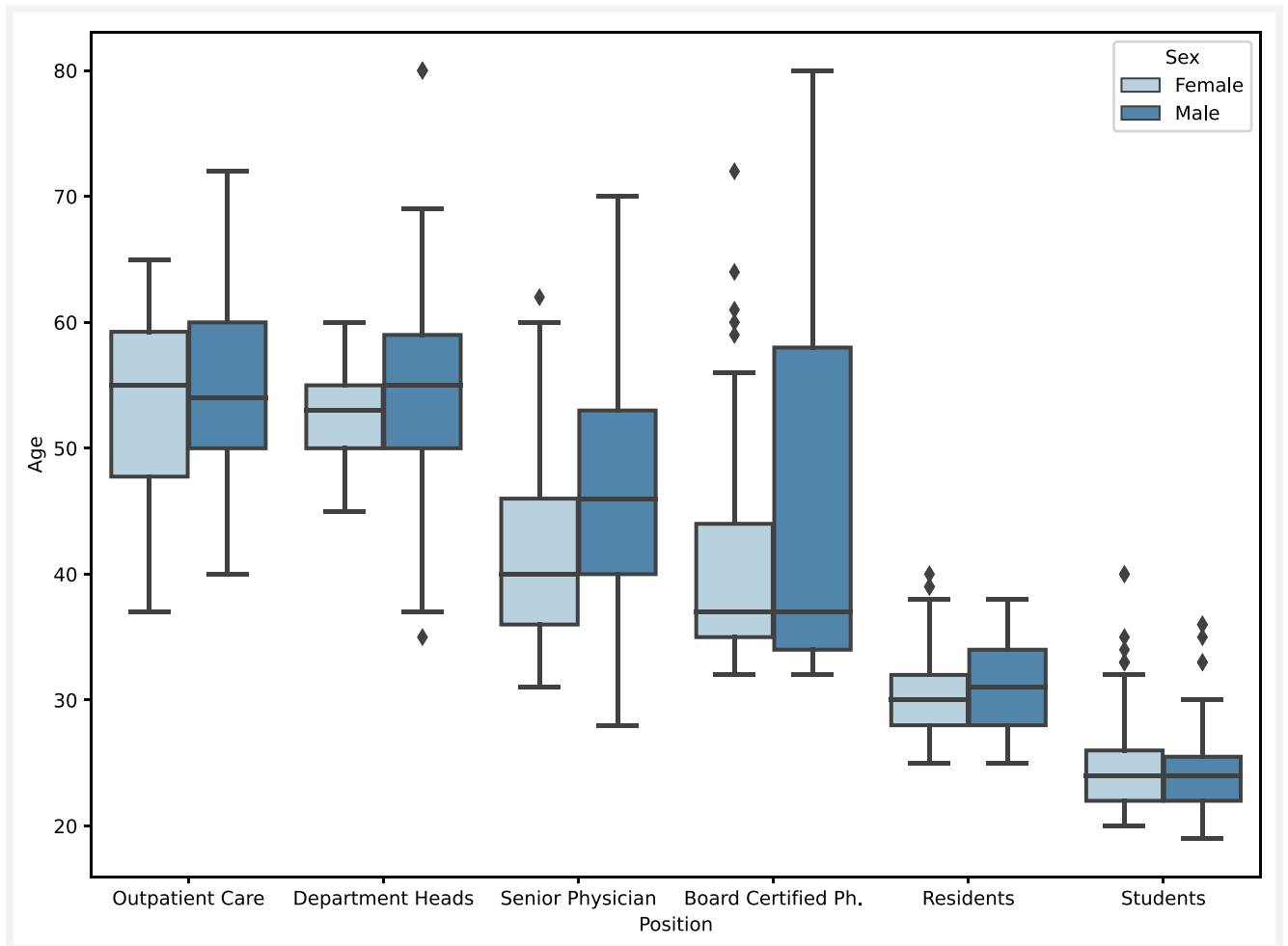
Results

Study cohort

Of the 958 respondents included in the final analysis, 465 (49%) were older than 42. The age structure in subgroups defined by position is shown in ► **Fig. 1**. Among physicians in the hospital, the median age of heads of departments was 54.0 \pm 15.91 years; of senior physicians 43.0 \pm 13.43 years; of board-certified physicians 37.0 \pm 14.34 years; of resident physicians 30.0 \pm 4.35 years. Among physicians working in outpatient centers, the median age was 54.0 \pm 12.5 years, and among students, 24.0 \pm 5.54 years. Of note, resident physician respondents were equally distributed among years of training (► **Table 1**), while medical student respondents were in the later parts of their studies. There was a dominance of male respondents ($n=579$; 60%) correlating with the predominance of male members of the DGVS. Less than half of the respondents (42.6%) care for children. Further characteristics, including place of work and position of respondents, are presented in ► **Table 1**.

Most respondents favor fixed rotation schedules based on the length of training

Approximately two-thirds responded that rotations to other specialties, emergency departments, intensive-care units, outpatient departments, and functional diagnostics should follow a fixed curriculum. Both trainers and trainees agreed to a similar degree.



► **Fig. 1** Age of respondents stratified by professional position and sex.

There was a shift in the response by seniority. Students and resident physicians preferred a fixed curriculum to a lesser extent than the board-certified physicians. Similarly, 51% of students preferred concurrent continuous sonographic or endoscopic training at the start of work, whereas 86% of residents preferred a fixed rotation in sonography and endoscopy (► **Fig. 2**). Physicians working at primary-care hospitals preferred fixed rotations to a lesser extent (64%) than university hospitals (88%), as well as full-time workers (68%) to a lesser extent than part-time workers (79%).

In addition, 63% of respondents felt that the rotation order should be based on the length of training time rather than on performance and commitment. Overall, trainees agreed to a higher degree (68%) than trainers (61%), but surprisingly, there was considerable heterogeneity in this group with 42% of students having the opinion that performance and commitment should decide rotation order. This was more than double the share compared to resident physicians (20%). Also, a gradual shift from department heads to resident physicians was seen here, with department heads valuing performance and commitment.

A large majority (80%) of respondents value education at several institutions higher than at a single institution. Again, we ob-

served strong concordance among trainers (78%) and trainees (83%). Solely, department heads share this view less (67%) (► **Fig. 3**).

Interestingly, about two-thirds of the respondents believe that overtime is necessary for good clinical training (► **Fig. 4**). Nevertheless, a majority of trainees (58%) disagree with this opinion. Of note, there was considerable dissent between students (67%) and resident physicians (42%) in the response to this question. Most trainers (76%), on the other hand, hold the opinion that good clinical education is impossible without overtime. Women (60%) overall agree less with the sentiment that overtime is essential for good clinical training than men (70%).

Most respondents prefer in-house training during work hours

Most respondents (87%) reported that in-house training opportunities should occur during working hours instead of after work, with trainees (92%) agreeing slightly more than trainers (85%). In particular, respondents <42 years (92%) and resident physicians (93%) agreed with this view more than average. The lowest level of agreement was found in respondents performing outpatient care (75%).

► **Table 1** Baseline Characteristics.

Characteristic*	Survey (958)	DGVS (6736)
Sex		
Female	36 (38%)	1771 (26%)
Male	579 (60%)	4963 (74%)
Diverse	3 (0%)	–
Age		
Median (years)	42.0	50.8
<42 years	465 (49%)	1755 (26%)
≥42 years	453 (47%)	4637 (69%)
Parental status		
Children	408 (43%)	N/A
No children	540 (56%)	N/A
Professional position		
Department head	158 (16%)	721 (11%)
Senior physician	291 (30%)	1771 (26%)
Board-certified physician	100 (10%)	562 (1%)
Resident physician	123 (13%)	1193 (18%)
1st year	17	N/A
2nd year	26	N/A
3rd year	16	N/A
4th year	20	N/A
5th year	21	N/A
≥6th year	23	N/A
Student	158 (16%)	73 (0%)
Outpatient Care Physician	128 (13%)	1222 (18%)
Place of work		
University Hospital	195 (24%)	688 (10%)
Maximum provider	154 (19%)	N/A
Basic provider	274 (34%)	N/A
Outpatient center	166 (21%)	1222 (18%)
Employment status		
Full-time	672 (70%)	N/A
Part-time	117 (12%)	N/A

* Respondents were given the option to not disclose personal information. Therefore, characteristics of sex, age, and parental status contain a small fraction of missing information, and percentages do not add up to 100%.

Interestingly, most respondents, especially trainees (76%) and respondents <42 years (74%), preferred internal versus external training (71%) before taking their first steps in sonography or endoscopy. Physicians working in primary-care hospitals (64%) agreed to a lesser degree with this statement compared to those working at university hospitals (75%). The same was true for part-time workers (63%) compared to full-time workers (70%).

In addition, 91% of respondents believe that external training should be paid for through a training budget from their institution. Almost every responder younger than 42 (96%) and resident physician (97%) supported this idea. Although physicians in outpatient care shared this view somewhat less, the acceptance remained high (84%).

There is an excellent agreement (89%) that at an early stage of the training in endoscopy or ultrasound, the trainee/resident should be under direct supervision (in the same room) during examinations and not work independently with on-call supervision. There was a strong consensus about this statement in all subgroups investigated.

There is substantial disagreement about whether advanced endoscopy techniques such as endoscopic retrograde cholangiopancreatography (ERCP), percutaneous transhepatic biliary drainage (PTBD), and endoscopic ultrasound should remain integral parts of board-certified training for gastroenterology (► Fig. 5). Trainees (69%) and especially students (72%) would prefer advanced endoscopy techniques to be included as part of the regular training to become gastroenterologist specialists. Trainers (51%) marginally agreed, but board-certified physicians without a management position (45%), physicians in outpatient care (44%), and part-time employees (43%) favored the introduction of a new additional sub-specialty for “interventional endoscopy”.

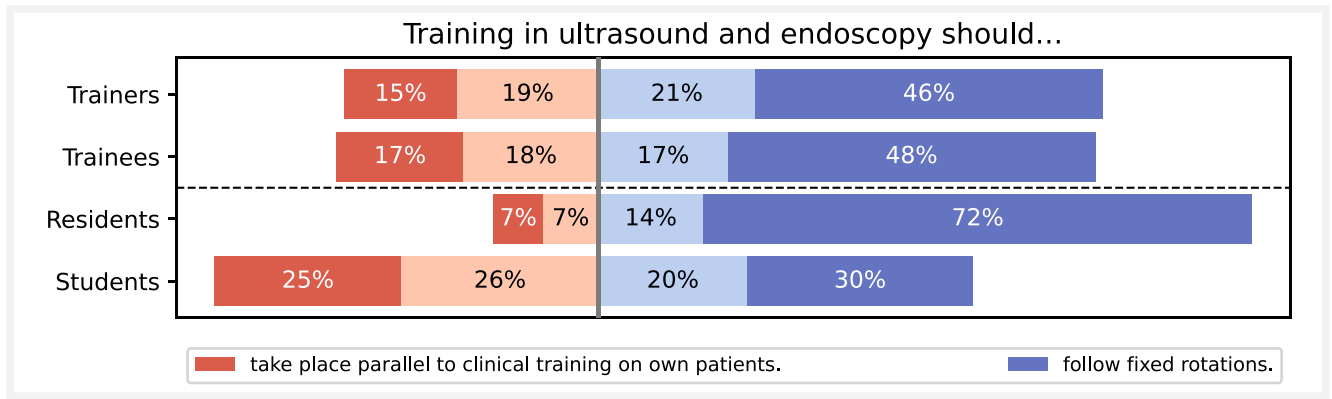
Broad consensus on responsibility for patient care and preferred structuring of working days

The majority of respondents (71%) believe that the responsibility for patient care lies with the senior physician, an opinion shared by trainers (70%) and trainees (74%) to a similar degree. Resident doctors (76%) and those employed at university hospitals (74%) share this opinion, in particular.

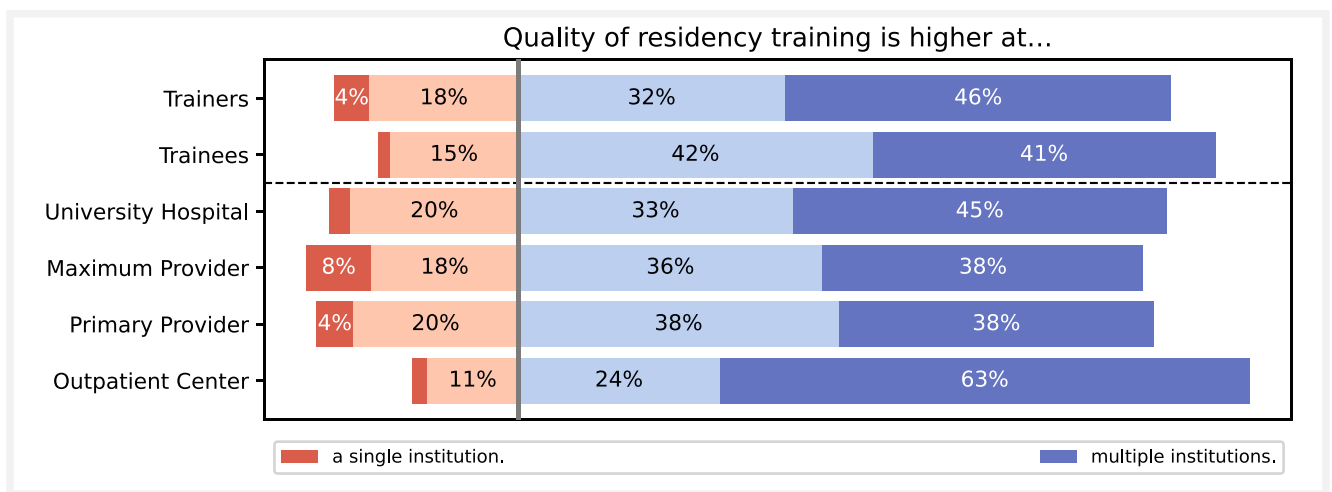
Two-thirds of the respondents would like the workday of the training assistant to be structured by the training assistants themselves. Trainees (72%) and part-time employees (75%) prefer a self-structured workday even more. In contrast, self-structuring of the working day is less favored in outpatient clinics (60%).

Yearly training evaluation as a place for feedback on performance and training opportunities, less for discussing additional commitment

There was a consensus that in the yearly training evaluation, the trainer should give feedback on performance (94%), discuss rotations (91%), inform about further training opportunities (86%), and show prospects at the training place (83%) during yearly training evaluations. Consensus about the first two points was most striking among physician residents (feedback on performance: 98%, rotations: 97%). Research opportunities were only an exciting topic for university employees (73%). Interestingly, 63% of all residents were interested in bringing up research in the yearly training evaluation, with residents in university hospitals wishing to discuss research to an even greater extent (72%). Besides regular patient care, discussing additional commitment in the clinic was most likely desired at university hospitals (61%). Of note, most respondents (66%) did not see the training interview as an opportunity to discuss development opportunities for soft skills.



► Fig. 2 Organization of Training for Endoscopy and Sonography.



► Fig. 3 Opinions upon training in multiple institutions.

Reduced work hours should not lead to disadvantages in physician training in the view of most respondents

Around three-fourths of the respondents believe that part-time work must not lead to disadvantages in continuing education (► Fig. 6). There is substantially stronger agreement among trainees (88%) than trainers (69%), with especially strong agreement among women (87%), respondents <42 years (85%), students (92%), and part-time employees (87%). Physicians in outpatient care (60%) and full-time employees (68%) showed lower agreement rates.

A substantial proportion (59%) of respondents believe that part-time work in continuing education should be made possible in all areas of activity and supported by colleagues. Rates of agreement are similar between trainers (58%) and trainees (61%). Substantial differences are particularly evident between full-time and part-time employees (54% versus 75%).

Significant disagreement about whether own research should be considered on the roster

There is substantial disagreement on whether research should be fully reflected in the roster. While 87% of trainees agree, only a

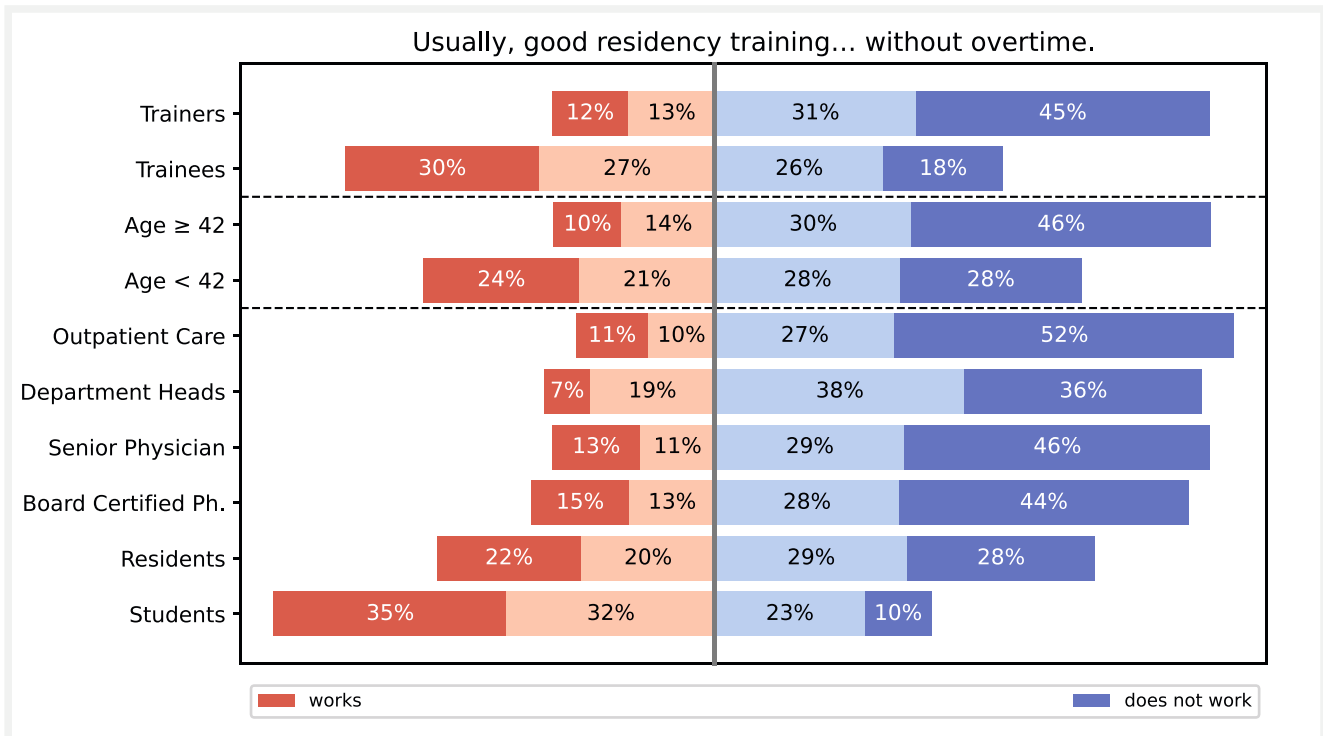
minority of 47% of trainers do. University staff especially (77%) would like to see research included in the roster (► Fig. 7). A slight majority of men (49%) and even more colleagues in the outpatient clinics (37%) think that research should not be considered in the roster.

Discussion

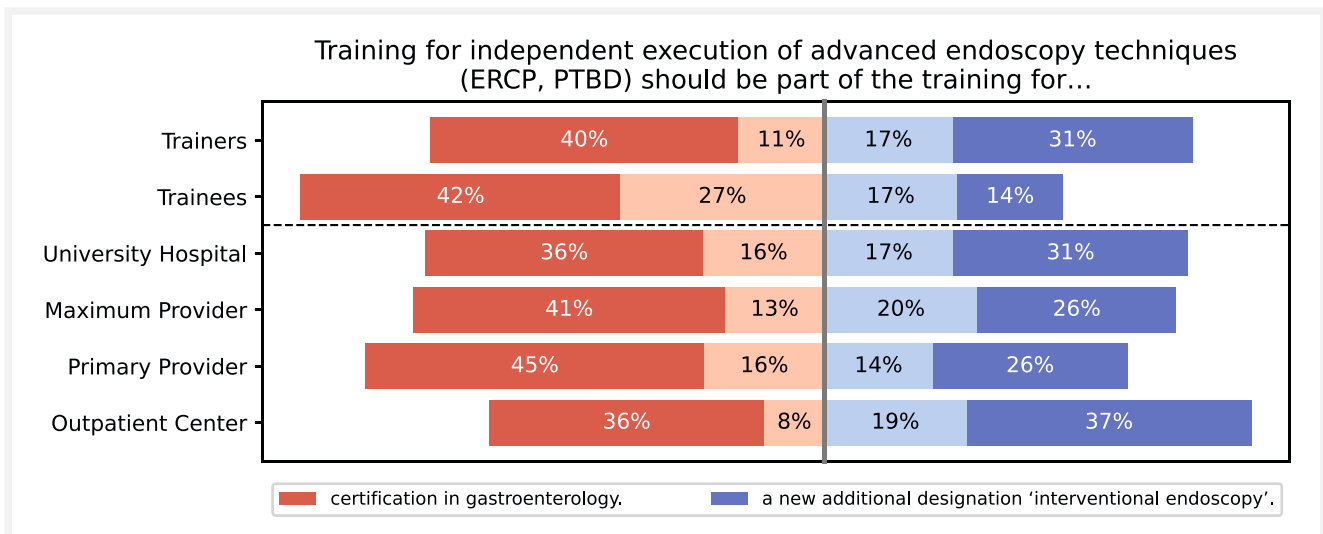
This study is the first survey of trainers and trainees for gastroenterology in Germany concerning the desired training conditions.

Overall, we found a strong concordance in most responses between trainers and trainees and in the pre-defined subgroups: medical hierarchy level, place of work, gender, age, full-time/part-time work, and parental status [14]. Consistently, earlier quantitative research showed no generational differences regarding self-reported work-life balance, work hours, and attitudes toward patient care among internal medicine physicians of different generations, besides significant perceived differences [15].

Above all, trainers and trainees agree that internal training should take place during working hours and that external training should be supported through a training budget. There is substan-



► Fig. 4 Overtime and Quality of Training.

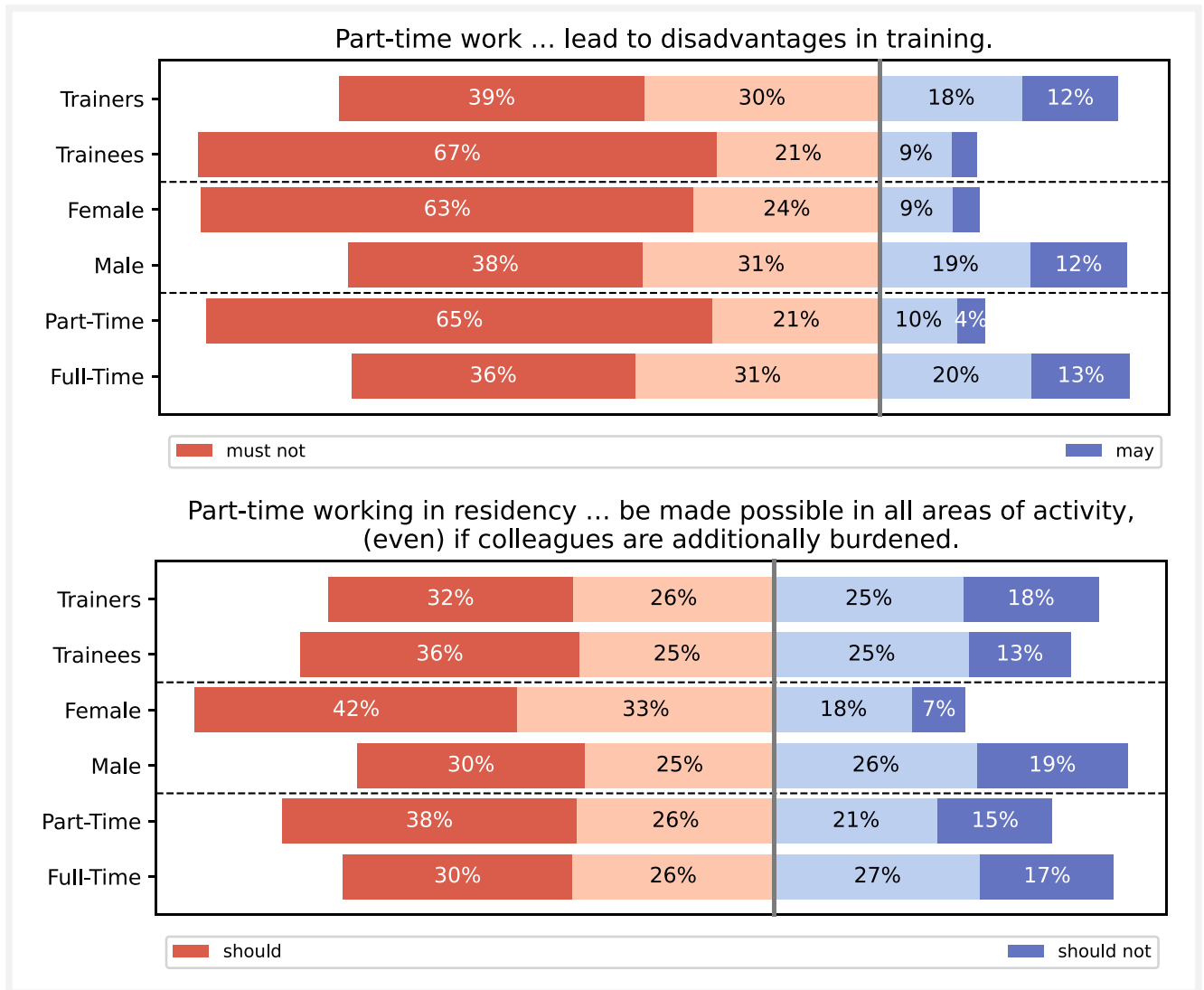


► Fig. 5 Views on advanced techniques in endoscopy.

tial agreement that a supervisor's presence should initially support resident physicians' training in a new technique, such as endoscopy or sonography. Although these points seem not surprising initially, they might act as a foundation to jointly improve training conditions.

Remarkably, most respondents believe that training for board certification in gastroenterology is better if performed at multiple institutions (► Fig. 3). Department heads share this view less, perhaps because they have high confidence in the training provided

at the institutions they lead. An impressive 86% of respondents in private practice see training at multiple institutions as superior. Exclusively training in the outpatient setting is not possible in Germany. Therefore, respondents in private practice did change their employment at least once and, hence, are the group with the most direct experience. To our knowledge, no reliable data on resident mobility between institutions in Germany are available. However, the possibility of changing institutions while in training seems relatively underutilized. Perhaps increasing mobility in



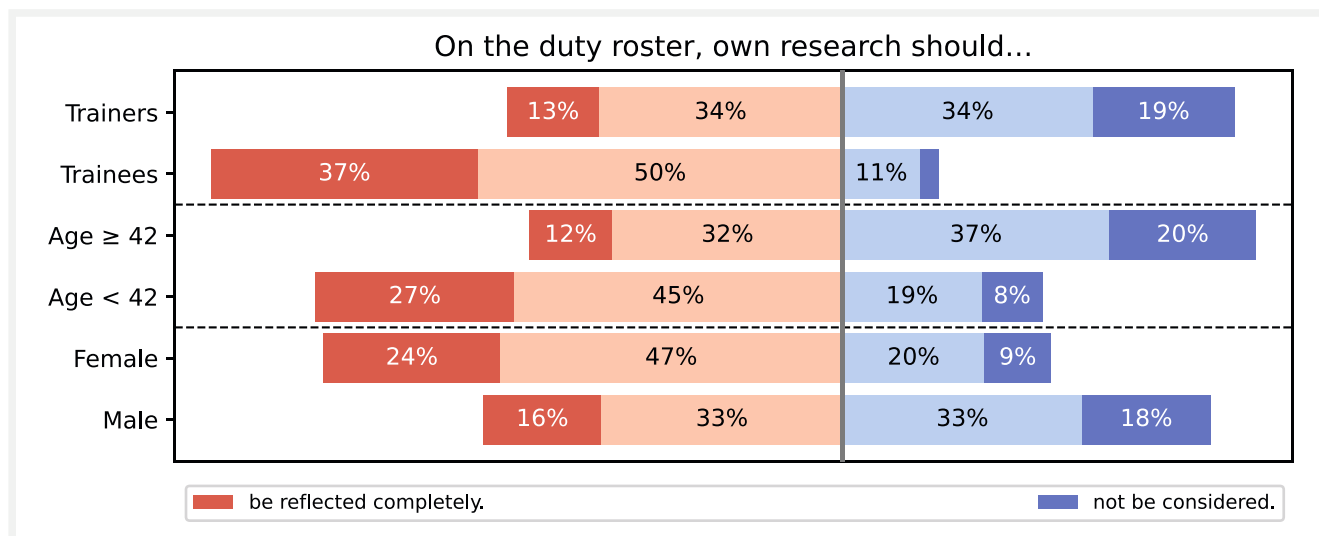
► **Fig. 6** Part-time work and its effect on training.

training is a way to improve training quality in the future. At the same time, the acceptance of mobility for career purposes is decreasing in different disciplines, a trend that might also hold true for health care.

Considerable differences in responses to the questions of whether good clinical training is possible without overtime were documented in our survey (► **Fig. 4**). Trainers considered overtime essential for good continuing education, a view that trainees did not share. It is unclear whether the difference here stems from a generational difference as respondents under the age of 42 agreed strongly. Alternatively, it might be carried by the opinion firmly held by students that clinical training is hindered and not supported by working overtime. This view might be due to a lack of understanding of clinical training realities and might change when current students enter residency. However, whether a change to this belief will occur is unclear. Additionally, how this perspective would affect day-to-day work on the wards is even less clear. Of note, an older evaluation from 2009 revealed that physicians in Germany work roughly 4 million hours of overtime

per year, with around 25% of overtime uncompensated [9]. One can infer that senior physicians who believe that overtime is essential for good clinical education presumably misinterpret a lack of willingness to work overtime as a lack of enthusiasm toward high-quality training. This misunderstanding can further fuel a potential conflict. Maybe a wish for higher compatibility of private life and work is reflected in the responses of the next generation, as seen in a Swiss study of generation Z in 2022 [16]. Joint efforts by trainees and trainers have to be made to find a consensus on how clinical training can be structured to ensure high-quality training with a limited number of extra work hours.

The most striking heterogeneity in responses we observed was whether research time should be fully considered work time (► **Fig. 7**). Respondents under 42 years, trainees, and especially resident physicians want research to be reflected in the duty roster, while this idea does not find a majority among doctors older than 42 years or trainers. From our point of view, the response from trainees speaks against a lack of enthusiasm for research. Research time increases stress and strain in the clinical setting and,



► **Fig. 7** Representation of research in the duty roster.

therefore, should be considered work time in their understanding. The reality of research on weekends and after the end of a shift is probably one of the main reasons for the lamentable lack of young researchers [17, 18]. There was also a considerable difference between female and male respondents. While 71 % of women stated that research should be reflected in the roster, only 49 % of men did. Of note, this effect might be bolstered by women in our survey being younger than men, but as it holds true among all age groups, a different gender-specific preference is to be assumed. Clinician-scientists believe that sacrifices must be made regarding family to be successful in their research career [17, 19]. In dual-physician couples, it was shown that mothers, unlike fathers, reduce work hours [20, 21, 22]. Consistently, female clinician-scientists reduce their clinical work hours more often than their male counterparts [17, 19]. Reasons for this gender difference are numerous: health issues during pregnancy and after delivery, maternity protection, breastfeeding, socialization, lack of support from partner and social network, nearly no daycare places for children below 6 months, limited opening hours in daycare places and schools, lack of kindergarten teachers, lack of support and mentoring at the workplace, and many more. These facts might explain why women are more dependent than men on research being mapped in service time and not being a private matter.

As the economic pressure on departments remains high, we think there is a strong need for a joint effort by doctors, professional organizations, hospitals, and political actors to guarantee that research is adequately reflected in the duty roster. Expanding clinician-scientist programs could be one of several solutions [23]. However, as yet, implementing research time as part of the board certification is either not allowed at all or only partially accepted by regulatory authorities in Germany. If supporting clinician scientists' career paths is a societal priority, joint forces on the trainer's and the authority's side are needed to remove obstacles on this path.

Regarding integrating part-time work in clinical practice, our survey showed an ongoing conflict (► **Fig. 6**). Most respondents

stated that part-time work must not lead to disadvantages in training, with trainees agreeing significantly more often than trainers do. Only a slim majority of overall respondents say that part-time work should be made possible even if it burdens co-workers. Strikingly, the dissent among trainers and trainees nearly completely vanishes here. As colleagues working part-time probably burden trainees in the day-to-day more often, this response is understandable but bears some structural inconsistency. Naturally, more respondents working part-time stated that it should be possible to work part-time even if it puts a strain on the working conditions of full-time colleagues. Notably, more women than men in our survey were working part-time, and significantly more women than men think that part-time employment must not lead to training disadvantages. Instead of framing this finding as a conflict between full- and part-time working physicians, we interpret it as a call to reimagine and reinvent our organizational structures to minimize or even diminish the negative impact of integrating part-time work into everyday work.

Interestingly, there is considerable heterogeneity in the trainee group in our survey, as the responses to some questions strongly differ between resident physicians and students. For example, regarding ultrasound and endoscopy, most residents prefer rotations, while most students prefer continuous parallel training on their patients (► **Fig. 2**). During their studies, students strongly demand the teaching of hands-on skills and might hope to learn sonography and endoscopy as early as possible through parallel training. Residents may have experienced that the parallel learning of sonography and endoscopy, in addition to shifts on the ward, only succeeds to a limited extent. Accordingly, the discussion about rotations and future training perspectives during the yearly evaluation should be integral.

The most remarkable differences in workplace expectations were found between university hospitals and outpatient clinics or primary providers. As expected, research has a much higher priority in university clinics. Physicians at university hospitals desire more than physicians in outpatient clinics features of a reasonable

work–life balance, such as educational training courses or part-time work. It is unclear whether outpatient clinics provide these desired features more than university hospitals. Possibly, physicians in outpatient clinics just do not favor training courses during work time as much as physicians at university hospitals because their salaries depend much more on the number of patients they treat. However, the fact is that many physicians are switching from university hospitals to outpatient clinics to work part-time after becoming parents. It could be a chance for university hospitals to consider ongoing medical education during work hours to respond to the loss of physicians and to support a better work–life balance in the inpatient setting.

While many items received high levels of consensus across subgroups, we observed issues on which gastroenterologists, regardless of subgroup affiliation, are highly divided: for example, whether advanced endoscopy techniques such as ERCP and PTBD should remain a part of training for board certification in Germany (► **Fig. 5**). Strikingly, in all predefined subgroups, we equally observed respondents intensely in favor or strongly opposed to the idea of creating a new additional designation, “interventional endoscopy”. As medicine and scientific progress lead to more and more subspecialization, answering this question is closely linked to how endoscopy and gastroenterology patient care should be organized in the future [24]. Our survey reveals that a consensus is still missing and that the divide runs through all ages and medical hierarchy levels.

Several limitations should be considered when interpreting the findings of our survey.

As we approached current and future German gastroenterologists through the DGVS, our study only represents members of the largest German professional society for gastroenterology. As resident physicians are less represented in the DGVS, this might result in a selection bias, especially regarding this subgroup of physicians. Also, our cohort of medical students is not representative of medical students in Germany, as there was no other measure of approaching the whole medical student body in Germany other than emailing all student councils. Hence, all results in this group should be interpreted cautiously and seen as exploratory.

The response rate to our survey was relatively low, albeit still in the expected range for an email survey in a large cohort [25]. Respondents are likely more interested in training conditions than nonrespondents.

In our survey, we classified department heads, senior physicians, board-certified physicians, and outpatient care physicians as trainers and residents and students as trainees. This does not fully grasp the fluidity of the trainer and trainee roles in the German medical system. For example, residents provide training to students, and board-certified physicians are sometimes in training for additional (sub)specializations. The distinction by seniority is a pragmatic solution, but the considerable heterogeneity, especially between resident physician and student responses, underscores the need to understand neither trainees nor trainers as monolithic blocs.

The censoring of data points always holds the risk of bias. As 39 responses were censored in our study, other biases through our approach cannot be ruled out but seem unlikely, as less than 4% of all completed responses were excluded.

► **Table 2** Opinions with broad consensus in trainers and trainees (1–6) and strong support by trainees not shared by trainers (7–10).

1. Educational training courses should take time during working hours.
2. External training should be paid for through the department’s training budget.
3. When learning new techniques, resident physicians should be initially closely supervised by a board-certified physician, who is always present in the examination room.
4. As training at multiple institutions is seen as superior to a single institution, mobility between institutions should be supported.
5. Reducing working hours must not lead to disadvantages in training.
6. Trainers should give feedback on performance, discuss rotations, inform about further training opportunities, and deliberate potential prospects at the training place in the training evaluations.
7. Training in endoscopy and ultrasound should be performed in fixed rotations.
8. The length of training should define rotation orders instead of performance and commitment.
9. Trainees should structure their workday on their own.
10. Research should be reflected entirely on the duty roster.

Due to privacy concerns, we did not collect any data enabling the correlation of trainees and trainers at the same institution. We can, therefore, not conclude if consensus on training conditions is weaker or stronger at single institutions compared to the national picture. We believe that interinstitutional heterogeneity exists and that a one-size-fits-all approach is not the answer to improving the quality of medical training. Solutions should always be found through direct communication and assessment of specific situations.

In conclusion, there is considerable consensus about many aspects of training implementation for board certification in Germany. The authors strongly advise implementing changes to physician training, reflecting the preferences held by the clear majority (as defined as approval by more than 75% of respondents, ► **Table 2**, in bold) of both trainers and trainees. Additionally, there are aspects with strong preferences by trainees not shared by trainers. From an employer’s perspective, these implementations might decrease employee turnover through increased training satisfaction and should be thoroughly considered.

Besides its limitations, our survey gives the first glimpse into the expectations and beliefs of trainers and trainees for board certification in gastroenterology in Germany. We hope that these data will create a basis on which training conditions can be discussed and improved with the help of all stakeholders.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

- [1] van der Leeuw RM, Lombarts KMJMH, Arah OA et al. A systematic review of the effects of residency training on patient outcomes. *BMC Med* 2012; 10: 65. doi:10.1186/1741-7015-10-65
- [2] Marburger Bund. MB-Barometer Ärztliche Weiterbildung. 2021
- [3] Hartmannbund. Assistenzarzt-Umfrage. Berlin, 2021

- [4] Raspe M, Vogelgesang A, Fendel J et al. Arbeits- und Weiterbildungsbedingungen deutscher Assistenzärztinnen und -ärzte in internistischer Weiterbildung; eine zweite bundesweite Befragung durch die Nachwuchsgruppen von DGIM und BDI. *Dtsch Med Wochenschr* 2018; 143: e42–e50. doi:10.1055/a-0543-4544
- [5] may/EB/aerzteblatt.de. Ärztliche Weiterbildung leidet unter Personal- und Zeitmangel. *aerzteblatt.de*, 28.10.2021. Accessed September 27, 2022 at: <https://www.aerzteblatt.de/nachrichten/128557/Aerztliche-Weiterbildung-leidet-unter-Personal-und-Zeitmangel>
- [6] Chan BPH, Fine M, Shaffer S et al. Resident Survey on Gastroenterology Training in Canada. *J Can Assoc Gastroenterol* 2019; 2: 44–48. doi:10.1093/jcag/gwy024
- [7] Pantenburg B, Kitze K, Lupp M et al. Physician emigration from Germany: insights from a survey in Saxony, Germany. *BMC Health Serv Res* 2018; 18: 341. doi:10.1186/s12913-018-3142-6
- [8] Nolting HD, Ochmann R, Zich K. Gesundheitszentren für Deutschland. Stuttgart, 2021
- [9] Marburger Bund. MB-Monitor 2022. 2022
- [10] Kumar NL, Perencevich ML, Trier JS. Perceptions of the Inpatient Training Experience: A Nationwide Survey of Gastroenterology Program Directors and Fellows. *Dig Dis Sci* 2017; 62: 2631–2647. doi:10.1007/s10620-017-4711-y
- [11] Likert R. A technique for the measurement of attitudes. *Archives of Psychology* 1932; 22: 55
- [12] Barnette JJ. Effects of Stem and Likert Response Option Reversals on Survey Internal Consistency: If You Feel the Need, There is a Better Alternative to Using those Negatively Worded Stems. *Educational and Psychological Measurement* 2000; 60: 361–370. doi:10.1177/00131640021970592
- [13] Bartlett JE, Kotrlik JW, Higgins CC. Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning and Performance Journal* 2001; 19: 43–50
- [14] Lim A, Epperly T. Generation Gap: Effectively Leading Physicians of All Ages. *Family Practice Management* 2013; 20: 29–34
- [15] Jovic E, Wallace JE, Lemaire J. The generation and gender shifts in medicine: an exploratory survey of internal medicine physicians. *BMC Health Serv Res* 2006; 6: 55. doi:10.1186/1472-6963-6-55
- [16] Holzer BM, Ramuz O, Minder CE et al. Motivation and personality factors of Generation Z high school students aspiring to study human medicine. *BMC Med Educ* 2022; 22: 31. doi:10.1186/s12909-021-03099-4
- [17] Donath E, Filion KB, Eisenberg MJ. Improving the clinician-scientist pathway: a survey of clinician-scientists. *Arch Intern Med* 2009; 169: 1242–1244. doi:10.1001/archinternmed.2009.173
- [18] Epstein N, Pfeiffer M, Eberle J et al. Nachwuchsmangel in der medizinischen Forschung. Wie kann der ärztliche Forschernachwuchs besser gefördert werden? *Beiträge zur Hochschulforschung* 2016: 162–189
- [19] Holliday E, Griffith KA, Castro R de et al. Gender differences in resources and negotiation among highly motivated physician-scientists. *J Gen Intern Med* 2015; 30: 401–407. doi:10.1007/s11606-014-2988-5
- [20] Ly DP, Seabury SA, Jena AB. Hours Worked Among US Dual Physician Couples With Children, 2000 to 2015. *JAMA Intern Med* 2017; 177: 1524–1525. doi:10.1001/jamainternmed.2017.3437
- [21] Buddeberg-Fischer B, Stamm M, Buddeberg C et al. The impact of gender and parenthood on physicians' careers—professional and personal situation seven years after graduation. *BMC Health Serv Res* 2010; 10: 40. doi:10.1186/1472-6963-10-40
- [22] Bodendieck E, Jung FU, Lupp M et al. Burnout and work-privacy conflict – are there differences between full-time and part-time physicians? *BMC Health Serv Res* 2022; 22: 1082. doi:10.1186/s12913-022-08471-8
- [23] Noble K, Owens J, André F et al. Securing the future of the clinician-scientist. *Nat Cancer* 2020; 1: 139–141. doi:10.1038/s43018-019-0005-y
- [24] Elta GH. GI training: where are we headed? *Am J Gastroenterol* 2011; 106: 395–397. doi:10.1038/ajg.2010.416
- [25] Draugalis JR, Coons SJ, Plaza CM. Best practices for survey research reports: a synopsis for authors and reviewers. *Am J Pharm Educ* 2008; 72: 11. doi:10.5688/aj720111