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**UNIVERSITÄT
BERN**

Faculty of Medicine
Institute of Medical Education
Assessment and Evaluation Unit

Report on the ESMO Examination 2018 in Medical Oncology

Rabea Krings, Dr. phil.

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Introduction

This report was prepared by the Institute of Medical Education, University of Bern, Switzerland. The 2018 examination in Medical Oncology conducted by the European Society for Medical Oncology (ESMO) took place on October 20th, 2018, in the locations Baghdad, Berlin, Cairo, Chennai, Munich, and Olten. 433 candidates participated in this examination, which consisted of 100 multiple choice questions written in English, German and French.

Method

2.1 Candidates

433 candidates participated in the examination: 26 in Baghdad, 10 in Berlin, 25 in Cairo, 92 in Chennai, 256 in Munich, and 24 in Olten.

2.2 Format

The examination 2018 was composed of 100 multiple choice questions: 75 type A questions (single choice), and 25 type K' questions (quadruple correct/incorrect decision).

Performance of measurement

The diagrams on page 7 give an overview of the psychometric properties of the examination of the group of Germany and Switzerland. This group was chosen for the keyvalidation and the pass/fail limit. The upper diagram shows the distribution of the items in terms of difficulty, the diagram underneath in terms of the discrimination index. At the bottom of this page the reliability (Cronbach's Alpha = 0.83), and the standard error of measurement (3.7) are given. The reliability of all candidates is 0.89, the standard error of measurement is 3.9.

Results

4.1 Score distribution

The score distribution is shown on page 8. On average, candidates answered correctly to 65.1% (2017: 59.2%) of the questions, with a standard deviation of 12.0% (2017: 12.0%).

4.2 Passing score

On December 7, 2018, the ESMO Examination Working Group discussed the questions which displayed statistical deviations. For content reasons, three A questions were eliminated from the evaluation. For two Kprim items, one of the four answers was counted as correct, nevertheless it was answered positively or negatively because both alternatives were evaluated as correct. Therefore, 97 questions remained in the analysis and final evaluation of each candidate.

After psychometric analysis of the difficulty of the examination, analysis of the Rasch model, as well as the difference between mean and pass/fail limit in the last years, the Examination Working Group decided to set the pass/fail limit at 59.8% correct answers (2017: 53.5%), in order to keep the passing requirement fair and comparable to previous years.

304 attendees (70.2%) passed the examination, and 129 attendees (29.8%) failed the examination (2017: 71.4% passed and 28.6% failed).

4.3 Detailed analyses

On page 9, the score distributions for the different locations of the examination are given. These results are shown in the following table as well.

Location	n	Mean %	SD %	success %
Baghdad	26	64.0	12.4	73.1
Berlin	10	71.0	8.4	100.0
Cairo	25	57.1	9.9	44.0
Chennai	92	61.8	12.9	58.7
Munich	256	66.0	11.2	73.0
Olten	24	73.8	10.8	87.5
Total	433	65.1	12.0	70.2

The candidates were then grouped into 5 regions according to the address given upon inscription. The countries with the largest numbers of attendees were rated separately. In comparison to last year, there were more candidates from Germany and Switzerland and

other countries, but less candidates from Spain and Portugal. Candidates from Switzerland and Germany were rated together, as well as candidates from Spain and Portugal. These score distributions are shown on page 10, and in the following table.

Region	n	Mean %	SD %	success %
Egypt	29	56.8	9.4	41.4
Germany and Switzerland	82	71.4	9.2	90.2
India	98	62.6	13.3	61.2
Spain and Portugal	40	67.4	8.6	80.0
Other countries	184	64.3	12.0	67.4
Total	433	65.1	12.0	70.2

The blueprint analyses are shown on pages 11 and 12. On the graph concerning blueprint 1, it can be seen that candidates had more difficulties answering questions on “Central nervous system malignancies” than questions on “Sarkomas”.

For the graph concerning blueprint 2, a further example shows that questions on “Other issues” were answered correctly more often than those about “Biology, Immunology, Pathology incl. Tumour Markers, Laboratory medicine”. However, this does not allow conclusion on the origin of these differences: The attendees could have performed better in some fields, or the questions were more difficult. Comparisons are also difficult because some fields are represented by few questions (e.g. “Gynecologic malignencis”, “Central nervous system malignencis”, “Skin cancers”, “Sarcomas”, “Carcinoma of unknown primary site”, “Endocirne cancers”, “Other issues”, and “Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy” are represented by 1-4 items).

The graph on page 13 shows the expected as well as the true values for each field in blueprint 1, separated for each location. It can be seen that candidates from all different locations performed very similar. They could exceed the expected values in several blueprint fields, ranging from 6 out of 13 blueprint fields in Baghdad to 9 out of 13 in Cairo. Candidates from the other locations lie in between.

4.4 Differentiated feedback to the individual candidate

Feedback letters with their individual results detailed according to blueprint 1 were given to all candidates. An example of such a feedback letter is given on page 14.

Summary

433 candidates participated in the 2018 written examination in Medical Oncology by the European Society for Medical Oncology, in Baghdad, Berlin, Cairo, Chennai, Munich, and Olten.

The exam consisted of 100 multiple choice questions, three items had to be eliminated from the evaluation. The exam shows a reliability of 0.89 (Cronbach's Alpha).

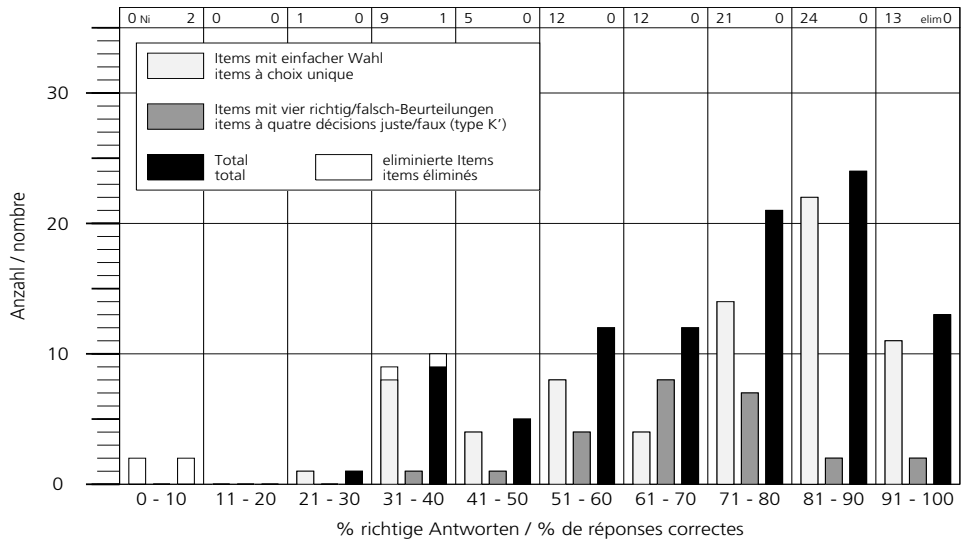
On average, candidates answered correctly to 65.1% of the questions, with a standard deviation of 12.0%.

The pass/fail limit was set at 59.8%. 304 (70.2%) candidates passed the examination.

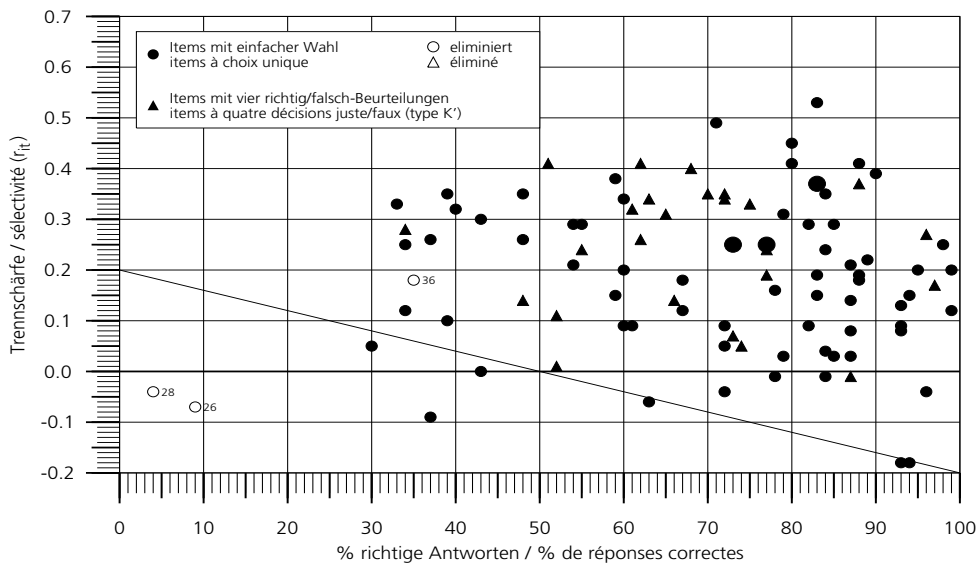
The next examination will be held on Saturday, 28th September 2019.

Difficulty distribution, Difficulty/discrimination index diagram of Germany & Switzerland

ESMO 20.10.2018 Examination in Medical Oncology
 Germany_Switzerland Distribution de difficulté
 K' Halbpunktbewertung K' évaluation à demi-points



Schwierigkeits-/Trennschärfediagramm Diagramme difficulté/sélectivité



Reliabilität (CRONBACH-alpha)	0.830	Fiabilité (r_{tt})
auf 100 Items gerechnet	0.834	calculée pour 100 items
Standardmessfehler ($s_e = s_x \sqrt{1-r_{tt}}$)	± 3.7	Erreur type ($s_e = s_x \sqrt{1-r_{tt}}$)
auf 100 Items gerechnet	± 3.8	calculée pour 100 items

Score distribution total

ESMO

20.10.2018
Total

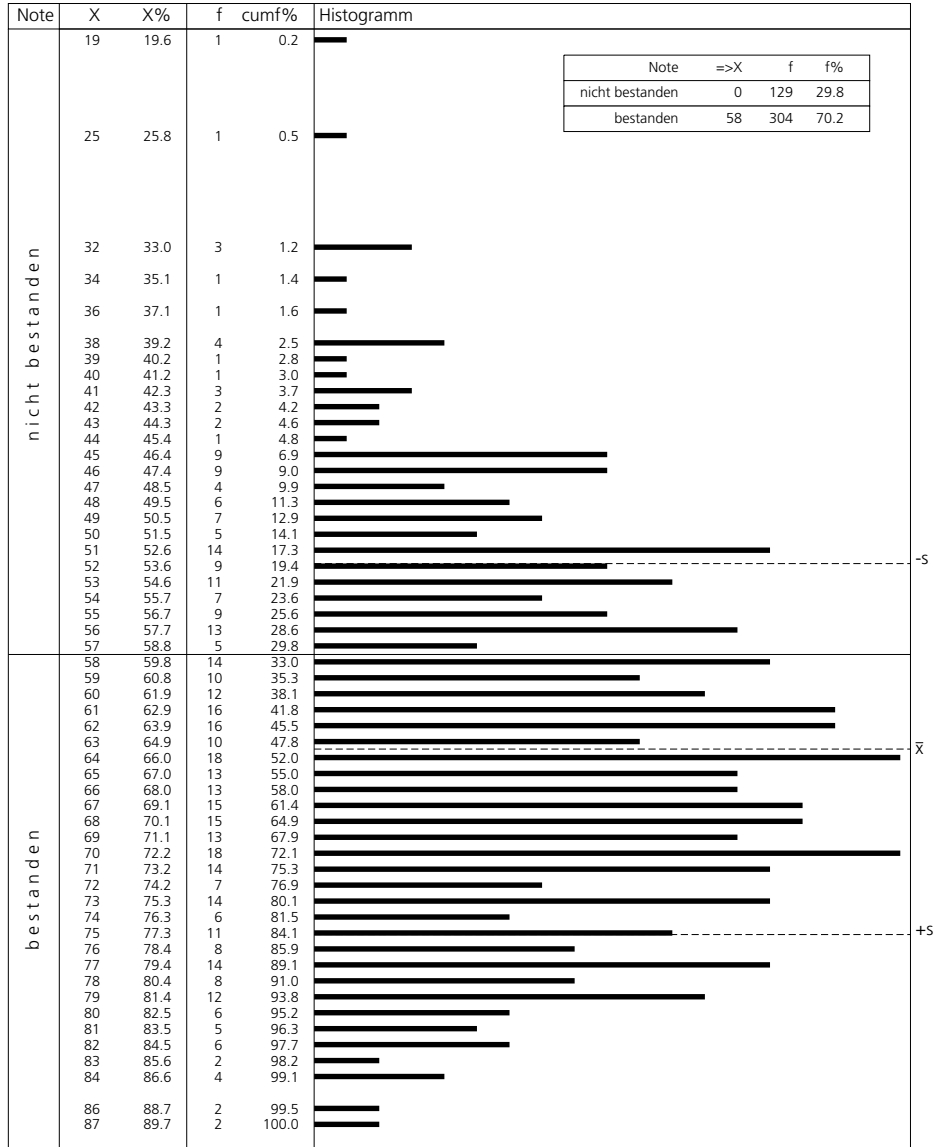
Examination in Medical Oncology

Punkte- und Notenverteilung

Répartition des points et des notes

K' Halbpunktbewertung

K' évaluation à demi-points



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Anzahl KandidatInnen
mögliches Punktemaximum

N_p 433
 N_i 97

nombre de candidats
score maximum possible

Mittelwert \bar{x} 63.15
Standardabweichung s 11.63

$\bar{x}_{\%}$ 65.10
 $s_{\%}$ 11.99
moyenne
écart type

eliminierte Fragen (Nummern)

26, 28, 36

questions éliminées (numéros)

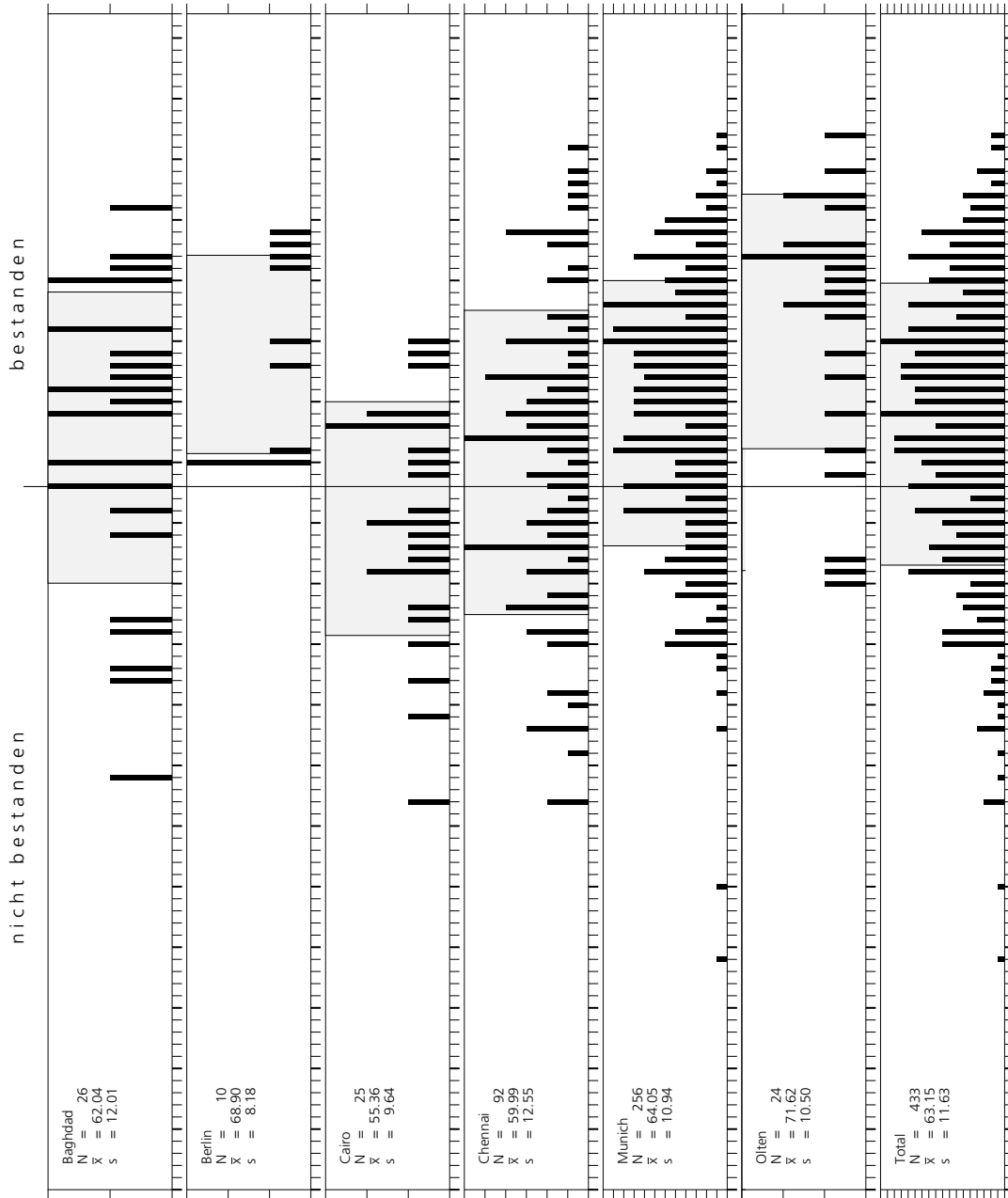
Score distribution (location)

ESMO

20.10.2018

Punkteverteilungen

K' Halbpunktbewertung



Anzahl KandidatInnen
1 Skalenstrich = 1 Kand.

Score distribution (region)

ESMO

20.10.2018

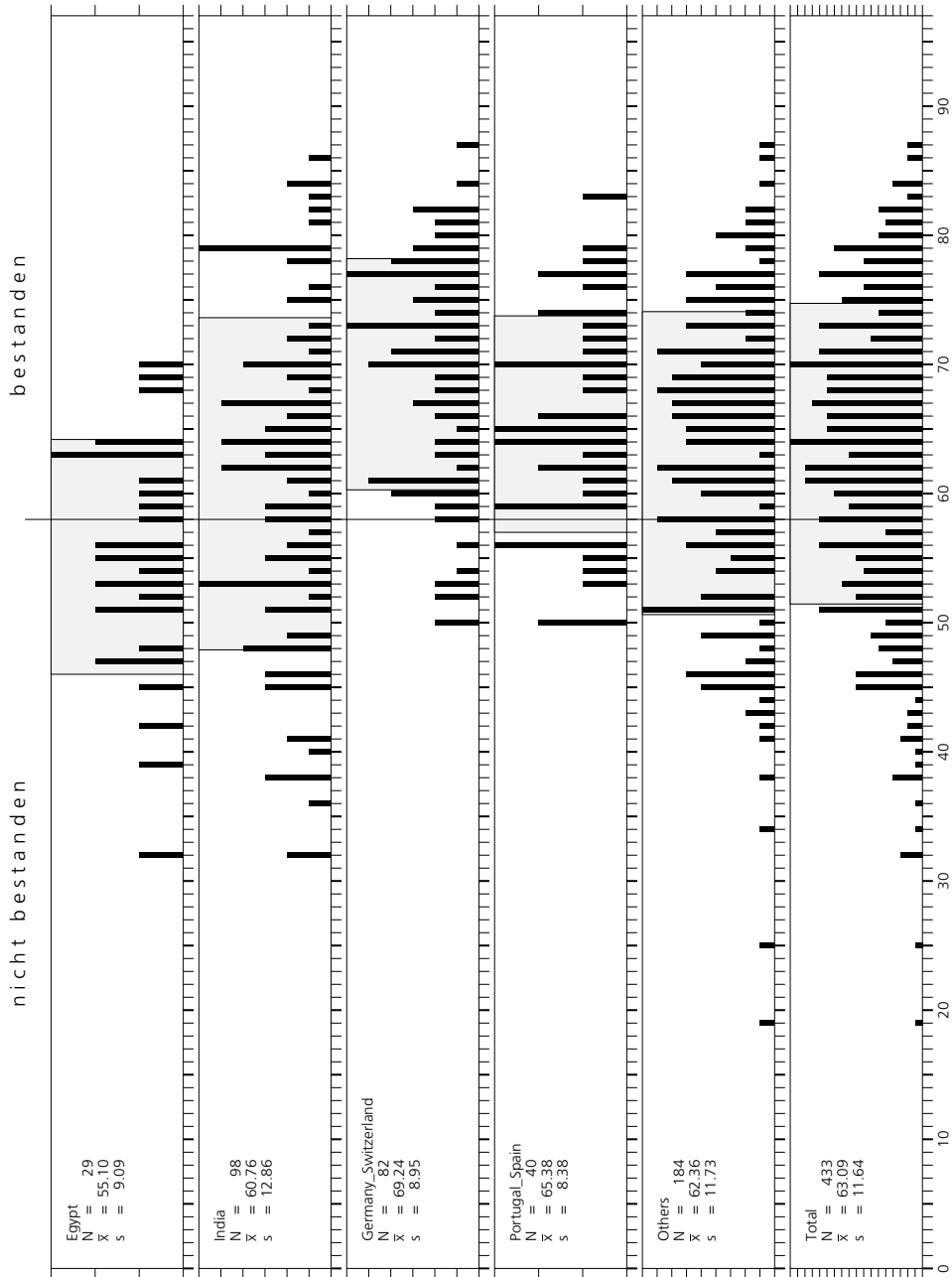
Examination in Medical Oncology

Punkteverteilungen

Répartitions des points

K* Halbpunktbewertung

K* évaluation à demi-points



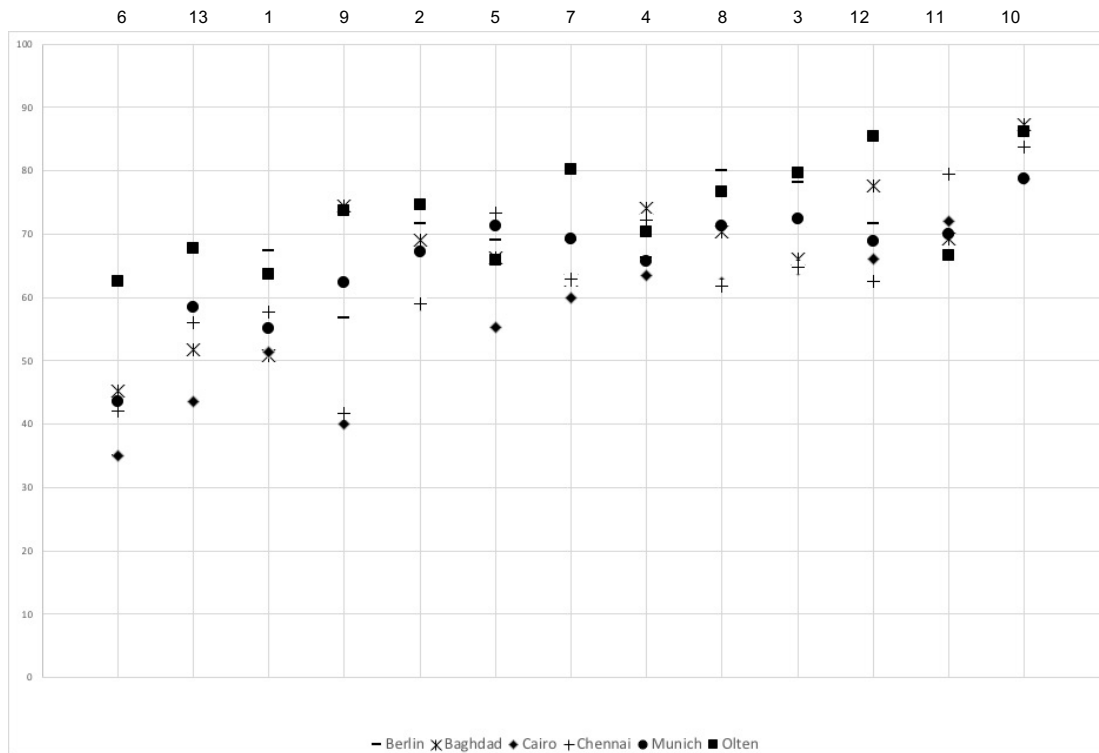
Anzahl KandidatInnen
1 Skalenstrich = 1 Kand.

Nombre de candidats
1 cand. par division

Composition of the exam (Blueprint 1)

Subscore		Number of items
1	Hematologic malignancies	11
2	Chest malignancies	13
3	Breast cancer	11
4	Gynecologic malignancies	4
5	Head and neck cancers	5
6	Central nervous system malignancies	2
7	Genitourinary cancers	15
8	Gastrointestinal cancers	10
9	Skin cancers	3
10	Sarcomas	3
11	Carcinoma of unknown primary site	2
12	Endocrine cancers	3
13	Others/Clinic	15

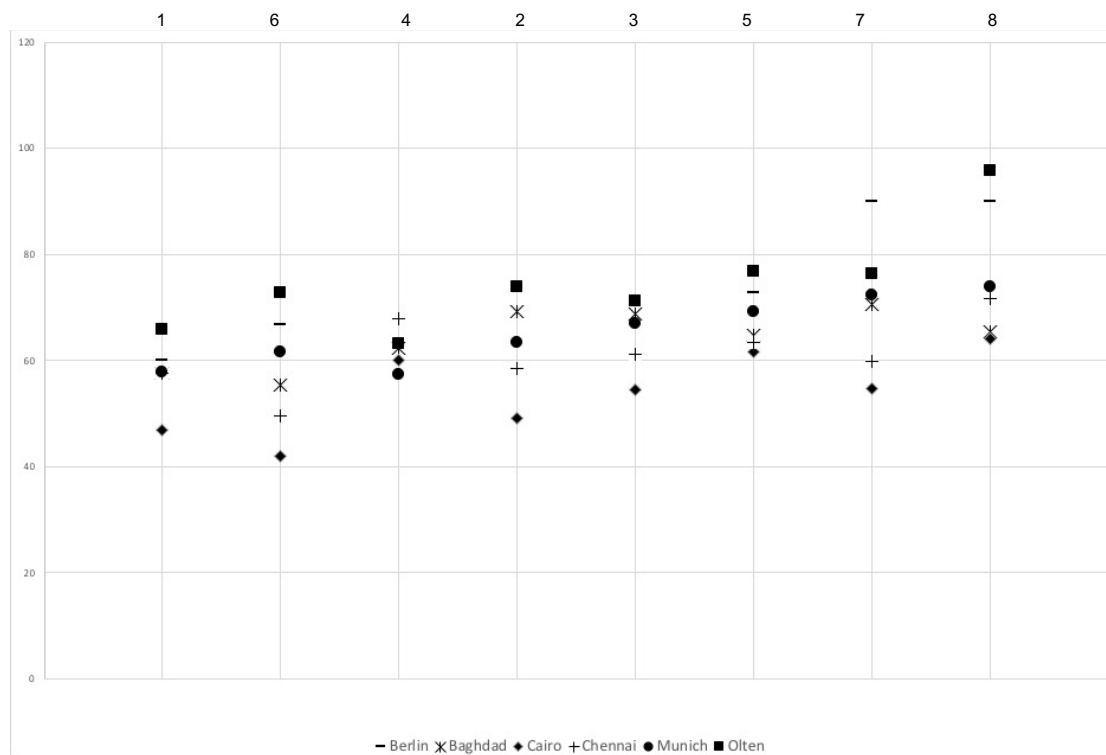
Subscoreanalysis sorted by performance in ascending order



Composition of the exam (Blueprint 2)

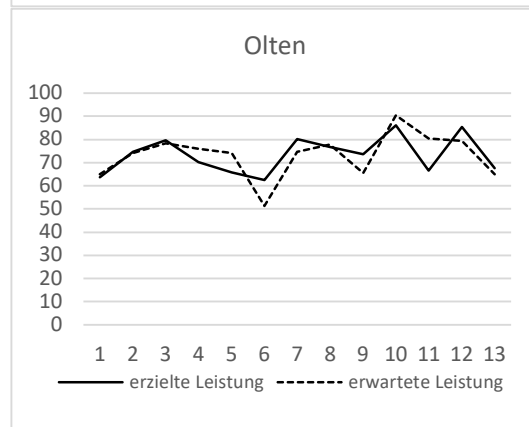
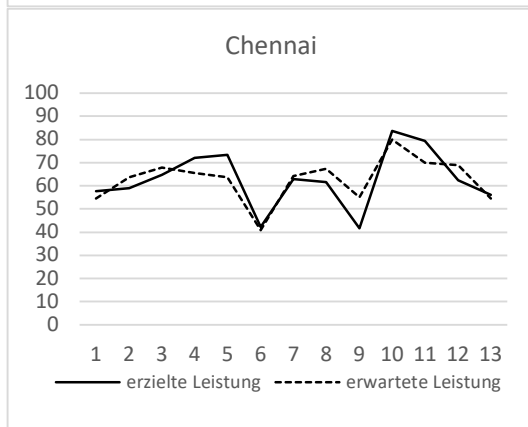
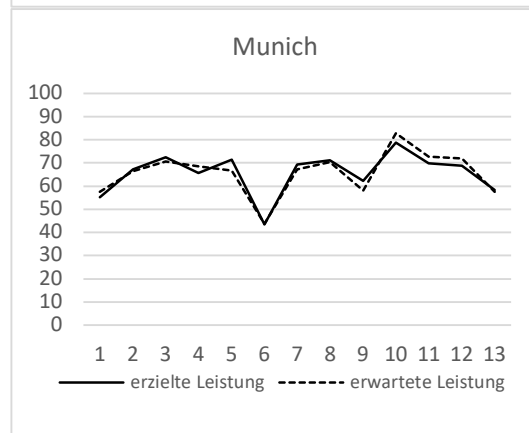
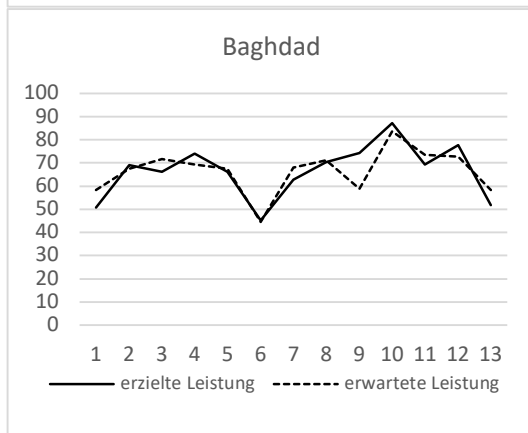
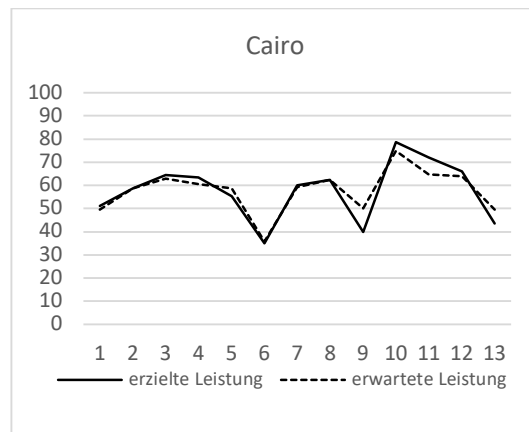
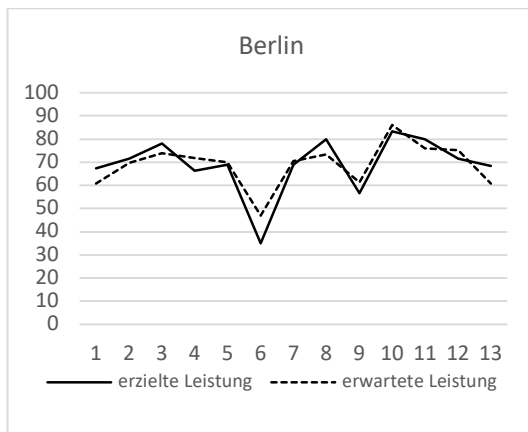
Subscore	Number of items	
1	Biology, Immunology, Pathology incl. Tumour Markers, Laboratory medicine	9
2	Epidemiology, Etiology, Clinical research	7
3	Screening and prevention	5
4	Clinic, Differential diagnosis, Staging, Imaging	11
5	Therapy, Surgery, Radiation oncology, Anticancer agents, Biologic therapy, Response assessment and follow up	52
6	Complications of treatment, Supportive and Palliative Care, Communication and Psychosocial issues	9
7	Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy, Aids associated malignancies	3
8	Other issues	1

Subscoreanalysis sorted by performance in ascending order



Composition of the exam & Subscores

	Subscore	Items Total	Items Type A	Items Type Kprim
1	Hematologic malignancies	11	8	3
2	Chest malignancies	13	11	2
3	Breast cancer	11	11	0
4	Gynecologic malignancies	4	1	3
5	Head and neck cancers	5	3	2
6	Central nervous system malignancies	2	1	1
7	Genitourinary cancers	15	12	3
8	Gastrointestinal cancers	10	5	5
9	Skin cancers	3	3	0
10	Sarcomas	3	3	0
11	Carcinoma of unknown primary site	2	2	0
12	Endocrine cancers	3	2	1
13	Others/Clinic	15	10	5



Sample feedback letter

ESMO Head Office
Education Department
Via Luigi Taddei 4
CH 6962 Viganello-Lugano / Switzerland

Max Muster
Muster University
99999 Munich
Germany

Feedback on your detailed exam results

On the 20th October 2018 you participated in the ESMO examination in Munich. In order to pass, 58 out of 97 questions had to be answered correctly (59.8%). Your results are shown in detail in the table below. Questions have been grouped into 'subsets / subscores' according to their content.

The column labelled 'points / of' indicates the number of points you obtained out of the maximum number of possible points in each subset.

In the 'success' column, the numbers tell you how your results compare to those of the other candidates.

- 1 You belong to the top 25 %
- 2 You belong to the mean (50 % of all participants)
- 3 You belong to the bottom 25 %, but not to the weakest 5 %
- 4 You belong to the weakest 5 %
- 0 Subscores with less than 6 questions will not be evaluated because of too small measuring reliability.

ESMO, 20th October 2018

999 Muster Max

Points	of	success	subscore	
				total score: 59.0 result: passed
8.0	11.0	1	Hematologic malignancies	
8.0	13.0	2	Chest malignancies	
6.0	11.0	3	Breast cancer	
1.5	4.0	0	Gynecologic malignancies	
3.5	5.0	0	Head and neck cancers	
.5	2.0	0	Central nervous system malignancies	
7.0	15.0	3	Genitourinary cancers	
8.5	10.0	1	Gastrointestinal cancers	
1.0	3.0	0	Skin cancers	
3.0	3.0	0	Sarcomas	
.0	2.0	0	Carcinoma of unknown primary site	
2.0	3.0	0	Endocrine cancers	
10.0	15.0	2	Others/Clinic	