# Report on the ESMO Examination 2019 in Medical Oncology

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# Content

# Introduction

This report was prepared by the Institute of Medical Education, University of Bern, Switzerland. The 2019 examination in Medical Oncology conducted by the European Society for Medical Oncology (ESMO) took place on September 28th, 2019, in the locations Baghdad, Barcelona, Berlin, Cairo, Chennai, and Olten. 429 candidates participated in this examination, which consisted of 100 multiple choice questions written in English, German and French.

# Method

## 2.1    Candidates

429 candidates participated in the examination: 10 in Baghdad, 258 in Barcelona, 18 in Berlin, 21 in Cairo, 101 in Chennai, and 21 in Olten.

## 2.2    Format

The examination 2019 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 Western European. 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 = 0.84), and the standard error of measurement (3.9) are given. The reliability of all candidates is 0.88, the standard error of measurement is 4.0.

# Results

## 4.1 Score distribution

The score distribution is shown on page 8. On average, candidates answered correctly to 59.0% (2018: 65.1%) of the questions, with a standard deviation of 12.0% (2018: 12.0%).

## 4.2 Passing score

On November 12, 2019, the ESMO Examination Working Group discussed the questions which displayed statistical deviations. For content reasons, three A questions were eliminated from the evaluation. 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 52.6% correct answers (2018: 59.8%), in order to keep the passing requirement fair and comparable to previous years.

313 attendees (73.0%) passed the examination, and 116 attendees (27.0%) failed the examination (2018: 70.2% passed and 29.8% 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 | 10 | 45.4 | 12.9 | 30.0 |
| Barcelona | 258 | 59.7 | 11.0 | 77.1 |
| Berlin | 18 | 60.0 | 11.9 | 77.8 |
| Cairo | 21 | 49.3 | 12.1 | 33.3 |
| Chennai | 101 | 58.8 | 12.6 | 69.3 |
| Olten | 21 | 66.6 | 9.9 | 95.2 |
| Total | 429 | 59.0 | 12.0 | 73.0 |

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 less candidates from Germany and Switzerland, but more 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 | 19 | 49.3 | 12.3 | 36.8 |
| Germany and Switzerland | 46 | 63.3 | 11.1 | 87.0 |
| India | 107 | 59.2 | 12.5 | 71.0 |
| Spain and Portugal | 80 | 59.9 | 9.4 | 80.0 |
| Other countries | 177 | 58.4 | 12.3 | 71.2 |
| Total | 429 | 59.0 | 12.0 | 73.0 |

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 "Hematologic malignancies" than questions on "Chest malignancies".

For the graph concerning blueprint 2, a further example shows that questions on "Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy, Aids associated malignancies" were answered correctly more often than those about "Screening and prevention". 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", "Head and neck cancers", "Central nervous system malignencis", "Carcinoma of unknown primary site", "Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy", and "Other issues" are represented by 2-4 items).

The graphs 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 5 out of 13 blueprint fields in Baghdad to 8 out of 13 in Berlin. 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

429 candidates participated in the 2019 written examination in Medical Oncology by the European Society for Medical Oncology, in Baghdad, Barcelona, Berlin, Cairo, Chennai, 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 0.88 (Cronbach's Alpha).

On average, candidates answered correctly to 59.0% of the questions, with a standard deviation of 12.0%.

The pass/fail limit was set at 52.6%. 313 (73.0%) candidates passed the examination.

The next examination will be held on Saturday, 19th September 2020.

# Difficulty distribution, Difficulty/discrimination index diagram of Western European

ESMO | 28.09.2019 Western_EU | Examination in Medical Oncology

Schwierigkeitsverteilung
K' Halbpunktbewertung

Distribution de difficulté
K' évaluation à demi-points

| 0 Ni | 1 | 5 | 1 | 5 | 1 | 9 | 0 | 9 | 0 | 18 | 0 | 15 | 0 | 14 | 0 | 14 | 0 | 8 elim | 0 |

Items mit einfacher Wahl
items à choix unique

Items mit vier richtig/falsch-Beurteilungen
items à quatre décisions juste/faux (type K')

Total
total

eliminierte Items
items éliminés

Anzahl / nombre

% richtige Antworten / % de réponses correctes
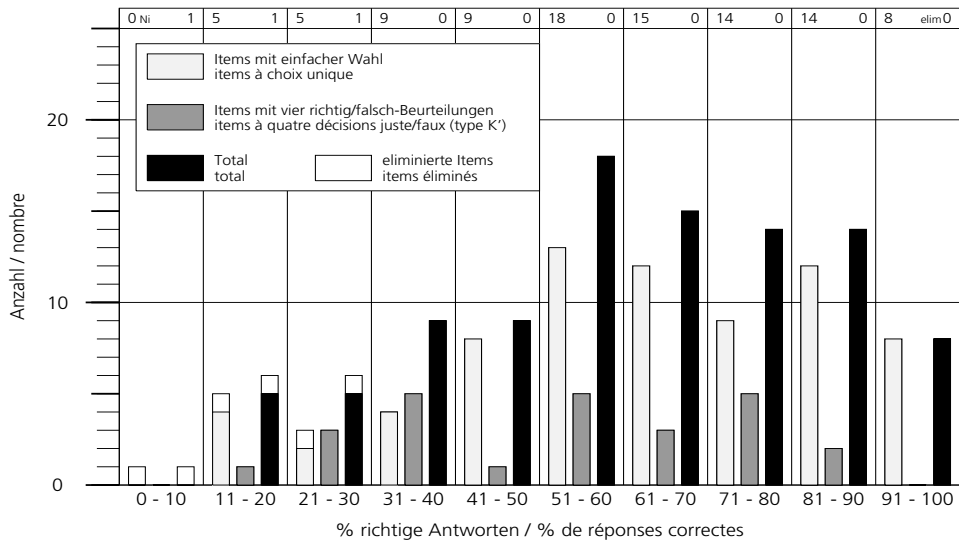
Schwierigkeits-/Trennschärfediagramm

Diagramme difficulté/sélectivité

Trennschärfe / sélectivité ($r_{it}$)

Items mit einfacher Wahl
items à choix unique

○ eliminiert
△ éliminé

Items mit vier richtig/falsch-Beurteilungen
items à quatre décisions juste/faux (type K')

56
34
57

% richtige Antworten / % de réponses correctes
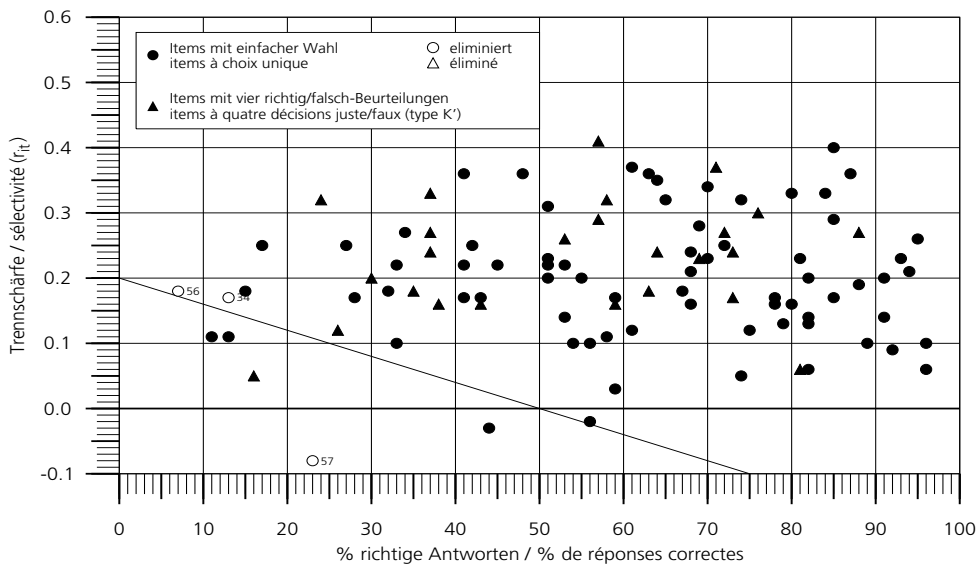
| Reliabilität (CRONBACH-alpha) | 0.838 | Fiabilité ($r_{tt}$) |
| auf 100 Items gerechnet | 0.842 | calculée pour 100 items |
| Standardmessfehler ($s_e = s_x \sqrt{1-r_{tt}}$) | ± 3.9 | Erreur type ($s_e = s_x \sqrt{1-r_{tt}}$) |
| auf 100 Items gerechnet | ± 4.0 | calculée pour 100 items |

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# Score distribution total

ESMO        28.09.2019        Examination in Medical Oncology
Total

Punkte- und Notenverteilung        Répartition des points et des notes

K' Halbpunktbewertung        K' évaluation à demi-points

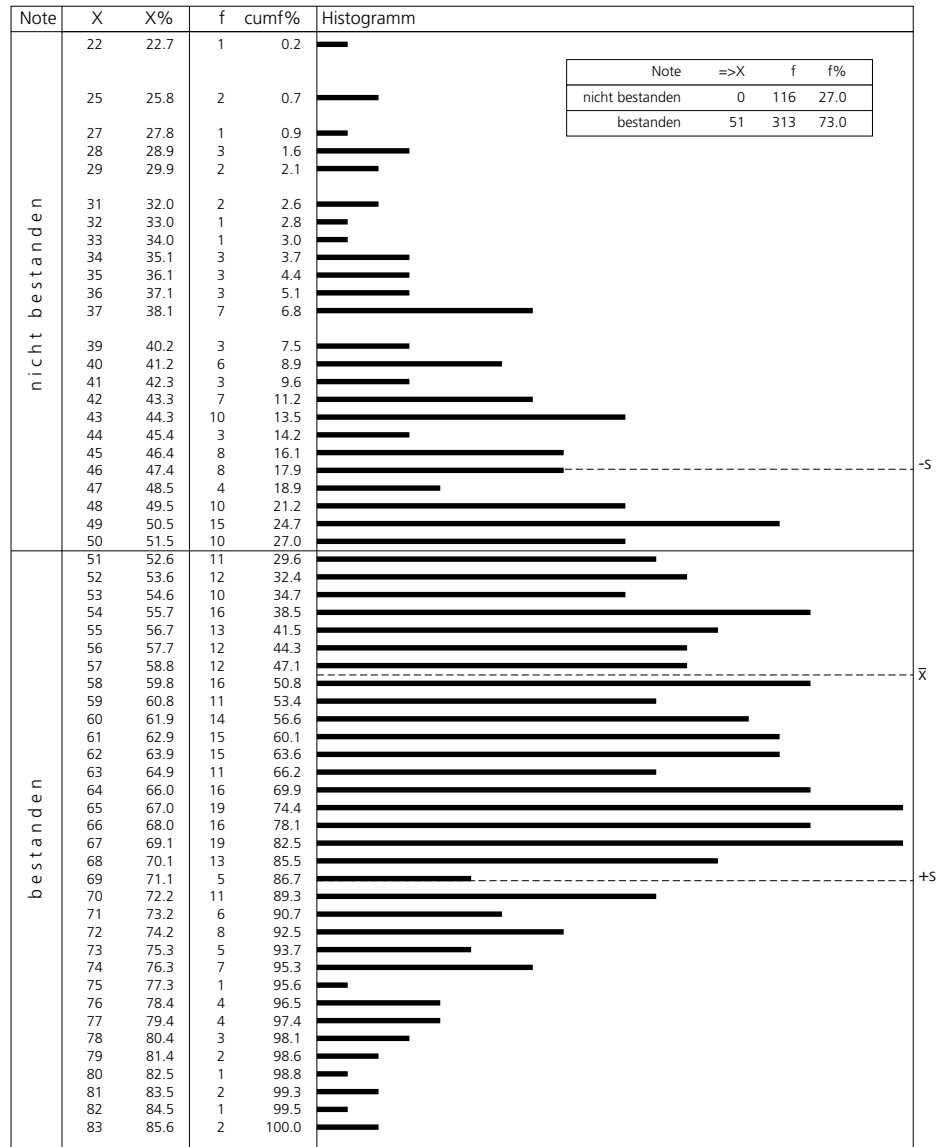| Note | =>X | f | f% |
|---|---|---|---|
| nicht bestanden | 0 | 116 | 27.0 |
| bestanden | 51 | 313 | 73.0 |

| Note | X | X% | f | cumf% | Histogramm |
|---|---|---|---|---|---|
| nicht bestanden | 22 | 22.7 | 1 | 0.2 | |
| | 25 | 25.8 | 2 | 0.7 | |
| | 27 | 27.8 | 1 | 0.9 | |
| | 28 | 28.9 | 3 | 1.6 | |
| | 29 | 29.9 | 2 | 2.1 | |
| | 31 | 32.0 | 2 | 2.6 | |
| | 32 | 33.0 | 1 | 2.8 | |
| | 33 | 34.0 | 1 | 3.0 | |
| | 34 | 35.1 | 3 | 3.7 | |
| | 35 | 36.1 | 3 | 4.4 | |
| | 36 | 37.1 | 3 | 5.1 | |
| | 37 | 38.1 | 7 | 6.8 | |
| | 39 | 40.2 | 3 | 7.5 | |
| | 40 | 41.2 | 6 | 8.9 | |
| | 41 | 42.3 | 3 | 9.6 | |
| | 42 | 43.3 | 7 | 11.2 | |
| | 43 | 44.3 | 10 | 13.5 | |
| | 44 | 45.4 | 3 | 14.2 | |
| | 45 | 46.4 | 8 | 16.1 | |
| | 46 | 47.4 | 8 | 17.9 | −s |
| | 47 | 48.5 | 4 | 18.9 | |
| | 48 | 49.5 | 10 | 21.2 | |
| | 49 | 50.5 | 15 | 24.7 | |
| | 50 | 51.5 | 10 | 27.0 | |
| bestanden | 51 | 52.6 | 11 | 29.6 | |
| | 52 | 53.6 | 12 | 32.4 | |
| | 53 | 54.6 | 10 | 34.7 | |
| | 54 | 55.7 | 16 | 38.5 | |
| | 55 | 56.7 | 13 | 41.5 | |
| | 56 | 57.7 | 12 | 44.3 | |
| | 57 | 58.8 | 12 | 47.1 | $\overline{x}$ |
| | 58 | 59.8 | 16 | 50.8 | |
| | 59 | 60.8 | 11 | 53.4 | |
| | 60 | 61.9 | 14 | 56.6 | |
| | 61 | 62.9 | 15 | 60.1 | |
| | 62 | 63.9 | 15 | 63.6 | |
| | 63 | 64.9 | 11 | 66.2 | |
| | 64 | 66.0 | 16 | 69.9 | |
| | 65 | 67.0 | 19 | 74.4 | |
| | 66 | 68.0 | 16 | 78.1 | |
| | 67 | 69.1 | 19 | 82.5 | |
| | 68 | 70.1 | 13 | 85.5 | |
| | 69 | 71.1 | 5 | 86.7 | +s |
| | 70 | 72.2 | 11 | 89.3 | |
| | 71 | 73.2 | 6 | 90.7 | |
| | 72 | 74.2 | 8 | 92.5 | |
| | 73 | 75.3 | 5 | 93.7 | |
| | 74 | 76.3 | 7 | 95.3 | |
| | 75 | 77.3 | 1 | 95.6 | |
| | 76 | 78.4 | 4 | 96.5 | |
| | 77 | 79.4 | 4 | 97.4 | |
| | 78 | 80.4 | 3 | 98.1 | |
| | 79 | 81.4 | 2 | 98.6 | |
| | 80 | 82.5 | 1 | 98.8 | |
| | 81 | 83.5 | 2 | 99.3 | |
| | 82 | 84.5 | 1 | 99.5 | |
| | 83 | 85.6 | 2 | 100.0 | |

| | | | | |
|---|---|---|---|---|
| Anzahl KandidatInnen | $N_p$ | 429 | | nombre de candidats |
| mögliches Punktemaximum | $N_i$ | 97 | | score maximum possible |
| Mittelwert | $\overline{x}$ | 57.24 | $\overline{x}_\%$ 59.01 | moyenne |
| Standardabweichung | s | 11.59 | $s_\%$ 11.95 | écart type |

eliminierte Fragen (Nummern)      34, 56, 57      questions éliminées (numéros)

# Score distribution (location)

bestanden

nicht bestanden

Baghdad
N = 10
x̄ = 44.00
s = 12.47

Barcelona
N = 258
x̄ = 57.93
s = 10.68

Berlin
N = 18
x̄ = 58.17
s = 11.55

Cairo
N = 21
x̄ = 47.86
s = 11.73

Chennai
N = 101
x̄ = 57.04
s = 12.26

Olten
N = 21
x̄ = 64.57
s = 9.64

Total
N = 429
x̄ = 57.24
s = 11.59

Anzahl Kandidatinnen
1 Skalenstrich = 1 Kand.
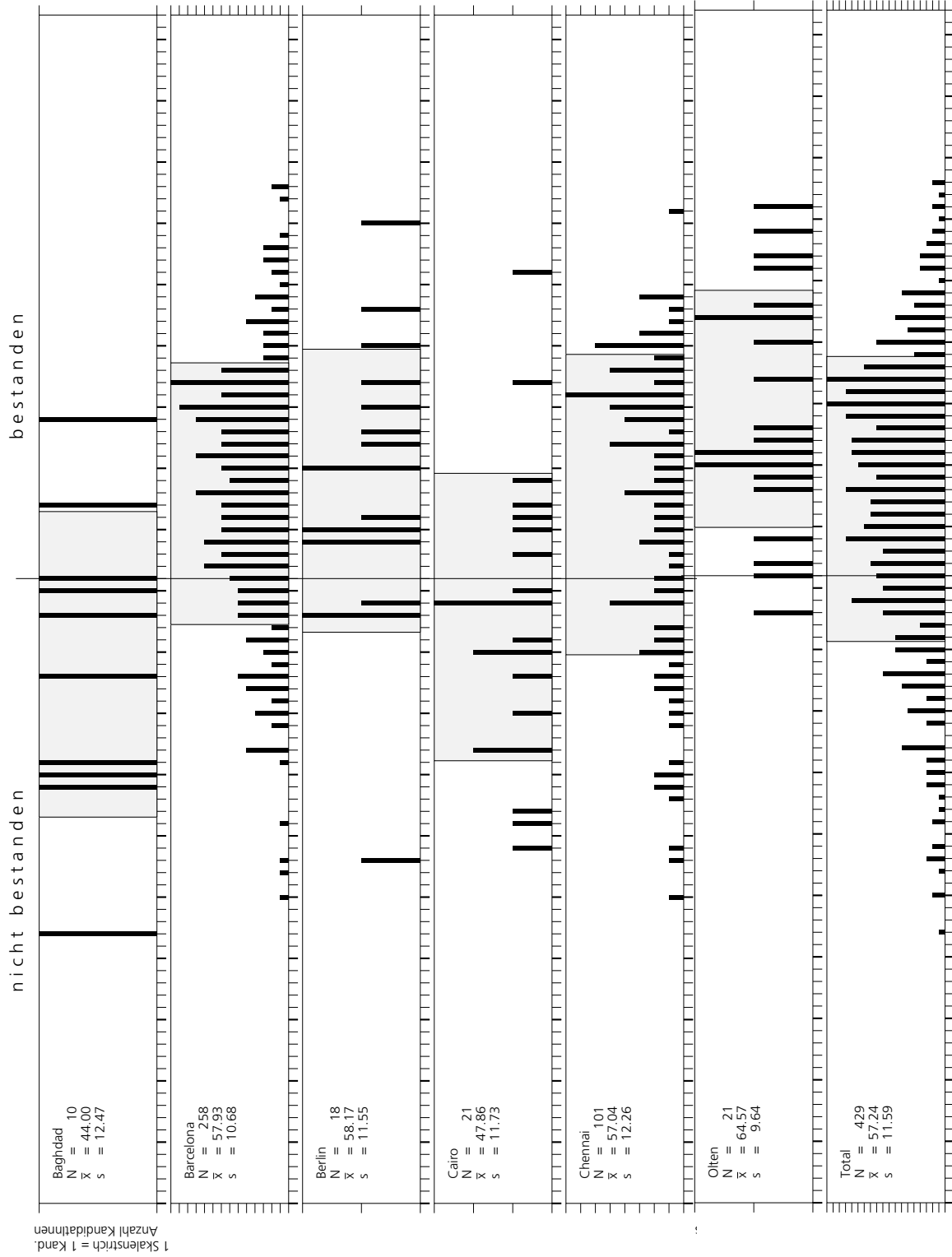
# Score distribution (region)



nicht bestanden    bestanden

Egypt
N  =    19
x̄  =  47.84
s   =  11.89

India
N  =   107
x̄  =  57.46
s   =  12.10

Germany_Switzerland
N  =    46
x̄  =  61.43
s   =  10.72

Portugal_Spain
N  =    80
x̄  =  58.11
s   =   9.10

Others
N  =   177
x̄  =  56.63
s   =  11.93

Total
N  =   429
x̄  =  57.24
s   =  11.59

Anzahl Kandidatinnen
1 Skalenstrich = 1 Kand.

Nombre de candidats
1 cand. par division
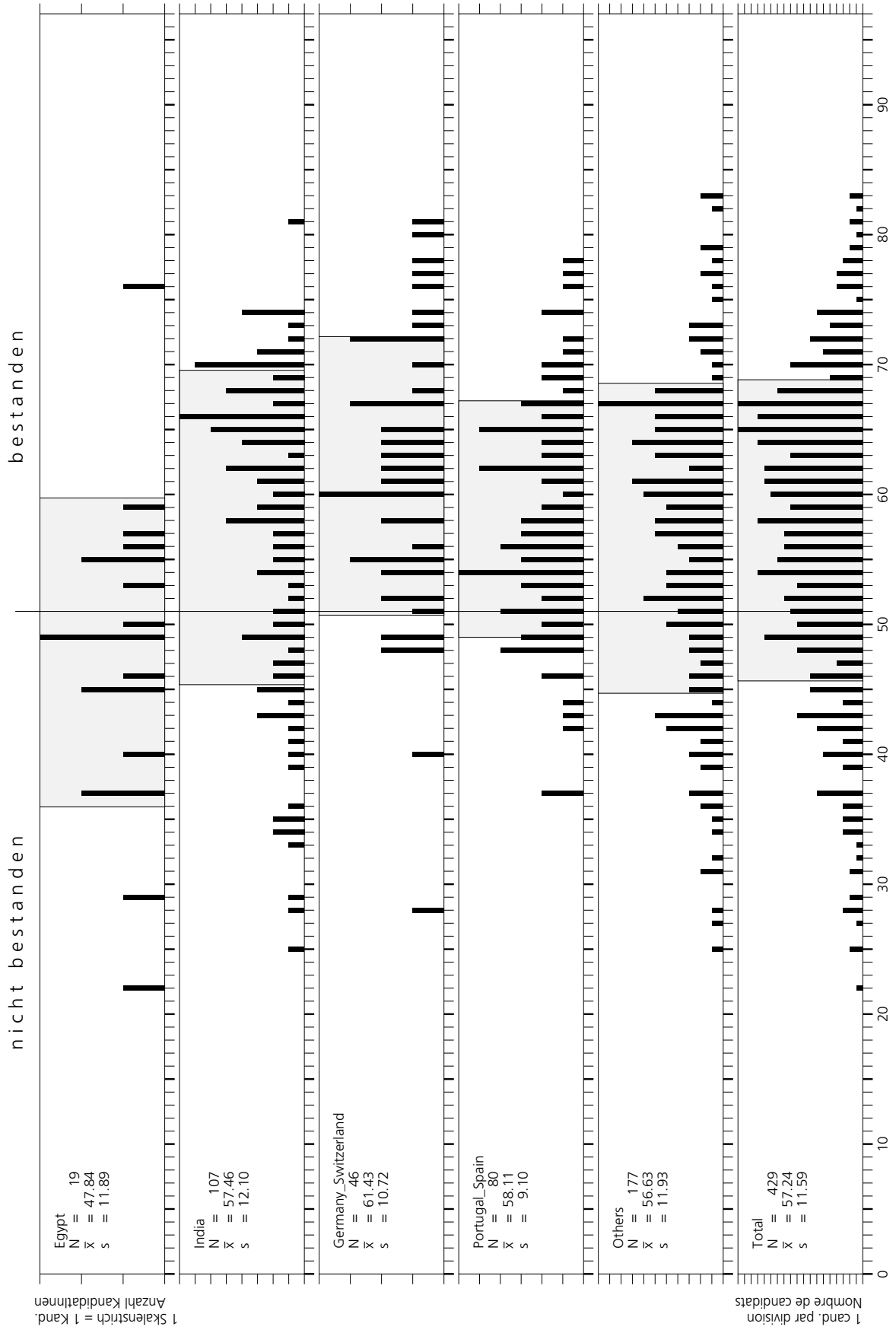
# Composition of the exam (Blueprint 1)

| Subscore | | Number of items |
|---|---|---|
| 1 | Hematologic malignancies | 8 |
| 2 | Chest malignancies | 10 |
| 3 | Breast cancer | 10 |
| 4 | Gynecologic malignancies | 4 |
| 5 | Head and neck cancers | 3 |
| 6 | Central nervous system malignancies | 4 |
| 7 | Genitourinary cancers | 11 |
| 8 | Gastrointestinal cancers | 13 |
| 9 | Skin cancers | 5 |
| 10 | Sarcomas | 5 |
| 11 | Carcinoma of unknown primary site | 2 |
| 12 | Endocrine cancers | 5 |
| 13 | Others/Clinic | 17 |

Subscoreanalysis sorted by performance in ascending order
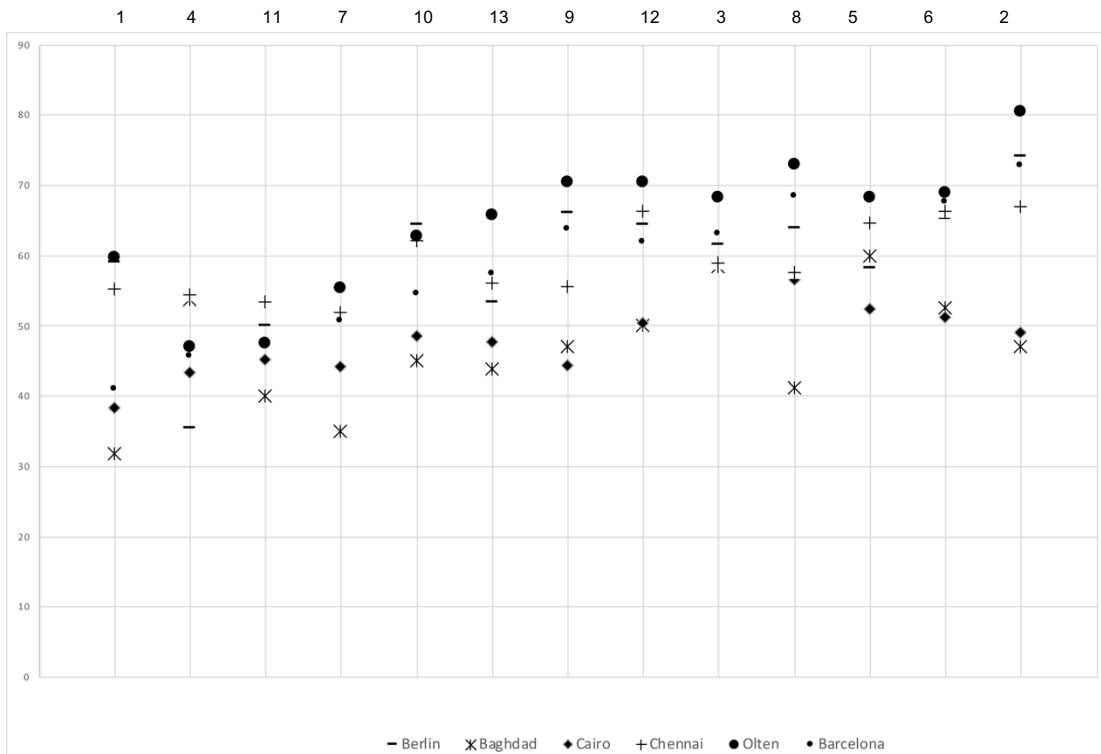
# Composition of the exam (Blueprint 2)

| | Subscore | Number of items |
|---|---|---|
| 1 | Biology, Immunology, Pathology incl. Tumour Markers, Laboratory medicine | 9 |
| 2 | Epidemiology, Etiology, Clinical research | 5 |
| 3 | Screening and prevention | 4 |
| 4 | Clinic, Differential diagnosis, Staging, Imaging | 9 |
| 5 | Therapy, Surgery, Radiation oncology, Anticancer agents, Biologic therapy, Response assessment and follow up | 51 |
| 6 | Complications of treatment, Supportive and Palliative Care, Communication and Psychosocial issues | 14 |
| 7 | Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy, Aids associated malignancies | 3 |
| 8 | Other issues | 2 |

Subscoreanalysis sorted by performance in ascending order
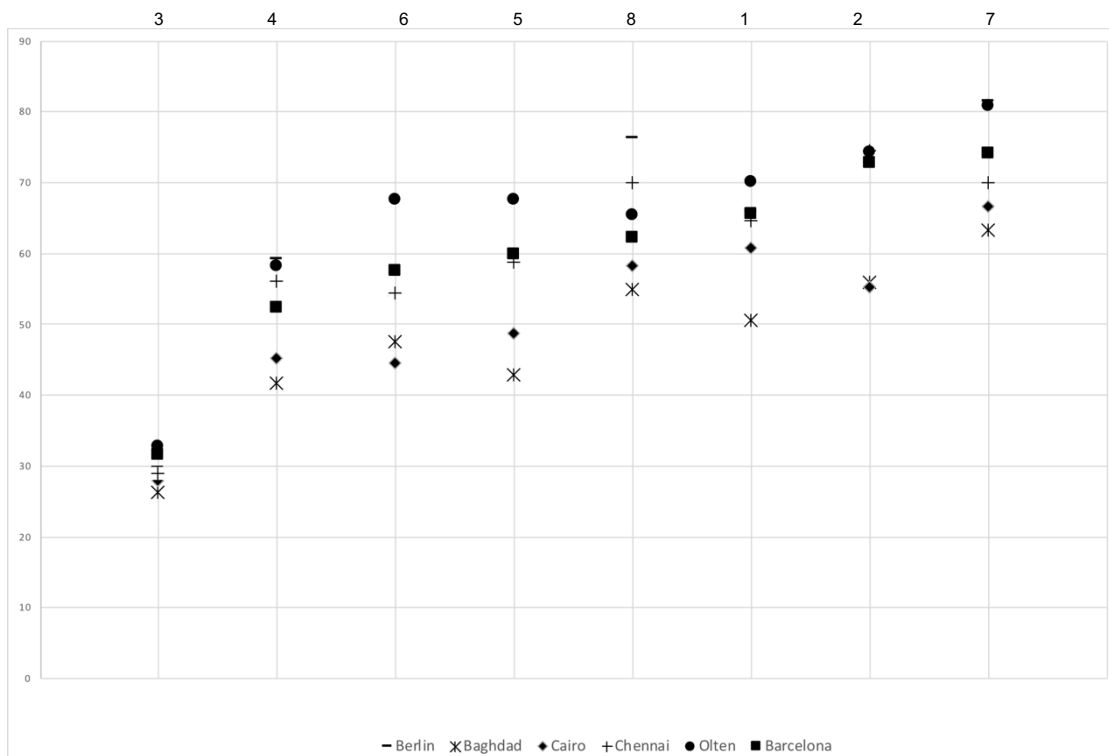
# Composition of the exam & Subscores

| | Subscore | Items Total | Items Type A | Items Type Kprim |
|---|---|---|---|---|
| 1 | Hematologic malignancies | 8 | 5 | 3 |
| 2 | Chest malignancies | 10 | 4 | 6 |
| 3 | Breast cancer | 10 | 7 | 3 |
| 4 | Gynecologic malignancies | 4 | 3 | 1 |
| 5 | Head and neck cancers | 3 | 2 | 1 |
| 6 | Central nervous system malignancies | 4 | 4 | 0 |
| 7 | Genitourinary cancers | 11 | 9 | 2 |
| 8 | Gastrointestinal cancers | 13 | 11 | 2 |
| 9 | Skin cancers | 5 | 4 | 1 |
| 10 | Sarcomas | 5 | 3 | 2 |
| 11 | Carcinoma of unknown primary site | 2 | 2 | 0 |
| 12 | Endocrine cancers | 5 | 5 | 0 |
| 13 | Others/Clinic | 17 | 13 | 4 |



Berlin



Cairo



Baghdad



Barcelona



Chennai



Olten
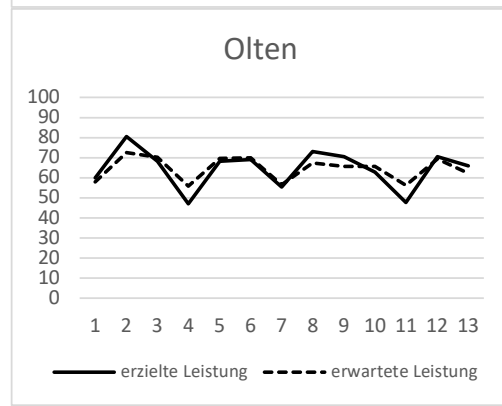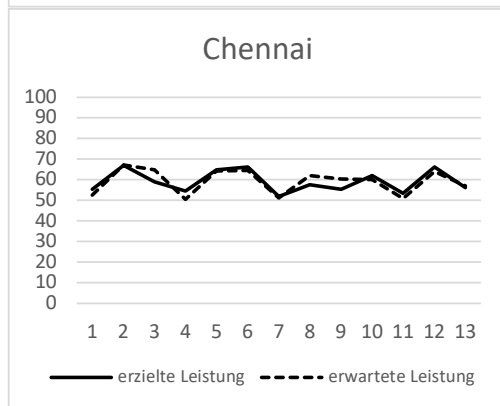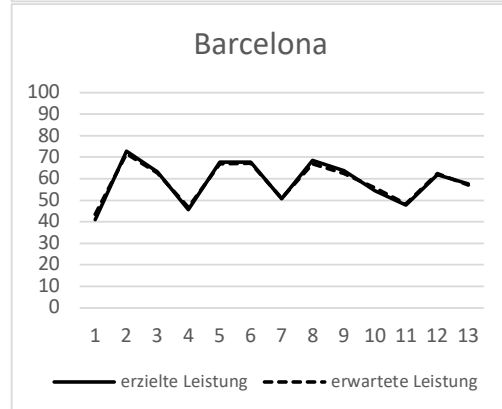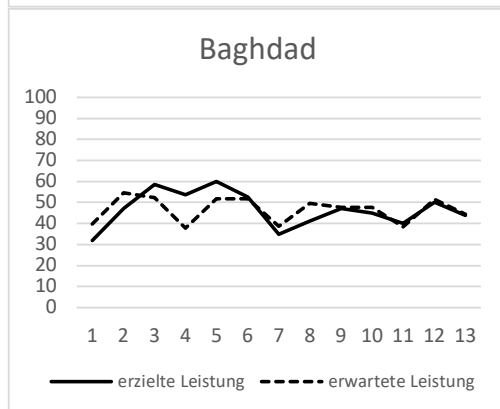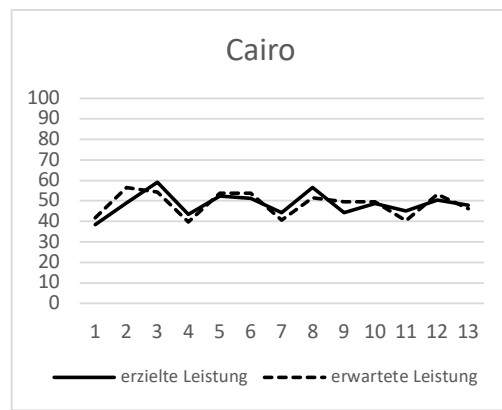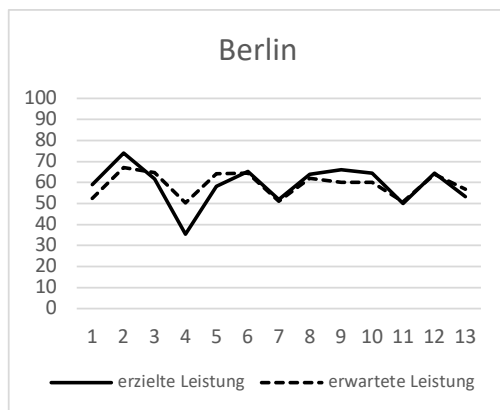
# Sample feedback letter

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ESMO Head Office
Education Department
Via Ginevra 4
CH 6900 Lugano / Switzerland

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Maximiliane Muster
Muster Spital
9999 Musterhausen
Musterland

**Feedback on your detailed exam results**
On the 28th September 2019 you participated in the ESMO examination in Barcelona. In order to pass,
51 out of 97 questions had to be answered correctly (52.6%). 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, 28th September 2019**

999, Maximiliane Muster

| Points | of | success | subscore | total score: 53<br>result: passed |
|---|---|---|---|---|
| 3.0 | 8.0 | 2 | Hematologic malignancies | |
| 3.5 | 10.0 | 3 | Chest malignancies | |
| 6.0 | 10.0 | 2 | Breast cancer | |
| 3.0 | 4.0 | 0 | Gynecologic malignancies | |
| 2.0 | 3.0 | 0 | Head and neck cancers | |
| 2.0 | 4.0 | 0 | Central nervous system malignancies | |
| 8.0 | 11.0 | 1 | Genitourinary cancers | |
| 7.5 | 13.0 | 2 | Gastrointestinal cancers | |
| 2.0 | 5.0 | 0 | Skin cancers | |
| 2.0 | 5.0 | 0 | Sarcomas | |
| 2.0 | 2.0 | 0 | Carcinoma of unknown primary site | |
| 4.0 | 5.0 | 0 | Endocrine cancers | |
| 8.0 | 17.0 | 2 | Others/Clinic | |

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Viviane Hess, Chair, ESMO Examination Working Group

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