



---

*b*  
**UNIVERSITÄT  
BERN**

Faculty of Medicine  
Institute of Medical Education  
**Assessment and Evaluation Unit**

# **Report on the ESMO Examination 2016 in Medical Oncology**

Rabea Krings, Dr. phil.

Rabea Krings, Dr. phil.  
Scientific co-worker  
Konsumstrasse 13  
3010 Bern  
rabea.krings@iml.unibe.ch  
www.iml.unibe.ch

# Content

<b>1. Introduction</b> .....	<b>3</b>
<b>2. Method</b> .....	<b>3</b>
2.1 Candidates .....	3
2.2 Format.....	3
<b>3. Performance of measurement</b> .....	<b>3</b>
<b>4. Results</b> .....	<b>4</b>
4.1 Score distribution.....	4
4.2 Passing score .....	4
4.3 Detailed analyses .....	4
4.4 Differentiated feedback to the individual candidate.....	5
<b>5. Summary</b> .....	<b>6</b>
<b>Difficulty distribution, Difficulty/discrimination index diagram</b> .....	<b>7</b>
<b>Score distribution total</b> .....	<b>8</b>
<b>Score distribution (location)</b> .....	<b>9</b>
<b>Score distribution (region)</b> .....	<b>10</b>
<b>Composition of the exam (Blueprint 1)</b> .....	<b>11</b>
<b>Composition of the exam (Blueprint 2)</b> .....	<b>12</b>
<b>Composition of the exam &amp; Subscores</b> .....	<b>13</b>
<b>Sample feedback letter</b> .....	<b>14</b>

## **1. Introduction**

This report was prepared by the Institute of Medical Education, University of Bern, Switzerland.

The 2016 examination in Medical Oncology conducted by the European Society for Medical Oncology (ESMO) took place on October 8th, 2016, in the locations Berlin, Cairo, Chennai, Copenhagen, and Olten. 351 candidates participated in this examination, which consisted of 100 multiple-choice questions written in English.

## **2. Method**

### **2.1 Candidates**

351 candidates participated in the examination: 30 in Berlin, 29 in Cairo, 73 in Chennai, 187 in Copenhagen, and 32 in Olten.

### **2.2 Format**

The examination 2016 was composed of 100 multiple choice questions: 80 type A questions (single choice), and 20 type K' questions (quadruple correct/incorrect decision).

## **3. Performance of measurement**

The diagrams on page 7 give an overview of the psychometric properties of the examination. 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 = 0.88), and the standard error of measurement (4.1) are given.

## 4. Results

### 4.1 Score distribution

The score distribution is shown on page 8. On average, candidates answered correctly to 59.8% (2015: 67.2%) of the questions, with a standard deviation of 12.1% (2015: 12.8%).

### 4.2 Passing score

On November 16, 2016, the ESMO Examination Working Group discussed the questions which displayed statistical deviations. For content reasons, two A questions and one K' question were eliminated from the evaluation, so that 97 questions remained in the analysis and final evaluation of each candidate.

After psychometric analysis of the difficulty of the examination, in particular with the Rasch model, the Examination Working Group decided to set the pass/fail limit at 54.6% correct answers (2015: 60.8%), in order to keep the passing requirement fair and comparable to previous years.

245 attendees (69.8%) passed the examination, and 106 attendees (30.2%) failed the examination (2015: 72.8% passed and 27.2% 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 in %.

Location	n	mean %	SD %	success %
Berlin	30	60.4	11.5	83.3
Cairo	29	48.5	10.4	27.6
Chennai	73	59.6	11.2	64.4
Copenhagen	187	60.6	11.4	75.4
Olten	32	65.2	14.6	75.0
Total	351	59.8	12.1	69.8

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, the number of candidates from each region were almost the same. Because only five groups are possible, 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 in %.

Region	n	mean %	SD %	success %
Egypt	26	48.7	10.0	26.9
Germany and Switzerland	72	63.3	13.5	83.3
India	71	59.8	11.4	64.8
Spain and Portugal	42	60.3	10.2	73.8
Other countries	140	59.9	11.6	72.1
Total	351	59.8	12.1	69.8

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 “Gynecologic malignancies” than questions on “Carcinoma of unknown primary site”.

For the graph concerning blueprint 2, a further example shows that questions on “Complications of treatment, Supportive and Palliative Care. Communication and Ps” 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. “Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy” and “Screening and prevention” are represented by 2-5 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 in Berlin were better or equal to the expected level in most blueprint fields (10 out of 13), whereas candidates in all other locations could not exceed the expected values in several blueprint fields (8 out of 13).

#### **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.

## **5. Summary**

351 candidates participated in the 2016 written examination in Medical Oncology by the European Society for Medical Oncology, in Berlin, Cairo, Chennai, Copenhagen, 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).

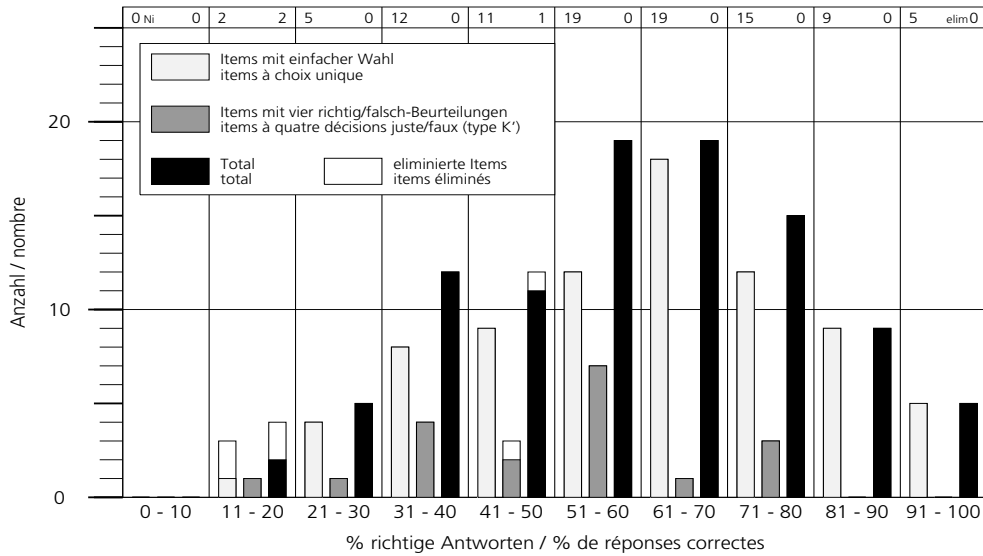
On average, candidates answered correctly to 59.8% of the questions, with a standard deviation of 12.1%.

The pass/fail limit was set at 54.6%. 245 (69.8%) candidates passed the examination.

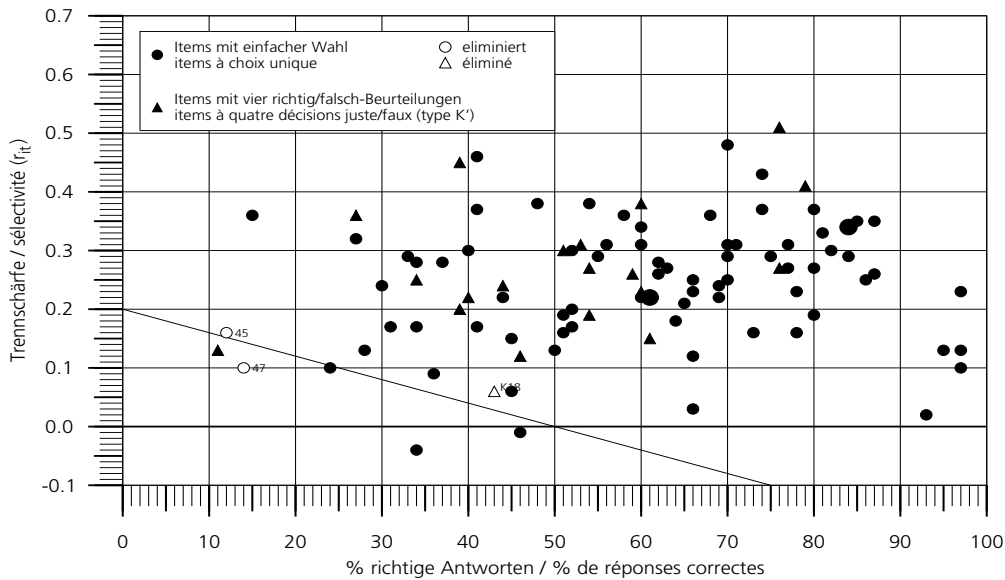
The next examination will be held on Saturday, 9th September 2017.

# Difficulty distribution, Difficulty/discrimination index diagram

ESMO 08.10.2016 Examination in Medical Oncology  
 Schwierigkeitsverteilung Total Distribution de difficulté  
 K' Halbpunktbewertung K' évaluation à demi-points



Schwierigkeits-/Trennschärfediagramm Diagramme difficulté/sélectivité



Reliabilität (CRONBACH-alpha)	0.880	Fiabilité ( $r_{tt}$ )
auf 100 Items gerechnet	0.883	calculée pour 100 items
Standardmessfehler ( $s_e = s_x \sqrt{1-r_{tt}}$ )	$\pm 4.1$	Erreur type ( $s_e = s_x \sqrt{1-r_{tt}}$ )
auf 100 Items gerechnet	$\pm 4.1$	calculée pour 100 items

# Score distribution total

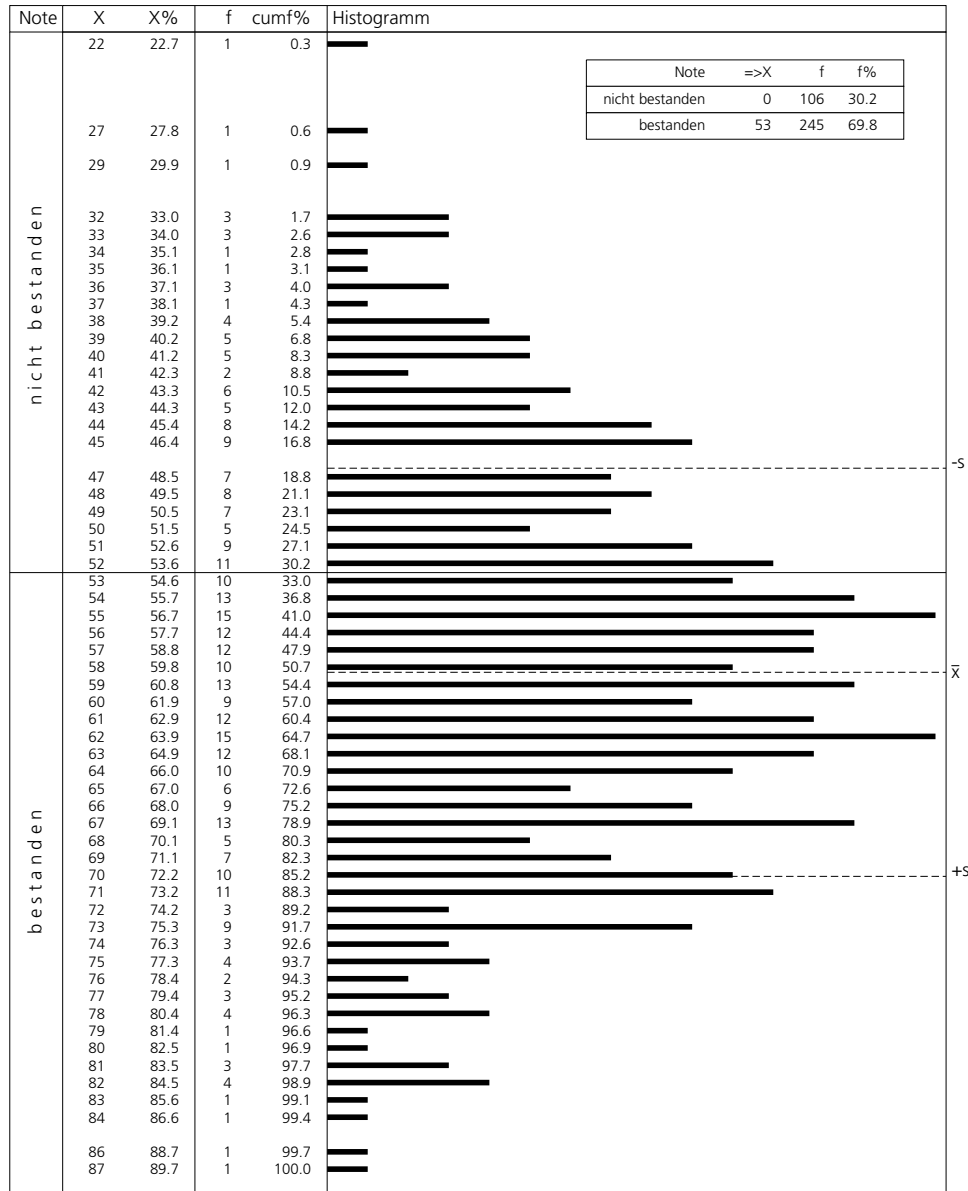
ESMO

08.10.2016  
Total

Examination in Medical Oncology

Punkte- und Notenverteilung  
K' Halbpunktbewertung

Répartition des points et des notes  
K' évaluation à demi-points



© AAE/ML, 12.Januar 2017, 10:41

Anzahl KandidatInnen  
mögliches Punktemaximum  
Mittelwert  
Standardabweichung  
eliminierte Fragen (Nummern)

$N_d$  351  
 $N_i$  97  
 $\bar{x}$  57.99  
 $s$  11.79  
45, 47, K18

nombre de candidats  
score maximum possible  
moyenne  
écart type  
questions éliminées (numéros)



# Score distribution (location)

ESMO

08.10.2016

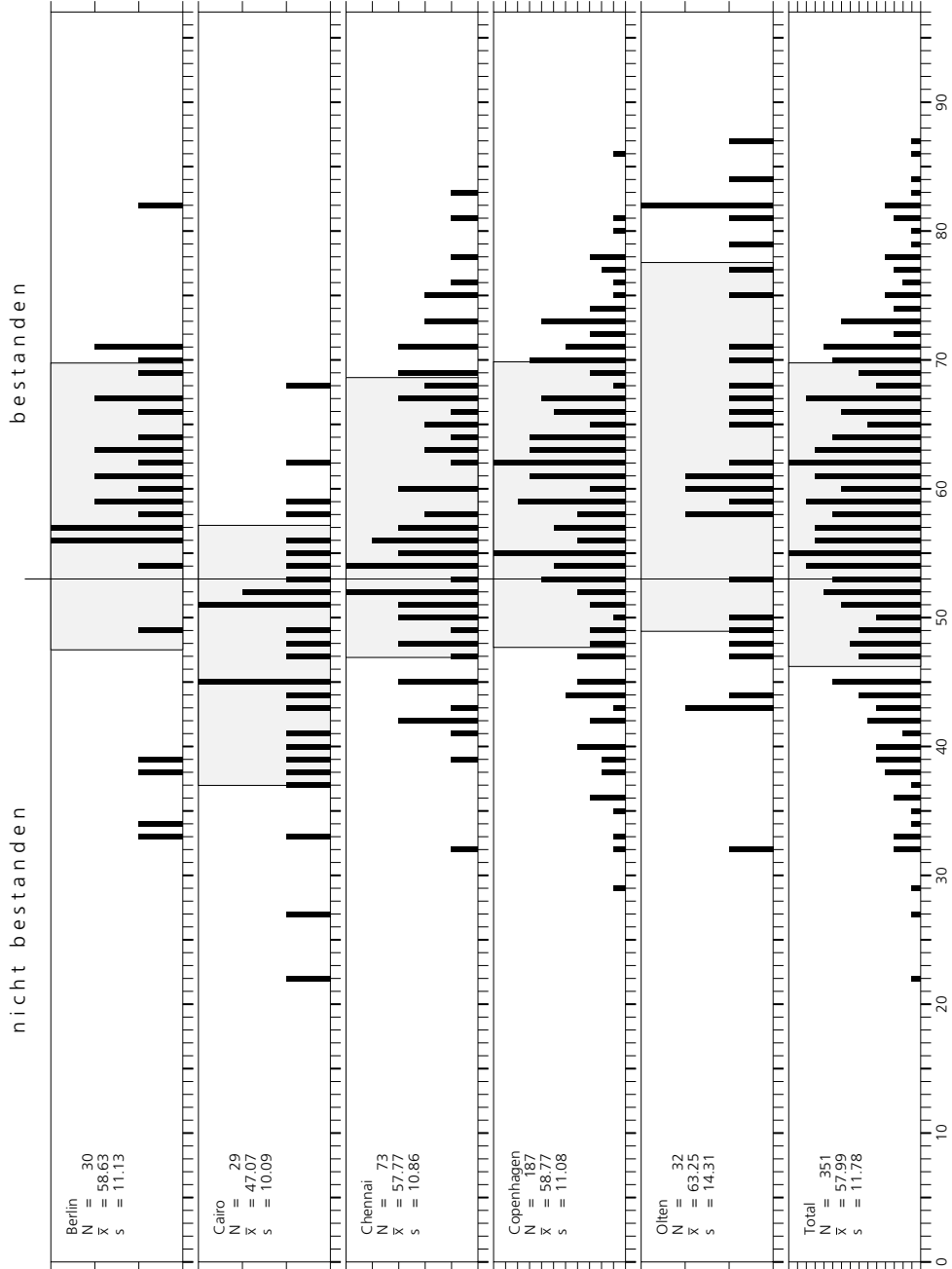
Examination in Medical Oncology

Punkteverteilungen

Répartitions des points

K' Halbpunktbewertung

K' évaluation à demi-points



Anzahl KandidatInnen  
1 Skalenstrich = 1 Kand.

Nombre de candidats  
1 cand. par division

# Score distribution (region)

ESMO

08.10.2016

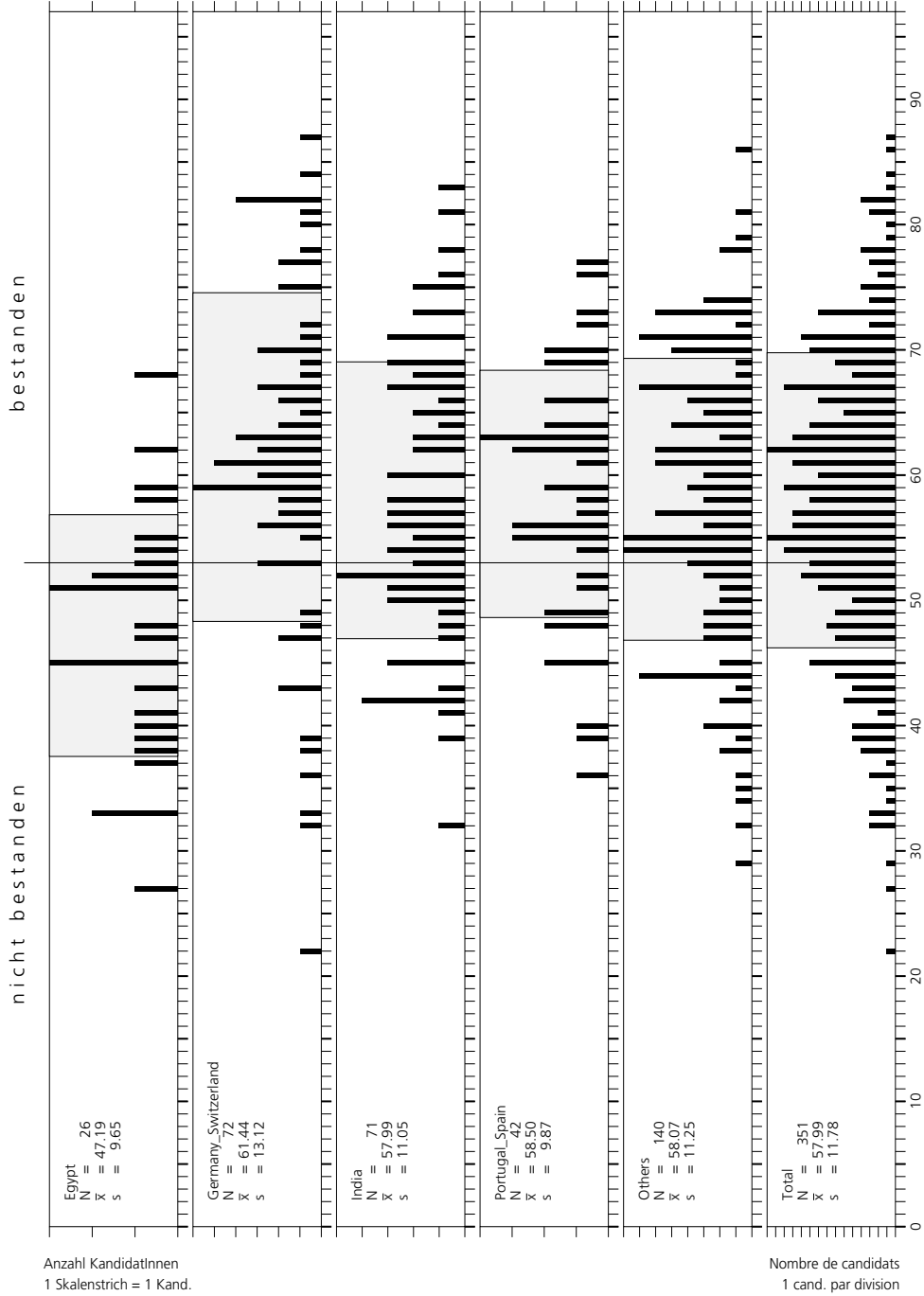
Examination in Medical Oncology

Punkteverteilungen

K' Halbpunktbewertung

Répartitions des points

K' évaluation à demi-points



# Composition of the exam (Blueprint 1)

ESMO

08.10.2016

Examination in Medical Oncology

## Prüfungszusammensetzung nach Inhalt

K' Halbpunktbewertung

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

## Composition de l'examen selon le contenu

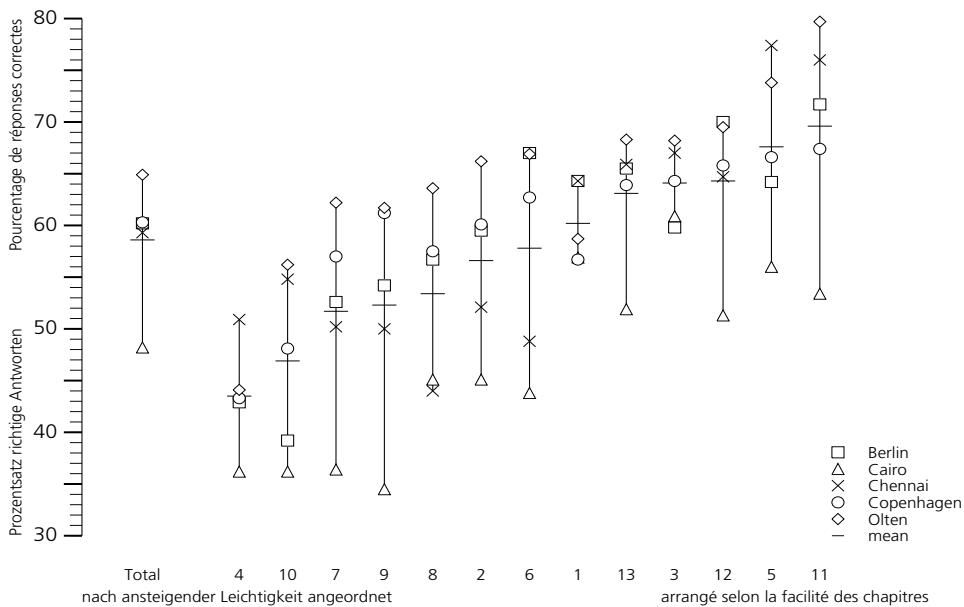
K' évaluation à demi-points

Items	K'[%]
9	22.2
11	18.2
9	22.2
4*	25.0
4*	25.0
5*	20.0
9	33.3
7	28.6
4*	0.0
4*	0.0
2*	0.0
4*	25.0
25	16.0
97	19.6

\* Bei kleinen Subscores ist die Aussagekraft eingeschränkt (Einfluss des Zufallsfehlers)  
L'interprétation des petites chapitres devient incertaine (influence de l'erreur aléatoire)

### Subscoreanalyse

### Analyse par subscores



# Composition of the exam (Blueprint 2)

ESMO

08.10.2016

Examination in Medical Oncology

## Prüfungszusammensetzung nach Inhalt<sup>2</sup>

K' Halbpunktbewertung

## Composition de l'examen selon le contenu<sup>2</sup>

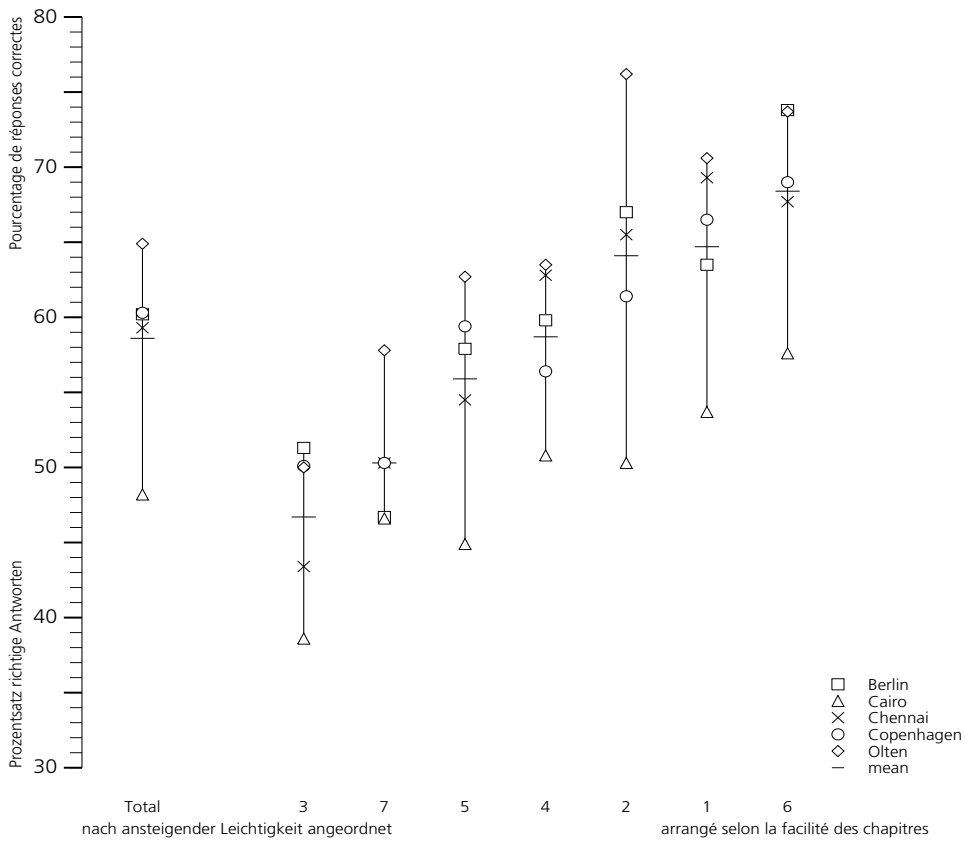
K' évaluation à demi-points

Code	Subscore	Items	K'[%]
1	Biology, Pathology incl. tumour markers, Laboratory medicine	17	17.6
2	Epidemiology, Etiology, Clinical research	5*	20.0
3	Screening and prevention	5*	40.0
4	Clinic, Differential diagnosis, Staging, Imaging	15	26.7
5	Therapy, Surgery, Radiation oncology, Anticancer agents, Biologic therapy, Respo	46	17.4
6	Complications of treatment, Supportive and Palliative Care. Communication and Ps	7	0.0
7	Geriatric oncology, Cancer in adolescents and young adults, Cancer and pregnancy	2*	50.0
Total			97 19.6

\* Bei kleinen Subscores ist die Aussagekraft eingeschränkt (Einfluss des Zufallsfehlers)  
L'interprétation des petites chapitres devient incertaine (influence de l'erreur aléatoire)

### Subscoreanalyse

### Analyse par subscores



# Composition of the exam & Subscores

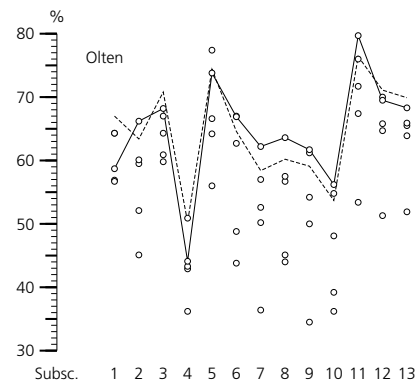
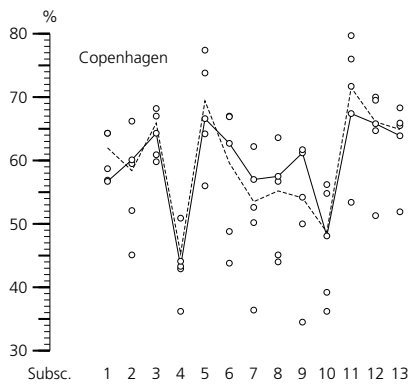
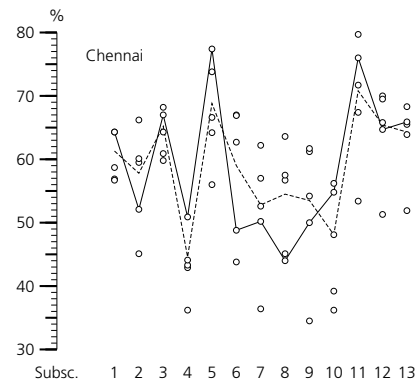
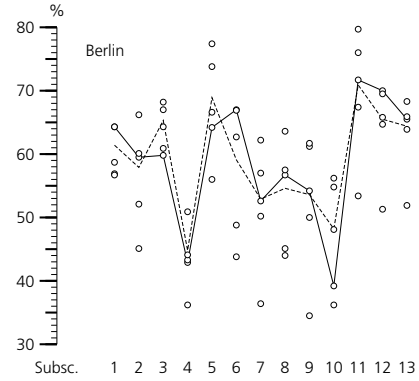
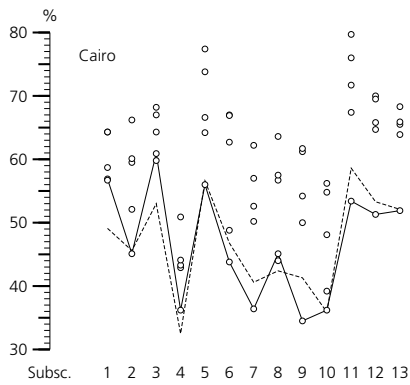
## ESMO Subscoreanalyse nach Inhalt

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

08.10.2016

Items	K[%]
9	22.2
11	18.2
9	22.2
4	25.0
4	25.0
5	20.0
9	33.3
7	28.6
4	0.0
4	0.0
2	0.0
4	25.0
25	16.0
97	19.6

## Examination in Medical Oncology Analyse par subscores selon le contenu Evaluation avec des demi-points



— erzielte Leistung  
- - - - - erwartete Leistung

— performance réalisée  
- - - - - performance attendue

## Sample feedback letter

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

Dr Mia Muster  
Inselspital  
Bundesplatz 100  
3000 Bern  
CH

### Informal feedback on your exam results

On October 8, 2016 you participated in the ESMO examination in Berlin. In order to pass, 53 out of 97 questions had to be answered correctly (54.6%). Your results are shown in detail in the table below.

Questions have been grouped in 'subscores' according to their content. For each subscore you find how many questions you answered correctly ('points'), the number of questions per subscore ('of') and how you compare with the other candidates ('success'). Subscores with less than 6 questions (\*) are not evaluated due to low measuring reliability.

- ↗ You scored within the top 25 %.
- ↘ You scored within the bottom 25 %, but not in the weakest 5 %.
- ↓ You scored within the weakest 5 %.

The absence of an arrow indicates that your results were between the 26th and the 75th percentile.

### ESMO Examination in Medical Oncology, October 2016

#### 300 Mia Muster

points / of	success	subscore		total score: 71	result: passed
5 / 9		Hematologic malignancies			
8.5 / 11	↗	Chest malignancies			
7 / 9	↗	Breast cancer			
2 / 4	*	Gynecologic malignancies			
4 / 4	*	Head and neck cancers			
3.5 / 5	*	Central nervous system malignancies			
7 / 9	↗	Genitourinary cancers			
6 / 7	↗	Gastrointestinal cancers			
4 / 4	*	Skin cancers			
2 / 4	*	Sarcomas			
2 / 2	*	Carcinoma of unknown primary site			
3 / 4	*	Endocrine cancers			
16.5 / 25		Others/Clinic			