MEDICAL UNIVERSITY OF VIENNA

# Training Programme (essential elements) Clinical Practical Year (CPY) at Medical University of Vienna, Austria

CPY-Tertial C

## Anatomy

Valid from academic year 2022/2023

Responsible for the content

Dr. med. univ. Lukas Reissig, PhD

This training programme applies to the subject of "Anatomy" within CPY tertial C "Electives". The training programmes for the elective subjects in CPY tertial C are each designed for a duration of 8 weeks.

## 3. Learning objectives (competences)

In their previous years of study, in addition to developing a theoretical background, students will have also acquired skills in macroscopic anatomical dissection, at least during their active participation in the "Organ Morphology I-III" courses with feedback. This theoretical knowledge and practical expertise should be further deepened in the CPY. Some skills and knowledge will still only be possible to practice in simulation or can only be discussed in terms of their importance and possibly supported with teaching materials. In such cases this is explicitly stated.

The following skills must be acquired or deepened in the subject of Anatomy during the CPY.

### 3.1 Competences to be achieved (mandatory)

A) History taking

1. Prepare a report of distinct medical parameters (record all normal anatomical variations, varieties and pathologies of anatomic specimens dissected during the course "Organ Morphology")

B) Examination techniques

2. Assessment of the status of anatomical study specimens (external description, diagnosis of regular vs. irregular topographic anatomical relations)

C) Routine skills and procedures

3. Correct execution of macroscopic anatomic dissections under instruction
4. Learning to use the dissecting magnifier/operation microscope for delicate dissections
5. Learning and using various fixation and preservation methods that are used in macroscopic anatomical dissection
6. Taking care of specimens and using methods to ensure long-term specimen storage

D) Therapeutic measures Not applicable

E) Communication with patient / team

7. Ethically correct treatment of body donors
8. Identifying ethically problematic situations
9. Giving teaching presentations and passing on specialist information, procedures and skills to students and other medical professionals

F) Documentation

10. Working with local / national and international guidelines and protocols
11. Compliance with legal requirements (Austrian Physicians' Act, Austrian Hospitals Act, Vienna Act governing Disposal of the Dead, Austrian Criminal Code, Austrian Insurance Act as well as laws that must be publicly displayed - Workers Protection Act and associated regulations)
12. Documentation of distinct medical parameters in patient files/report
13. Information request in the database of body donors or in the associated files

### 3.2 Optional competences

In addition to the competences that are mandatory to achieve, further competences from the following list may also be acquired.

1. X-ray investigations of anatomical specimens ensuring strict compliance with radiation protection regulations
2. Ultrasound examinations of anatomic specimens
3. Use of macroscopic anatomical dyeing and injection methods
4. Application of techniques to prepare translucent anatomical specimens?
5. Use of histological techniques to create serial cross-sections
6. Use of computer-assisted three-dimensional reconstruction of histological serial cross-sections and generation of three-dimensional computer models
7. Attendance at the Journal Club
8. Presentation of article in the Journal Club
9. Course attendance (ECG course, ultrasound, suture course, burnout prevention etc.)
10. Attendance at external training/professional development events (congresses etc.)

## 4. Information on verification of performance, on-going assessments

Reviews of performance during the CPY tertial are used to document and monitor learning progress. No marks are given here. They represent a self-assessment exercise for students in terms of realising the specified learning objectives. During the CPY tertial students are expected to take responsibility for optimising their own competence levels, a process that is supported by the mentor. In some situations required training steps can also be requested by the student.

The review of performance should be seen as an on-going assessment. These reviews are conducted regularly on a fortnightly basis; the time and theme are agreed in advance. The assessments are performed by various people (subject coordinator/mentor and her/his scientific staff).

### 4.1 DOPS (Direct Observation of Procedural Skills)

These are used by the supervisor to check the student's dissection skills as well as their powers of judgement in identifying and describing regular anatomical situations and situations that differ more or less significantly from the norm (i.e. normal variants or anatomical variations) directly while the student is working on and with the anatomical specimen.

The following aspects can be assessed in the DOPS

1. Preparation of report of distinct medical parameters
2. External description of an anatomical specimen
3. Preparation of an anatomical findings report
4. Correct execution of anatomical dissection techniques

5. Correct execution of an anatomical dissection in terms of the clarity and completeness of the presentation of the structures dissected
6. Identifying and interpreting regular topographical anatomical situations and deviations, i.e. normal variants and variations
7. Use of macroscopic anatomical fixation and preservation methods
8. Correct care of anatomical specimens entrusted to him/her
9. Use of histological techniques
10. Ethically correct treatment of body donors
11. Phoning/e-mailing to obtain relevant information for performing a study in the fields of clinical anatomy
12. Phoning/e-mailing (clinical) colleagues to give information about/discuss the results of an anatomical investigation/study
13. Information request and research in the literature in the case of anatomical normal variants and variations in the relevant database (http://www.anatomyatlases.org/AnatomicVariants/AnatomyHP.shtml)
14. Information request in the database of body donors or in the associated files
15. Working with dissecting magnifier/operation microscope with a particular focus on clear and complete anatomical presentation

This list can be expanded accordingly.

## 5. Subject-specific details regarding the CPY tasks

The following CPY tasks must be completed in the subject of Anatomy:

| (A) Active tasks – mandatory component | | Each 8 weeks |
|---|---|---|
| Preparation of a macroscopic anatomical external cadaver description | | 16x |
| Correct performance of macroscopic anatomical dissections | | 4x |
| Preparation of a macroscopic anatomical findings report | | 4x |
| Preliminary presentation of the anatomical specimen prepared under instruction, including checking of knowledge and skills | | 8x |
| Preparation of a macroscopic anatomical report of distinct medical parameters | | 4x |
| Correct use of macroscopic anatomical fixation and preservation methods | | 2x |
| Correct care of anatomical specimens | | 8x |
| Writing of a macroscopic anatomical case description (casuistic) | | 4x |
| **A) Active tasks – mandatory elective component** | **Points** | **Each 8 weeks** |
| Working with dissecting magnifier/operation microscope | 5 | *Elective tasks – amounting to 15 points from at least 2 categories* |
| Using imaging techniques ensuring strict compliance with safety regulations | 5 | |
| Using histological techniques | 5 | |
| Concluding case presentation (detailed) | 8 | |

| | | |
|---|---|---|
| Documentation in patient files/report of distinct medical parameters | 3 | |
| Information request in the database of body donors or in the associated files | 3 | |

| (B) Attendance at structured training and professional development events – mandatory component | | Each 8 weeks |
|---|---|---|
| Advanced training/tutorial “Anatomia practica” | | 2x |
| **(B) Attendance at structured training and professional development events – mandatory elective component** | **Points** | **Each 8 weeks** |
| Advanced training/tutorial “Anatomia practica | 2 | *Elective events amounting to at least 4 points from at least 2 categories* |
| Anatomy / cell biology seminar | 1 | |
| Course attendance (surgery courses at the "Anatomy Training Centre Vienna" etc., per ½ day) | 3 | |
| External training and professional development events per ½ day (congresses, conferences etc.) | 3 | |

The main task of the student is therefore to perform methodologically correct macroscopic anatomical dissections. In addition, the student has to present the specimens/dissections they have made to the supervisor who checks the progress in dissection and, above all, the completeness and clarity of the dissection and the theoretical knowledge of the student. In order to acquire this knowledge, the use of the standard works of Anderhuber et al. (Waldeyer "Anatomie des Menschen"[1]) and Corning [2] is strongly recommended. The sole use of a (teaching) atlas is equally strongly discouraged. The use of the freely available database of Bergman et al. [3] is indispensable for the assessment of normal anatomical variants.

## Appendix: Details of the CPY tasks in the subject of Anatomy

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### Preparation of a macroscopic anatomical external cadaver description

Description of the external characteristics of an anatomical specimen

*Structure (content):*

1. Date
2. Number of the specimen according to ID-tag
3. Gender and age (latter to be taken from the body donor file)
4. Hight/Weight (if measured), otherwise physique/build as per Kretschmer or Sheldon
5. Any operation scars: position, size, healing status (differentiation between operations performed shortly before death and earlier in life), assumed indication for surgery
6. Any access lines (e.g. central venous catheter, Port-a-cath, urinary catheter etc.)
7. Any injuries/skin lesions: position, size
8. Any present signs of death (livores, rigor mortis,..)
9. Any visible or palpable changes on the skeleton (position, type)
10. Summary
11. Initials of the author

*Formal requirements:*

Preparation time: 1 day

Scope: Description of the external characteristics of an anatomical specimen before starting dissection

Resources: Body donor database, database of anatomical variations, other more detailed reference works, digital camera

Documentation: Written and graphic, possibly illustrated with photos, making sure the anonymity of the body donor is kept (no photographs of the face!)

## Correct execution of macroscopic anatomical dissections

Following orientation lines and palpable bony landmarks, the skin incisions are defined. The blade of the scalpel and the little finger (stabilization and distance) make contact with the skin and the incision is made along the anticipated line. At an intersection of two incisions, the skin is lifted using anatomical forceps. With the blade of the scalpel facing the dermis the connective tissue between dermis and subcutaneous adipose tissue is cut and the skin is separated from the subcutis. While doing so the skin is kept under tension using the forceps or the fingers. The skin of the defined area is removed completely and then disposed in the designated containers.

Now identify and dissect the subcutaneous vessels and nerves. Then remove the subcutis while protecting this subcutaneous structure and dissect the superficial fascia of the region.

After removing the superficial fascia, the borders of the region have to be identified and dissected first of all. Only after completing delineation of the relevant region, the anatomical structures specified in the dissection instructions may be identified and traced as far as the borders of the region. The best way to dissect arteries is to remove their adventitia as well as the accompanying veins (after identification).

To present muscles correctly, initially look for the supplying vessels and nerves and trace them towards their entrance into the muscle. Then dissect the branches of the nerves and arteries as far as they enter the muscle and remove the muscle's own fascia as far as this can be done by blunt dissection. When removing the fascia, make sure the associated nerves and arteries are not damaged. Furthermore, do not remove parts of the muscle fascia which serve one or more muscles as an area of origin or attachment and therefore can hardly be separated from the underlying muscle fibres.

*Formal requirements:*

Preparation time: 3 days
Scope: Preparation/dissection of a defined topographical region
Resources: Set of dissection instruments (https://anatomieundzellbiologie.meduniwien.ac.at/studium-lehre/lehre-anatomie/sezierbesteck/) , digital camera

**Documentation:** Written and graphical, possibly illustrated with photos

## Preparation of a macroscopic anatomical findings report

Description of the structure present in a region of an anatomical specimen and its topographical relationships

*Structure (content):*

1. Date
2. Room and table number
3. Number of the specimen according to ID-tag
4. Gender and age (latter to be taken from the body donor file)
5. Description of the dissected region, its borders and the structures lying in/running through it as well as their normal/anomalous morphological character, position and/or course
6. Creation of general sketches to document the branching pattern and the course of the vessels and/or nerves and/or the normal variants/variations present
7. In the case of normal variants and variations, photographic documentation with the provided digital camera
8. Concluding assessment of the anomalous topographic anatomical relationships
9. Summary
10. Initials of the author

*Formal requirements:*

Preparation time: 3 days
Scope: Description of the anatomical specimen presented by the student
Resources: Body donor database, database of anatomical variations, other more detailed reference works, digital camera

Documentation: Written and graphical, possibly illustrated with photos
Including explanation: Why did your supervisor choose this specimen? What clinical consequences may the deviations from normal anatomical findings have?

## Preliminary presentation of the anatomical specimen created under instruction, including checking of knowledge and skills

Regular feedback from the supervisor required for progress in dissection and complete dissection

*The following skills and knowledge are assessed during the presentation:*

1. Presentation of the borders of the region in their entire extent
2. Complete and clear dissection
3. Strict compliance with layered dissection
4. Theoretical knowledge of all presented structures: correct naming; origin and branching pattern of vessels and nerves; origin, attachment, innervation and function of muscles; systematic anatomic description of organs; also general description of topographical anatomical relationships
5. Diagnosis of any normal variants and variations with the aid of supervisor
6. Assessment of correct specimen care
7. Dissection and theoretical assistance from the supervisor
8. Specification of further dissection course of action and/or possibly practical correction of a dissection technique that does not quite meet the required objectives
9. Based on the assessment of theoretical knowledge and/or in the case of anatomical normal variants/variations, the supervisor shall indicate to the student additional content that needs to be learnt and/or further specialist literature
10. Summary

*Formal requirements:*

Preparation time: In parallel with dissection

Scope: Description of the dissected anatomical region

Resources: Body donor database, database of anatomical variations, other more detailed reference works, digital camera

Documentation: Written and graphical, possibly illustrated with photos

## Preparation of a macroscopic anatomical report of distinct medical parameters

Description of the site encountered on the anatomical study specimen and all topographical relationships

*Structure (content):*

1. Date
2. Room and table number
3. Number of the specimen according to ID-tag
4. Gender and age (latter to be taken from the body donor file)
5. External description of the cadaver: see separate instructions
6. Description of the prepared regions in cranio-caudal sequence with recording of the normal and anomalous position of anatomical structures
7. Creation of general sketches to document the branching pattern and the course of the vessels and/or nerves and/or the normal variants/variations found
8. In the case of normal variants and variations, photographic documentation with the provided digital camera
9. Concluding assessment of the anomalous topographical anatomical relationships
10. Summary
11. Initials of the author

*Formal requirements:*

Preparation time: 3 days

Scope: Description of an anatomical study specimen insofar as it was dissected Resources: Body donor database, database of anatomical variations, other more detailed reference works, digital camera

Documentation: Written and graphical, possibly illustrated with photos

## Correct use of macroscopic anatomical fixation and preservation methods

Correct handling of the two chemicals used for the fixation of macroscopic anatomical specimens

*Structure (content):*

1. Compliance with safety regulations in the preparation of the diluted solution (under extractor hood, wearing of safety gloves and work clothing, mouth and eye protection)
2. Knowledge of the concentration of formol (1%) and phenol (3%), correct calculation of the necessary volumes for the relevant container
3. Careful removal of the chemicals from the canisters into the provided measurement cylinders, immediate re-closure of the canisters after removal
4. Transfer of concentrate into the container provided for fixation and careful filling with mains water (WARNING: risk of chemical burns from splashes)
5. Insertion of the specimen; in the case of large specimens possibly covering with a provided cloth napkin and airtight closure of the fixative container
6. Container labelling: name of the specimen, date of start of fixation, name of student
7. Where the fixative solution needs to be changed: correct disposal of the used solution into the canister provided for this purpose
8. Storage of the specimen in the area provided
9. Regular checking of the specimen (the level of the liquid must be high enough to ensure that the specimen is completely covered by the solution, if necessary top up with tap water)

*Formal requirements:*

Preparation time: 1 hour (reading of instructions for making up solution and associated safety datasheets)

Scope: Immersion fixation of an anatomical specimen

Resources: Work and safety clothing, extractor hood

Documentation: Written, including explanation: What difficulties did you experience in the individual work steps? How were they overcome?

## Correct care of anatomical specimens

Protection of macroscopic anatomical specimens from drying out and bacteria

*Structure (content):*

1. Immersion of the provided cloths into the low-concentrate phenol solution (0.5‰) until they are completely saturated; then reclose the solvent container IMMEDIATELY
2. Transfer soaking wet cloths in a plastic bowl to the specimen
3. Wrap up the specimen if possible in the form of a bandage so that the napkin(s) have as close contact as possible with the fabric
4. When doing dissection on the full body, additionally cover the specimen with a bed linen
5. Wrap the specimen airtight in the provided plastic film
6. Storage of the specimen in the area provided for this purpose
7. Regular checking of the specimen (the napkins must ALWAYS be at least moist, if necessary repeat the procedure described above)

*Formal requirements:*

Scope: Protection of the anatomical specimen by wrapping in wet cloth napkins (5‰ phenol solution)
Resources: Work clothing

Documentation: Written, including explanation: What happens if the specimen is not cared for properly? What are the practical and ethical consequences of this?

## Writing of a macroscopic anatomical case description (casuistic)

Description of a normal variant/variation present when performing dissection on an anatomical study specimen

*Structure (content):*

1. Date
2. Room and table number
3. Number of the specimen according to the ID-tag
4. Gender and age (latter to be taken from the body donor file)
5. Description of the normal variant/variation present:
    a. Localisation in the body (name of region)
    b. Type of variant (variation of a vessel, muscle, nerve or internal organ)
    c. In the case of a vascular or nerve variant: altered branching pattern and/or course with particular emphasis on changed topographical relationships
    d. In the case of a muscle variant: absence of part of a muscle or presence of an additional part of a muscle with precise description of the origin, course, insertion and innervation
    e. In the case of a variant of an internal organ: shape, size and/or positional variation with precise description of the topographical relationships and (if changed) vascular supply
6. Production of general sketches for documentation of the normal variants/variations found
7. Photographic documentation with the digital camera provided
8. Final assessment of the irregular topographical anatomical relationships, possibly also of the clinical, phylogenetic and ontogenetic aspects
9. Summary
10. Initials of the author

*Formal requirements:*

Preparation time: 3 days

Scope: Description of an anatomical normal variant/variation found in the anatomical (study) specimen

Resources: Body donor database, database of anatomical variations, other more detailed reference works, digital camera

Documentation: Written and graphical, possibly illustrated with photos