

Implementation of EPAs in Cardiology

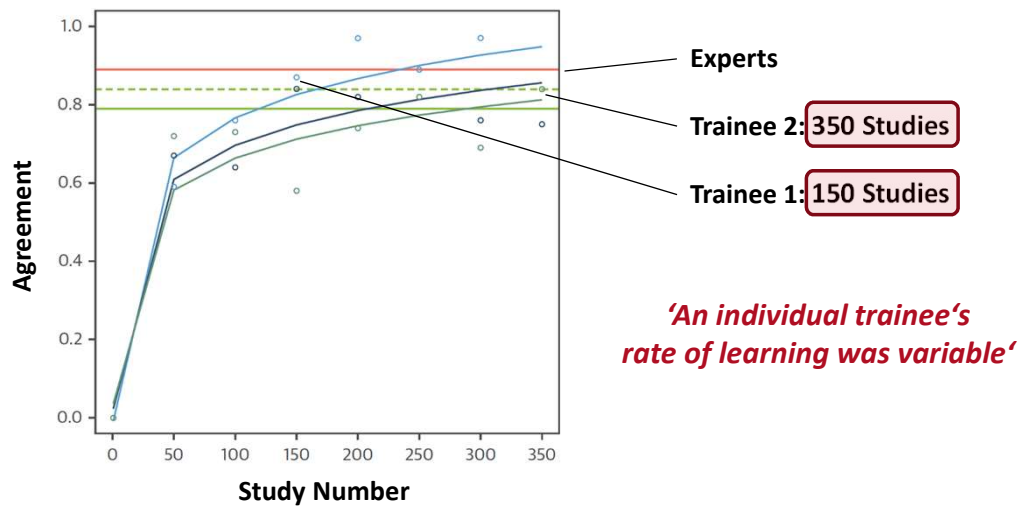
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President, Swiss Society of Cardiology
Lead, Core Curriculum Task Force, European Society of Cardiology

EPAs in Cardiology

Individuals and Training



Abnormal Myocardial Perfusion Imaging



Training and Trust



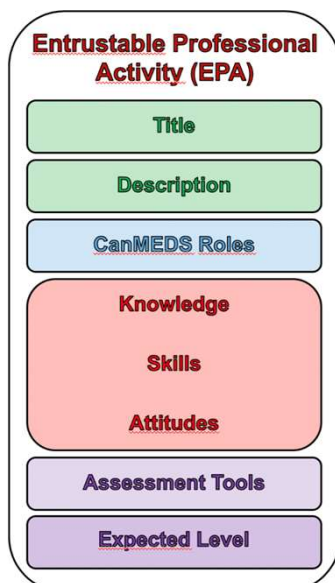
During training of an individual the trainer develops an increasing degree of trust in the trainee's competence

Numbers Versus Competence in Training



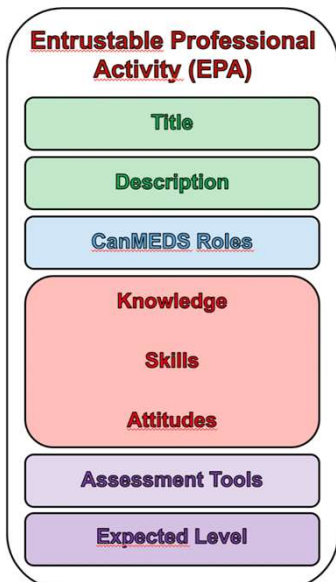
- Training using numbers:
‘We gave him/her a fair chance, but he/she failed, so sorry’
→ Problem is shifted onto the patients
- Training using EPAs:
‘We did our best, but we trust him/her to work with distant supervision only, and he/she will need some more training’
→ Problem is solved before patients are concerned

Entrustable Professional Activities (EPAs)



- EPA = a unit of professional practice the trainee can execute in an independent manner at some stage of training
- EPAs enable assessment of clinically meaningful units of competence (e.g. ‘assess a patient with chest pain’)
- To complete an EPA successfully means that the trainer has developed trust in the trainee

Entrustable Professional Activities (EPAs)

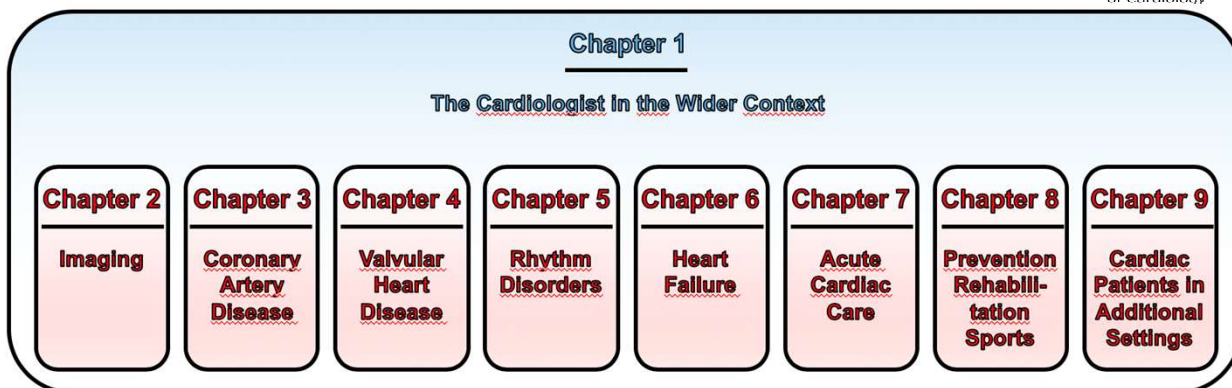


Rationale for use of EPAs:

to generate the **necessary flexibility** for guiding and assessing trainees with **different abilities** and training needs

to promote a **holistic type of assessment** in the clinical setting focused on the **clinical competence** of the trainee

Content Structure - Chapters



CanMEDS Physician Competency Framework Roles

- Professional
- Communicator
- Collaborator
- Leader
- Health Advocate
- Scholar

Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada 2015

Content Structure - EPAs



1. Chapter 1: The cardiologist in the wider context	11	5. Chapter 5: Rhythm disorders	38	7. Chapter 7: Acute Cardiovascular Care	61
1.1. Preamble	11	5.1. Manage a patient with palpitations	38	7.1. Manage a patient with haemodynamic instability	61
1.2. CanMEDS roles	12	5.2. Manage a patient with transient loss of consciousness	39	7.2. Manage a patient post-cardiac arrest	62
2. Chapter 2: Imaging	15	5.3. Manage a patient with atrial fibrillation	40	7.3. Manage a critically ill cardiac patient	64
2.1. Assess a patient using one or multiple imaging modalities	15	5.4. Manage a patient with atrial flutter	41	7.4. Manage a patient after a percutaneous cardiovascular procedure	65
2.2. Assess a patient using echocardiography	16	5.5. Manage a patient with supraventricular tachycardia	42	7.5. Manage a patient after cardiac surgery	66
2.3. Assess a patient using cardiac magnetic resonance	17	5.6. Manage a patient with ventricular arrhythmia	43	7.6. Manage end-of-life care in a critically ill cardiac patient	67
2.4. Assess a patient using cardiac computed tomography	18	5.7. Manage a patient with bradycardia	44	8. Chapter 8: Prevention, rehabilitation, sports	68
2.5. Assess a patient using nuclear techniques	19	5.8. Manage a patient with a cardiac ion channel dysfunction	45	8.1. Manage cardiovascular aspects in an athlete (Sport Cardiology)	68
3. Chapter 3: Coronary artery disease	20	5.9. Manage a patient with a pacemaker	46	8.2. Manage a patient with arterial hypertension	69
3.1. Manage a patient with symptoms suggestive of coronary artery disease	20	5.10. Manage a patient with an implantable cardioverter defibrillator	47	8.3. Manage a patient with dyslipidaemia	70
3.2. Manage a patient with acute coronary syndrome	21	5.11. Manage a patient with a cardiac resynchronization therapy device	48	8.4. Manage cardiovascular aspects in a diabetic patient	71
3.3. Manage a patient with chronic coronary syndrome	22	6. Chapter 6: Heart Failure	49	8.5. Manage an individual in primary prevention	73
3.4. Assess a patient using coronary angiography	23	6.1. Manage a patient with symptoms and signs of heart failure	49	8.6. Manage a cardiac patient in secondary prevention	74
4. Chapter 4: Valvular heart disease	24	6.2. Manage a patient with heart failure with reduced ejection fraction	50	8.7. Prescribe a prevention and rehabilitation programme for a cardiovascular patient	75
4.1. Manage a patient with aortic regurgitation	24	6.3. Manage a patient with heart failure with preserved ejection fraction	52	9. Chapter 9: Cardiac patients in other settings	76
4.2. Manage a patient with aortic stenosis	25	6.4. Manage a patient with acute heart failure	53	9.1. Manage a patient with aortic disease	76
4.3. Manage a patient with mitral regurgitation	26	6.5. Manage a patient with cardiomyopathy	54	9.2. Manage a patient with trauma to the aorta or the heart	77
4.4. Manage a patient with mitral stenosis	28	6.6. Manage a patient with pericardial disease	56	9.3. Manage a patient with peripheral artery disease	78
4.5. Manage a patient with tricuspid regurgitation	29	6.7. Manage a patient with right heart dysfunction	57	9.4. Manage a patient with thromboembolic venous disease	79
4.6. Manage a patient with tricuspid stenosis	30	6.8. Manage a patient with a cardiac tumour	58	9.5. Manage a patient with pulmonary thromboembolism	80
4.7. Manage a patient with pulmonary regurgitation	32	6.9. Manage cardiac dysfunction in oncology patients	59	9.6. Manage a patient with pulmonary hypertension	81
4.8. Manage a patient with pulmonary stenosis	33	7. Chapter 7: Acute Cardiovascular Care	61	9.7. Manage a patient with adult congenital heart disease	82
4.9. Manage a patient with multivalvular disease	34	7.1. Manage a patient with haemodynamic instability	61	9.8. Manage a pregnant patient with cardiac symptoms or disease	83
4.10. Manage a patient with a prosthetic valve	35	7.2. Manage a patient post-cardiac arrest	62	9.9. Perform a cardiological consultation	85
4.11. Manage a patient with endocarditis	36	7.3. Manage a critically ill cardiac patient	64		
		7.4. Manage a patient after a percutaneous cardiovascular procedure	65		
		7.5. Manage a patient after cardiac surgery	66		
		7.6. Manage end-of-life care in a critically ill cardiac patient	67		

Content Structure - EPAs



4.2. Manage a patient with aortic stenosis

Description

Timeframe: from diagnosis of aortic stenosis (AS) until referral for surgical/interventional therapy
Setting: outpatient setting, inpatient setting, emergency department

Including:

initial assessment based on clinical history and physical examination
 identification of causes and differential diagnosis
 performance and interpretation of basic diagnostic modalities
 interpretation of additional diagnostic modalities
 medical therapy

Excluding: performing interventional or surgical therapy

CanMEDS roles

- Medical expert
- Communicator
- Collaborator
- Leader
- Professional

Knowledge

- List the causes of AS
- Describe the haemodynamics of AS
- Describe the pathophysiology of AS and its impact on the heart and circulation
- Describe the symptoms and clinical signs of AS
- Outline the natural history and prognosis of AS
- Describe the values and limitations of diagnostic modalities; in particular echocardiography
- Quantify the severity of AS and its effect on cardiac function
- Plan the follow-up during conservative management of a patient with AS
- Explain the current guidance on endocarditis prophylaxis
- Discuss the indications for aortic valve replacement, with or without replacement of the ascending aorta
- Describe the indications, benefits, and risks of conservative, interventional, and surgical therapy
- Discuss the impact of aortic root dilatation, concomitant coronary artery disease, and other co-morbidities

Skills

- Take a relevant history and perform an appropriate physical examination
- Select appropriate diagnostic modalities
- Perform and interpret the following diagnostic modalities:
 - ECG
 - Exercise ECG
 - Cardiopulmonary exercise testing
 - Transthoracic echocardiography
- Interpret the following diagnostic modalities:
 - Chest X-ray
 - Trans-oesophageal echocardiography
 - Stress echocardiography
 - Cardiac catheterization
 - Coronary angiography
 - Cardiac CT
 - Cardiac MR
- Decide on the strategy and frequency of follow-up
- Identify the appropriate timing for interventional or surgical therapy
- Optimize patient condition in preparation of interventional or surgical therapy
- Assess the benefits and risks of different therapeutic approaches

Attitudes

- Allow time for careful evaluation of symptoms using, when appropriate, the results of exercise testing
- Limit investigations to those required for definitive diagnosis and planning for an intervention
- Educate the patient on the cause, and probable natural history of their AS
- Educate the patient on the necessity for regular follow-up
- Provide balanced, understandable, and appropriate information to the patient on benefits and risks of different therapeutic approaches
- Involve the patient in all decisions relating to their care
- Commit to work in a Heart Team involving imaging specialists, interventional cardiologists, cardiac surgeons, anaesthetists, and nurses

Assessment tools

- Direct observation/WBA (e.g. DOPS, Mini-CEX, fieldnotes)
- CbD (case-based discussion)/EbD (entrustment-based discussion)

Level of independence

- 5. Able to teach (no supervision)

Content Structure – Entrustment Levels



Level 1: Trainee is able to observe

Level 2: Trainee is able to perform the activity under direct supervision
proactive, close supervision, supervisor in the room

Level 3: Trainee is able to perform the activity under indirect supervision
reactive, on-demand supervision, trainee has to ask for help, supervisor readily available, within minutes

Level 4: Trainee is able to perform the activity under distant supervision
reactive supervision available remotely, e.g. within 20-30min, on the phone or post-hoc

Level 5: Trainee is able to supervise others in performing the activity

Content Structure – Entrustment Levels



EPA	Level of Independence				
	1	2	3	4	5
2. Imaging					
2.1. Assess a patient using one or multiple imaging modalities					
2.2. Assess a patient using echocardiography					
2.3. Assess a patient using cardiac magnetic resonance					
2.4. Assess a patient using cardiac computed tomography					
2.5. Assess a patient using nuclear techniques					
3. Coronary artery disease					
3.1. Manage a patient with symptoms suggestive of coronary artery disease					
3.2. Manage a patient with acute coronary syndrome					
3.3. Manage a patient with chronic coronary syndrome					
3.4. Assess a patient using coronary angiography					
4. Valvular heart disease					
4.1. Manage a patient with aortic regurgitation					
4.2. Manage a patient with aortic stenosis					
4.3. Manage a patient with mitral regurgitation					
4.4. Manage a patient with mitral stenosis					
4.5. Manage a patient with tricuspid regurgitation					
4.6. Manage a patient with tricuspid stenosis					
4.7. Manage a patient with pulmonary regurgitation					
4.8. Manage a patient with pulmonary stenosis					
4.9. Manage a patient with multivalvular disease					
4.10. Manage a patient with a prosthetic valve					
4.11. Manage a patient with endocarditis					
5. Rhythm disorders					
5.1. Manage a patient with palpitations					
5.2. Manage a patient with transient loss of consciousness					
5.3. Manage a patient with atrial fibrillation					
5.4. Manage a patient with atrial flutter					
5.5. Manage a patient with supraventricular tachycardia					
5.6. Manage a patient with ventricular arrhythmia					
5.7. Manage a patient with bradycardia					
5.8. Manage a patient with a cardiac ion channel dysfunction					
5.9. Manage a patient with a pacemaker					
5.10. Manage a patient with an ICD					
5.11. Manage a patient with a CRT device					
6. Heart failure					
6.1. Manage a patient with symptoms and signs of heart failure					
6.2. Manage a patient with heart failure with reduced ejection fraction					
6.3. Manage a patient with heart failure with preserved ejection fraction					
6.4. Manage a patient with acute heart failure					
6.5. Manage a patient with cardiomyopathy					
6.6. Manage a patient with pericardial disease					
6.7. Manage a patient with right heart dysfunction					
6.8. Manage a patient with a cardiac tumor					
6.9. Manage cardiac dysfunction in oncology patients					
9. Cardiac patients in further settings					
9.1. Manage a patient with aortic disease					
9.2. Manage a patient with trauma to the aorta or the heart					
9.3. Manage a patient with peripheral artery disease					
9.4. Manage a patient with thromboembolic venous disease					
9.5. Manage a patient with pulmonary thromboembolism					
9.6. Manage a patient with pulmonary hypertension					
9.7. Manage a patient with adult congenital heart disease					
9.8. Manage a pregnant patient with cardiac symptoms or disease					
9.9. Perform a cardiological consultation					
Procedures	Level of Independence				
	Level I, II, III			Level of Independence	
	validated 2019-02-18	1	2	3	4
ECG	III				
AMBULATORY ECG	III				
EXERCISE ECG TESTING	III				
CARDIOPULMONARY EXERCISE TESTING	III				
AMBULATORY BP MONITORING	III				
TRANSTHORACIC ECHOCARDIOGRAPHY	III				
TRANSESOPHAGEAL ECHOCARDIOGRAPHY	II				
STRESS ECHOCARDIOGRAPHY	I				
VASCULAR ULTRASOUND	I				
CORONARY CT					
CARDIAC CT	II				
CARDIAC MR	I				
NUCLEAR IMAGING	I				
RIGHT HEART CATHETERISATION	II				
ENDOMYOCARDIAL BIOPSY	I				
CORONARY ANGIOGRAPHY	II				
PERCUTANEOUS INTERVENTIONS	I				
STRUCTURAL INTERVENTIONS	I				
CARDIAC SURGERY	I				
PACEMAKER PROGRAMMING	II				
ICD/CRT PROGRAMMING	I				
TEMPORARY PACEMAKER IMPLANTATION	III				
PERMANENT PACEMAKER IMPLANTATION	II				
ICD/CRT IMPLANTATION	I				
ELECTROPHYSIOLOGICAL STUDIES	I				
ELECTROPHYSIOLOGICAL INTERVENTIONS	I				
ELECTRICAL CARDIOVERSION	III				
PERICARDIOCENTESIS	III				

Implementation of EPAs in Cardiology

Implementation in Switzerland

SIWF_{FMH}
ISFM

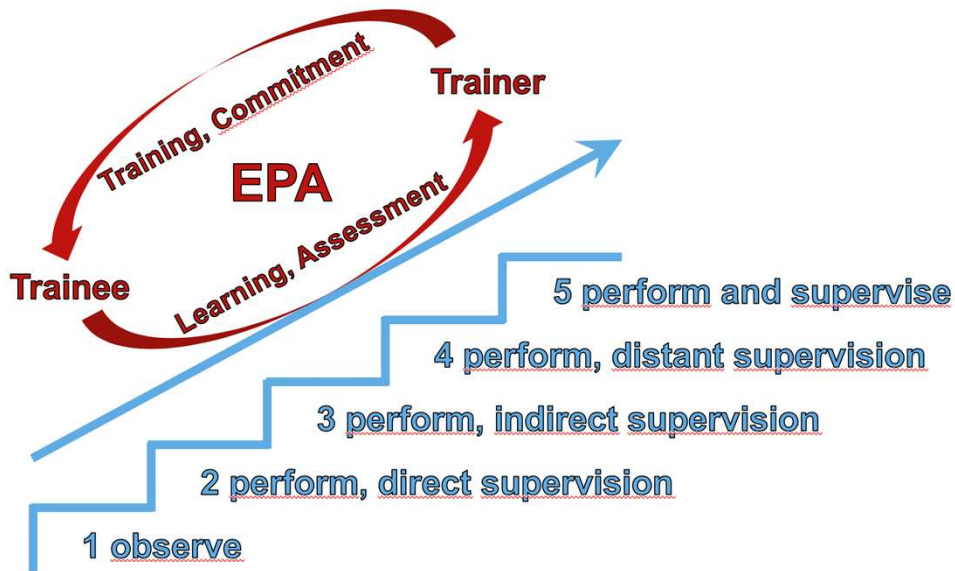


Facharzt für Kardiologie

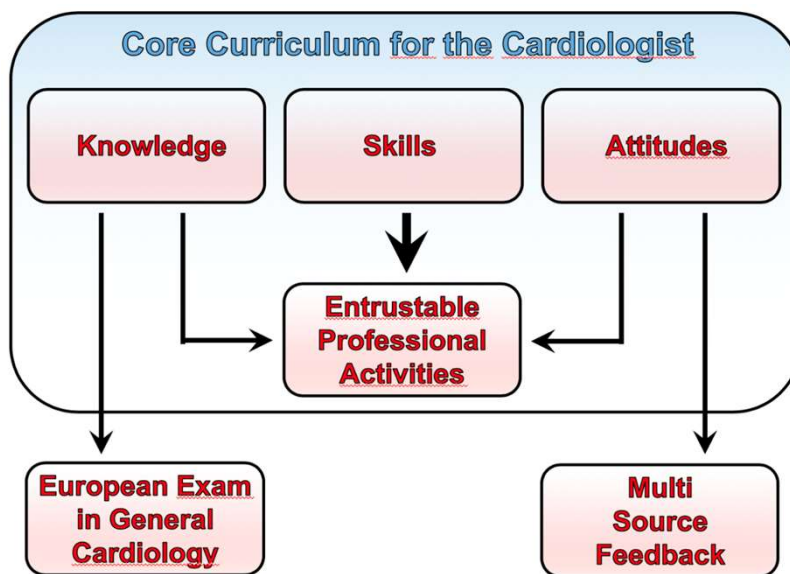
Weiterbildungsprogramm vom 1. Juli 2022

Akkreditiert durch das Eidgenössische Departement des Innern: 31. August 2018

EPA and Trainer Trainee Interaction



EPA and Assessment





Potential Concerns Regarding EPAs

- **Trainers:**
 - Effort required for effectively developing trust in the trainees
 - More time necessary for documentation of assessments
 - **Mobile technology for rapid documentation of assessments**

- **Trainees:**
 - No numbers for documentation in log book
 - **Mobile technology for documentation of competence levels**

EPA-Based Assessments



Ad hoc examination

'Why don't we use this situation for an EPA'

Current clinical situation



Procedure has just been completed



Describe clinical situation
→ Main diagnosis?

Decide which EPA matches
→ Best match?

Analyze performance of trainee based on EPA
→ Knowledge? Skills? Attitudes? Roles?

Determine level of complexity of situation
→ Simple or complex? Reason?

Determine level of independence of trainee
→ Level 1/2/3/4/5? Reason?



Retrospective approach

Planned examination

'I still need an EPA on X to complete my curriculum...'

Scheduled examination



Selected procedure



Analyze performance of trainee based on EPA
→ Knowledge? Skills? Attitudes? Roles?

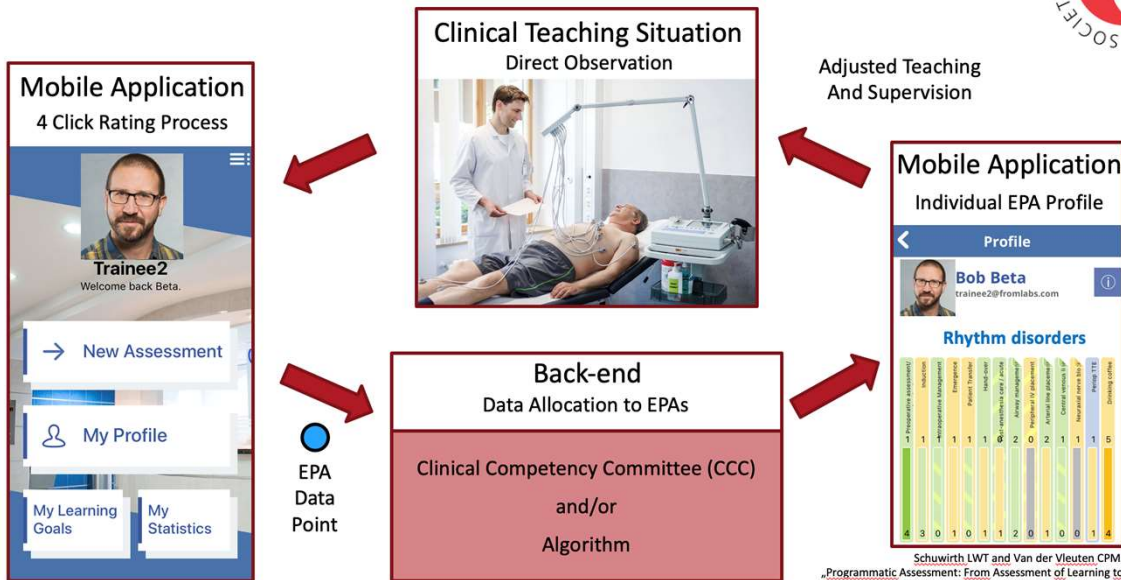
Determine level of complexity of situation
→ Simple or complex? Reason?

Determine level of independence of trainee
→ Level 1/2/3/4/5? Reason?



Prospective approach

EPA-Based Assessments Using Mobile Technology



EPA-Based Assessments Using Mobile Technology



prEPARED-Assessment System

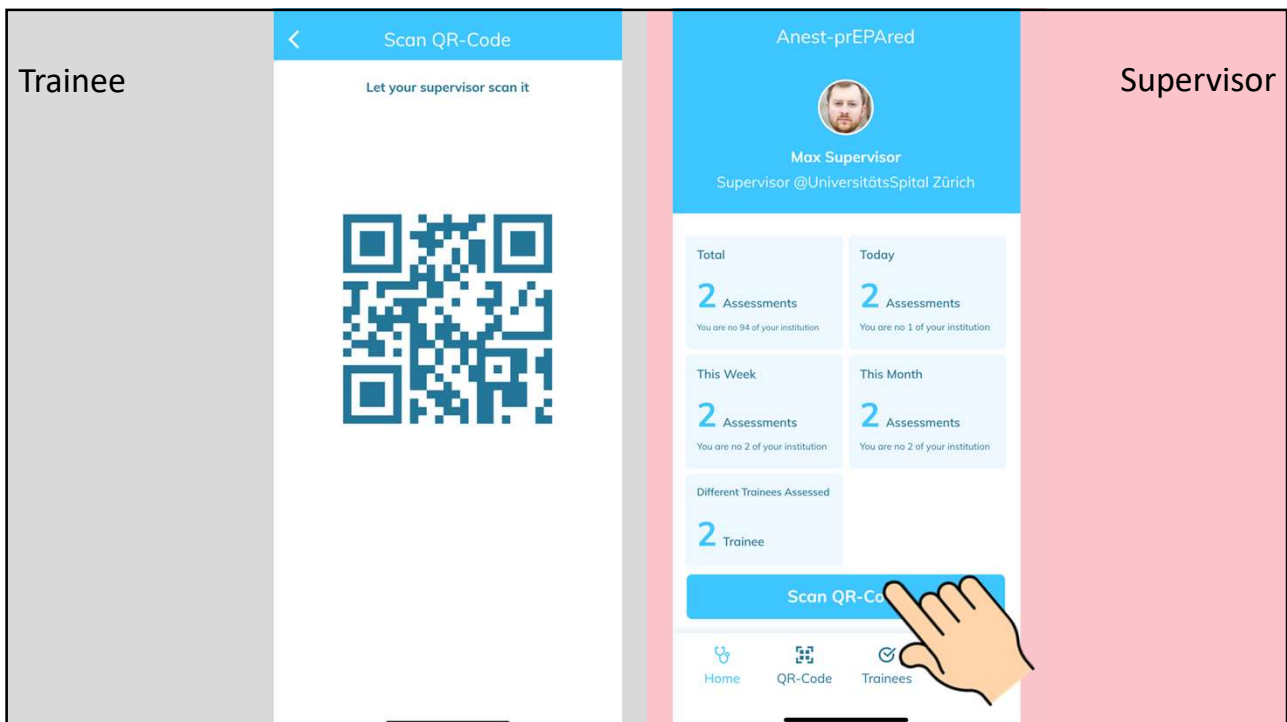
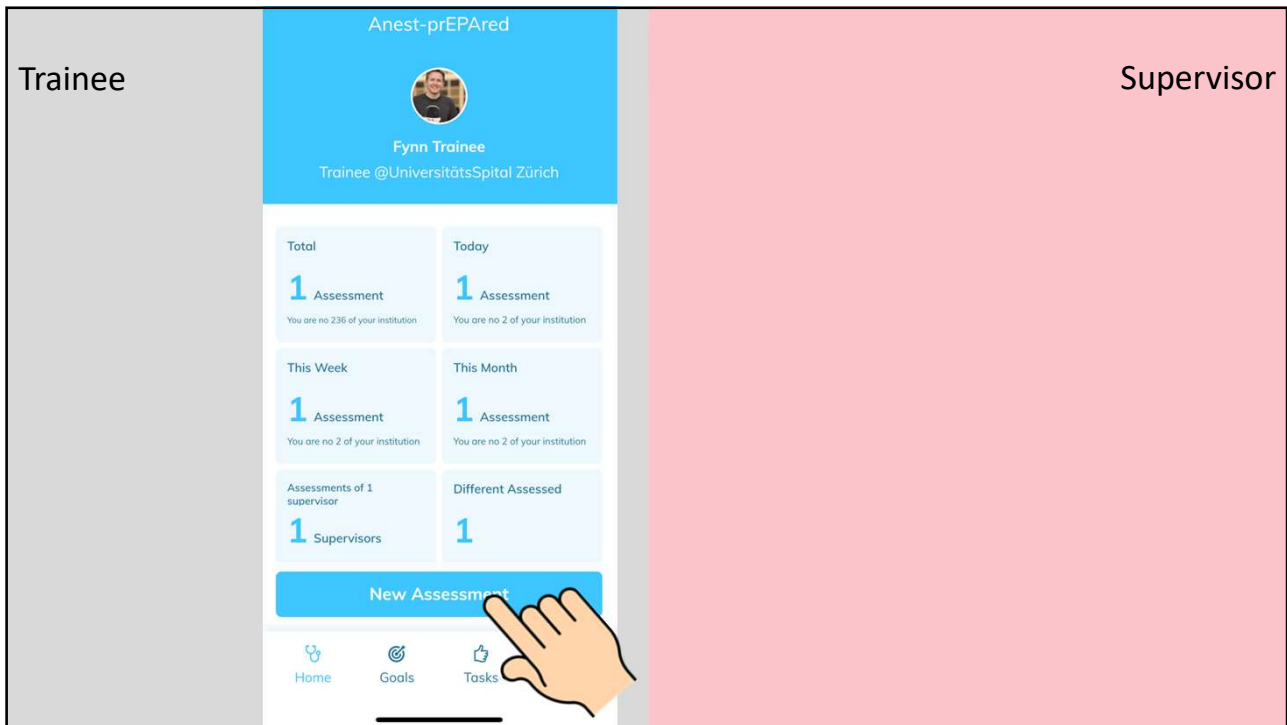
Self-directed Learning
„Precision Medical Education“

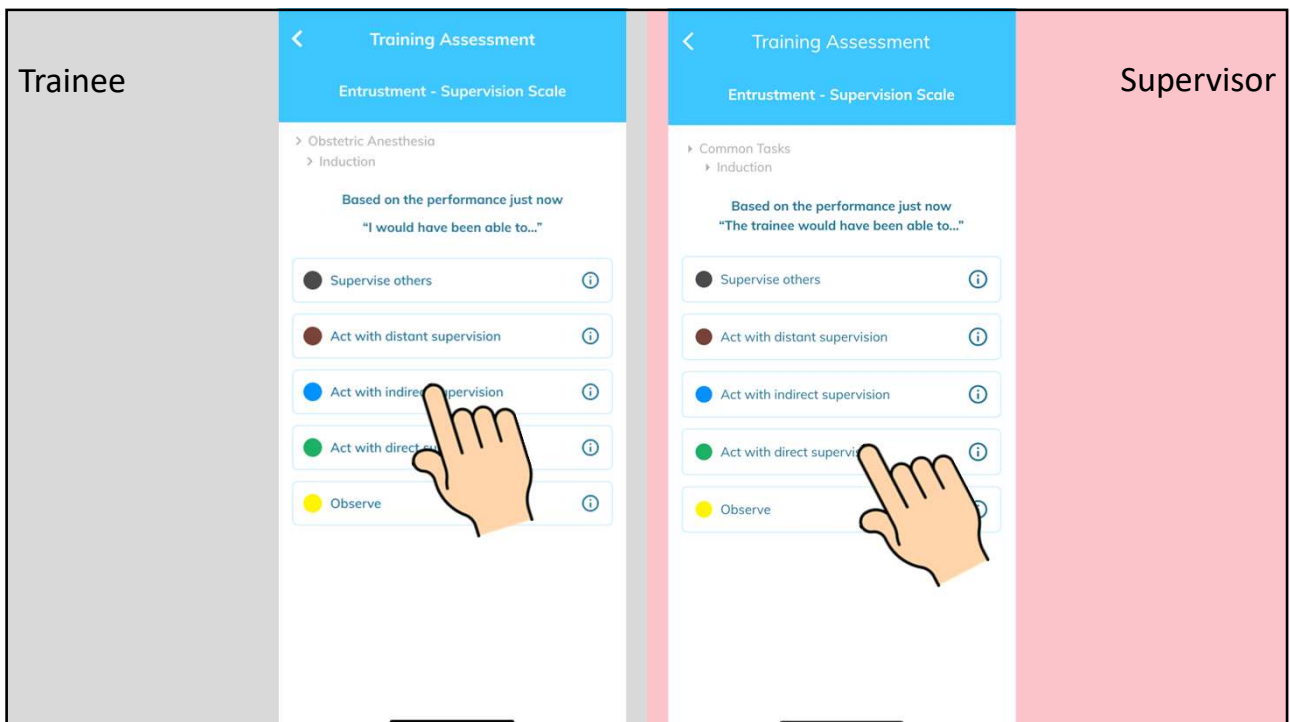
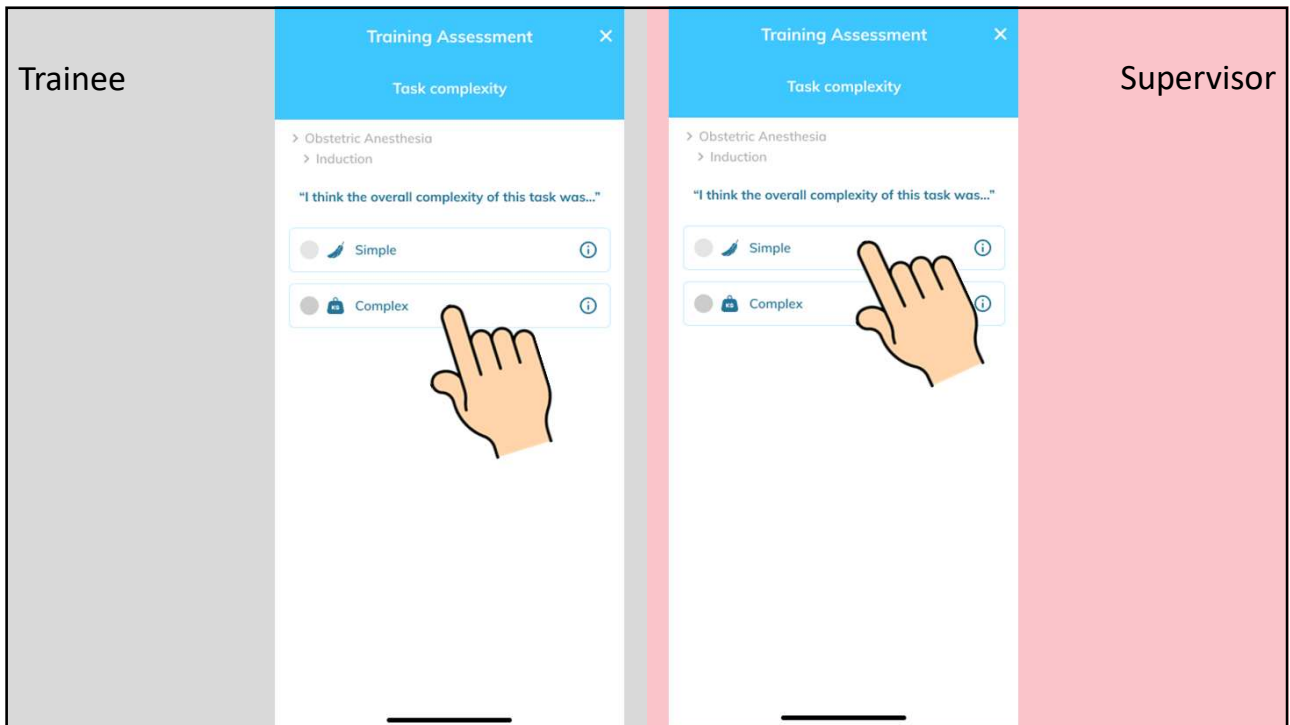
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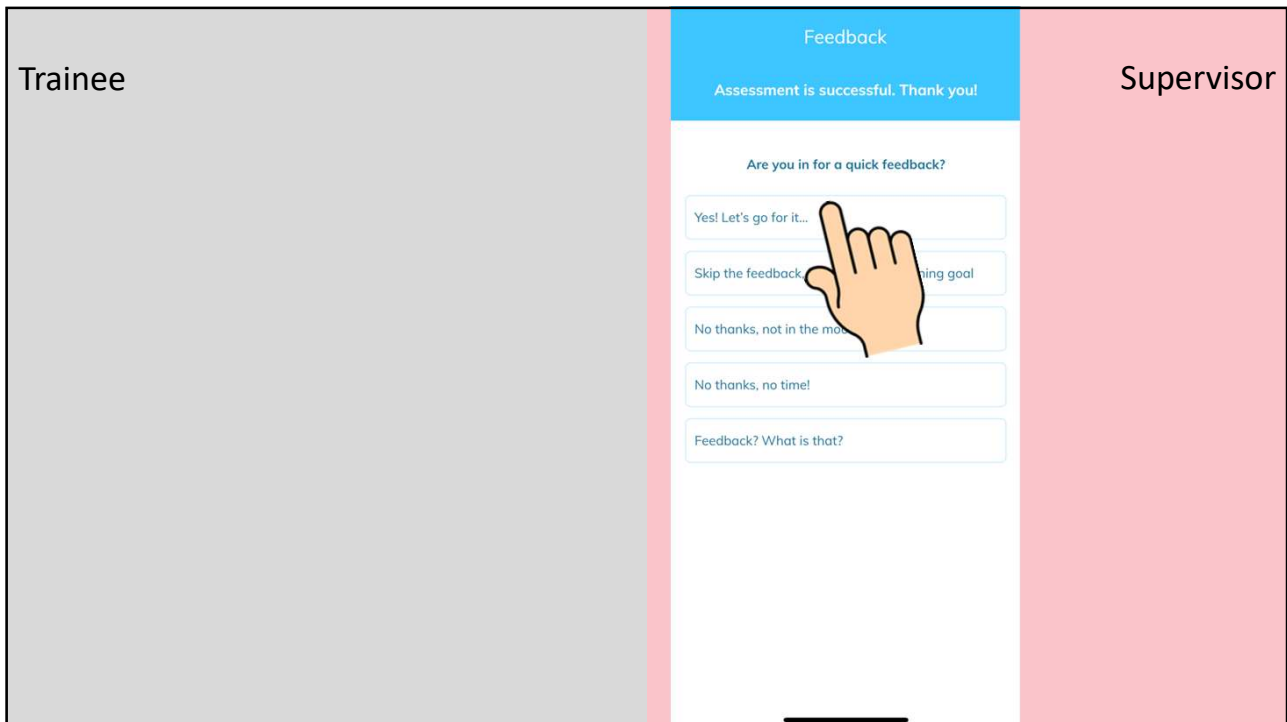
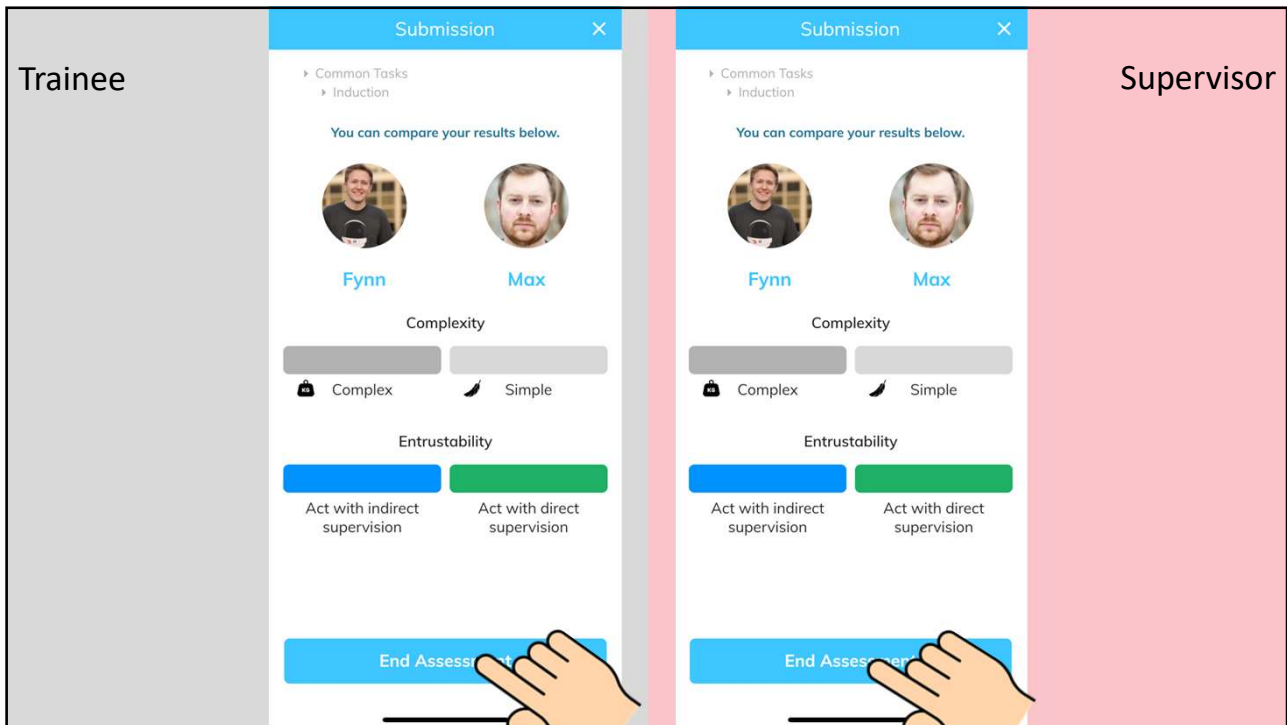


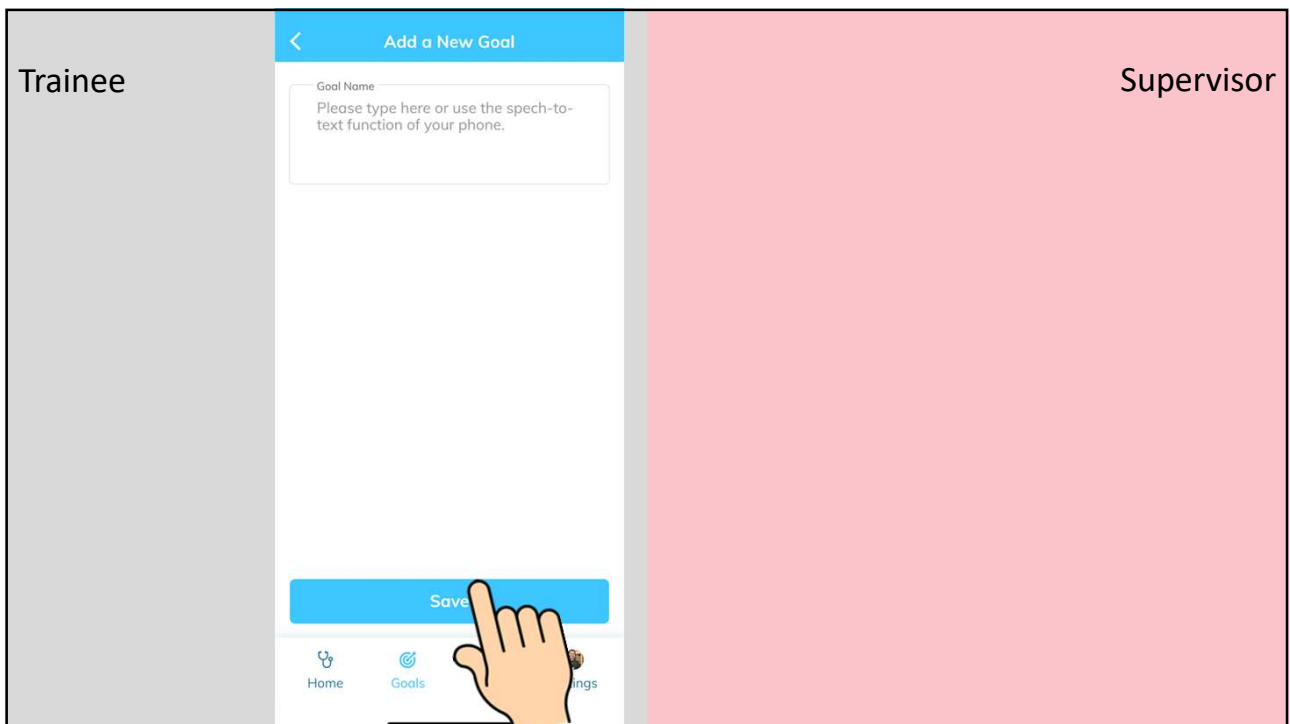
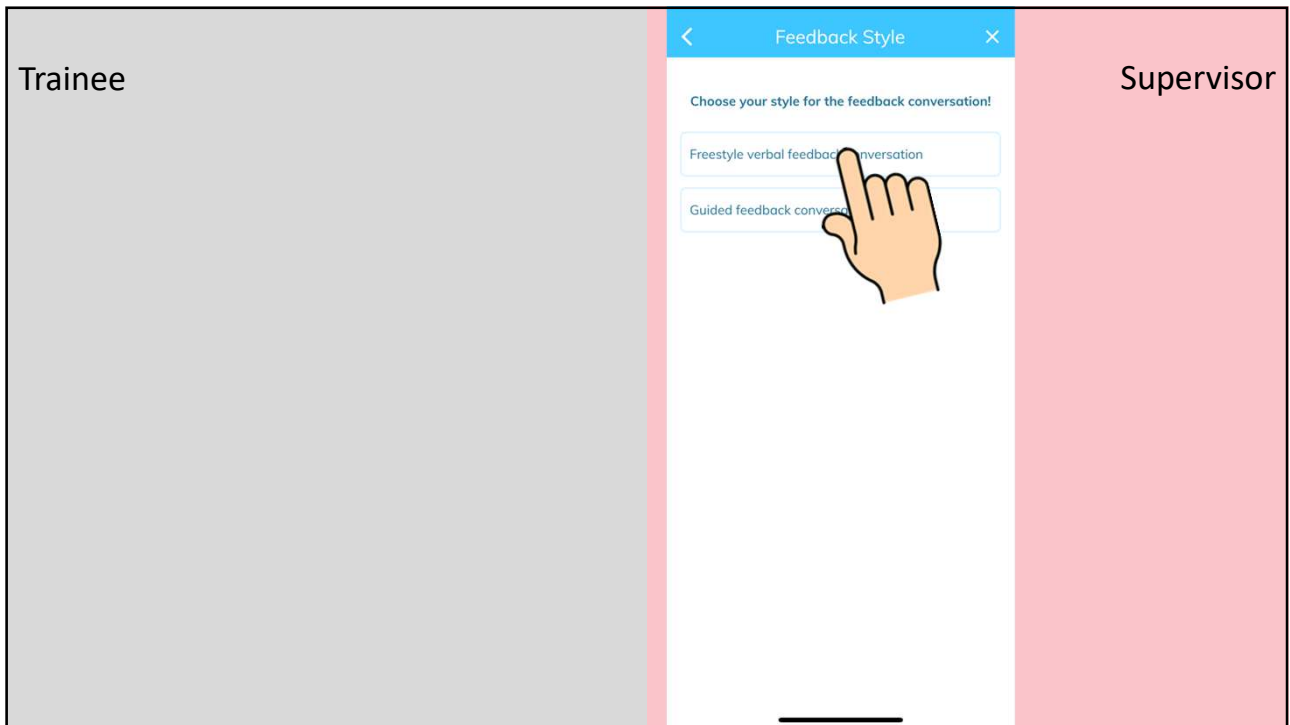
University of Zurich UZH

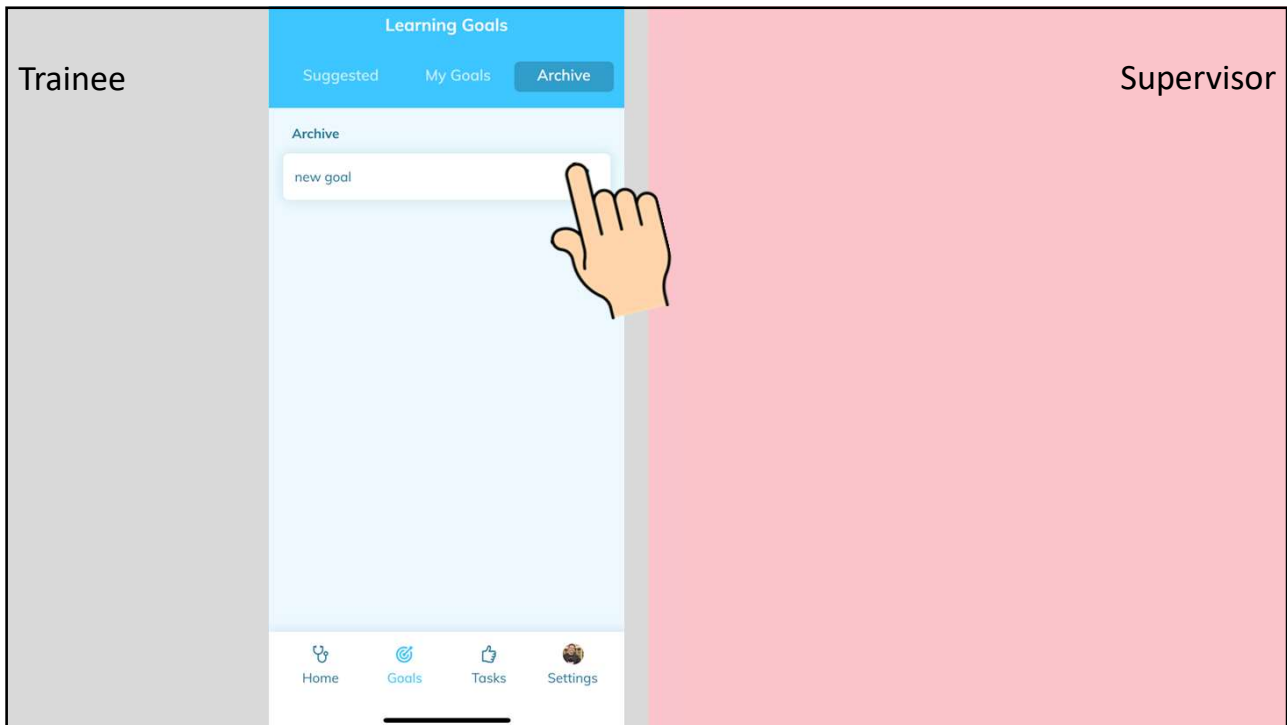
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Current Situation

Pilot Project for EPA Implementation



- 5 cardiology training institutions (level A) participate
- Zoom meeting for exchange of experience once per month
- WhatsApp chat for more spontaneous communication
- prEPARED app is very practical and has proven its value already
- Some trainers are reluctant to give negative feedback
- Some trainees are not particularly keen on receiving regular feedback
- → Both trainers and trainees need to get used to the new approach!

Activities in the Near Future



Entrustment Levels in Cardiology

Competence levels reached by training in general cardiology
'the fellow's perspective'

Competence levels required throughout cardiology
'the patient's perspective'

Procedures	Level I, II, III validated 2019-02-18	Level of Independence				
		1	2	3	4	5
ECG	III					
AMBULATORY ECG	III					
EXERCISE ECG TESTING	III					
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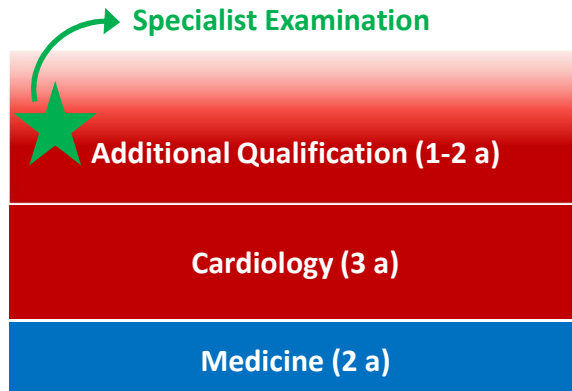
Additional Qualifications in Cardiology



General Cardiology Training

General Cardiology Training

+ Additional Qualification ('Schwerpunkt')



Thank you