

## 6. References

**References studied for all the selected procedures are listed at the end of every specific procedure.**

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## 7. Addendum 1. Questionnaire

## Clinical procedures in family practice in South Africa

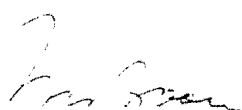
Dear Dr

This study is done to determine the scope of procedures done by general practitioners. Your contribution is very much appreciated and will help to focus on the important role of general practitioners in the performance of clinical procedures, which forms an important part of effective health care in South Africa.

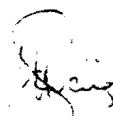
Your questionnaire will be kept confidential. No information by which you can be identified will be released or published. The first part is on demographic data, and the second on specific procedures. You need only to tick your answer in the appropriate box. Every procedure has 8 questions to answer. The questions are repeated on every page.

A word of special thanks for your time and cooperation in completing this questionnaire.

Kind regards



Dr JM Boon  
MBChB, MMed(Family Medicine)(Pret)  
Senior Lecturer: Dept of Anatomy  
Faculty of Medicine  
University of Pretoria



Prof JH Meiring  
MBChB, MpraxMed(Pret) LAKad(SA)  
HEAD : Department of Anatomy  
Faculty of Medicine  
University of Pretoria

### Demographic data:

Indicate your answer by ticking in the appropriate box:

<b>Age</b>	23-30	30-35	35-40	40-50	>50
<b>Sex</b>	Male	Female			
<b>Date of graduation</b>	<1970	1970-1980	1981-1990	1991-1995	1996-1999
<b>Years in practice</b>	< 5	6-10	11-20	21-30	> 30
<b>Practice profile</b>	urban private practice	urban hospital practice	rural private practice	rural hospital practice	Academic position with practice
<b>Postgraduate training</b>	Masters in Family Medicine	Diploma in: Family Medicine Obstetrics and Gynaecology Anaesthesia Other:		MSc (Sports Medicine)	Other:



1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Emergency procedures	1	2	3	4	5	6	7	8
Oro/naso-tracheal intubation 1	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Esophageal intubation	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	laryngospasm	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Not able to visualize vocal cords	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Cricothyroidotomy 2	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to find entry site for needle	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Vocal cord paralysis	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Esophageal perforation	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Thyroid perforation	Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Vascular access: peripheral arm veins 3	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Brachial artery puncture	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Median nerve damage	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Inability to locate vein	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Emergency Procedures	1	2	3	4	5	6	7	8
Vascular access: femoral vein 4	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Femoral artery puncture	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Femoral nerve transection and/or puncture	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Inability to locate vein	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Hip joint sepsis	Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Vascular access: greater saphenous vein on the foot (1 finger breadth medially to the medial malleolus) 5	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to locate vein	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Saphenous nerve damage	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Arterial transection	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Subclavian vein catheterization 6	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to locate vein	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Subclavian artery puncture	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	hemopneumothorax	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Brachial plexus puncture	Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Emergency procedures	1	2	3	4	5	6	7	8
Internal jugular vein catheterization 7	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to locate the vein	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	pneumothorax	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Internal carotid artery puncture	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	chylothorax	Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Pretibial intraosseous puncture/infusion in paediatric patients 8	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to find the correct site of placement	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Physcal plate injury	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	osteomyelitis	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Subcutaneous or subperiosteal infiltration	Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Intercostal drain insertion 9	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to find the correct site of placement	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Bleeding from the intercostal vessels	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Damage to the intercostal nerves	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Puncture of intrathoracic and/or abdominal organs	Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Emergency Procedures	1	2	3	4	5	6	7	8
Lumbar puncture 10	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to find the correct placement of the needle	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Inability to appreciate the position of the needle while proceeding the needle	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Bloody tap	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Arterial puncture for blood sampling  • Radial artery • Femoral artery • Paediatric patients 11	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to perform a radial artery puncture	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Inability to locate the femoral artery	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Uncertain on which artery to use in paediatric patients	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Pericardiocentesis 12	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to find the correct site of placement	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Inability to appreciate the position of the needle while placing	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Injury to a coronary vessel, inferior vena cava, aorta, esophagus	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Aspiration of ventricular blood	Strongly disagree	Strongly disagree

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7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Emergency Procedures	1	2	3	4	5	6	7	8
Umbilical line placement 13	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Inability to find the umbilical artery	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Suprapubic catheterization and puncture 14	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about the site of placement of the puncture	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Intra-abdominal placement	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Eye injury Examination 15	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomical structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Inability to visualize the retina and optic disc	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unsure of innervation of the eye musculature	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree



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Minor Surgery	1	2	3	4	5	6	7	8
Reduction of uncomplicated forearm fractures 16	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about correction of rotation	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Sigmoidoscopy and proctoscopy 17	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure of the anatomy of the bowel mucosa	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about the difference between sigmoid colon, rectum and anus	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Bowel perforation	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
D+C 18	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about the extent of the uterus in a non pregnant women	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Uterus perforation	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

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7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Minor surgery	1	2	3	4	5	6	7	8
Episiotomy 19	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of incision	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about perineal layers when suturing	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Normal vaginal delivery 20	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Second or third degree tear	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about determining the position of the fetal head	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unsure about anatomical landmarks during vaginal examination	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Caecarian section 21	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomy of the abdominal wall when suturing	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Difficulty to determine the site of uterine incision	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Damage to the ureter	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Difficulty to perform a Phannstiel incision	Strongly disagree	Strongly disagree

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6. I met the following complication/s and have the following difficulties when performing this procedure
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8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Minor surgery	1	2	3	4	5	6	7	8
Sterilization 22	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Bleeding	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Difficulty to locate the uterine tubes	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Ectopic pregnancy 23	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Bleeding	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about anatomy of the abdominal wall when suturing	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Circumcision 24	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	bleeding	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Difficulty to find site for incision	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

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Minor surgery	1	2	3	4	5	6	7	8
Excision of external thrombosed hemorrhoids and Injection or ligation of internal hemorrhoids 25	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Difficulty to find and distinguish between hemorrhoids	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about possible site of incision	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Appendectomy 26	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of incision	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	bleeding	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unable to locate appendix	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Damage to cutaneous nerves	Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Tonsillectomy and adenoidectomy 27	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	bleeding	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to remove tonsil in fascia plane	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Nerve damage	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Unsure about the location of the adenoids	Strongly disagree	Strongly disagree

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8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Minor surgery	1	2	3	4	5	6	7	8
Wrist block and digital nerve block  28	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate nerves in relation to the wrist	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to locate nerves in relation to the digits	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Pudendal nerve block  29	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomical landmarks to find the nerve	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Brachial plexus block  • Scale- nus block  • Supra- clavicular block  • Axillary block  30	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Pneumothorax	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Phrenic nerve paralysis	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unsure about site of entrance and direction of the needle	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree



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8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Injection of shoulder joint 31	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure of site of entrance and direction of needle	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Colposcopy 32	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomical landmarks	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Paronychia incision and drainage 33	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of incision	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to locate root of the nail	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

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6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Upper gastrointestinal endoscopy 34	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomical landmarks of the mucosal anatomy	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Knee joint aspiration 35	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate the site of entry	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Damage to coetaneous nerves of the knee joint	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Damage to articular cartilage	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Liver biopsy 36	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of entrance	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	bleeding	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	pneumothorax	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	pneumoperitoneum	Strongly disagree	Strongly disagree

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6. I met the following complication/s and have the following difficulties when performing this procedure.
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Indirect laryngoscopy 37	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomical landmarks in the larynx	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Epistaxis and nasal packing 38	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to control bleeding	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Bone marrow aspiration • Sternal • Crista illaca 39	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of entry	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

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7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Aspiration of pleural effusion 40	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about site of needle entrance	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Reduction of shoulder dislocation 41	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about technique and its rationale	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Brachial plexus injury	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Reduction of elbow dislocation 42	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Brachial artery injury	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Median nerve injury	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unsure about the technique and its rationale	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

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4. I feel comfortable to perform this procedure.
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6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Reduction of inter-Phalangeal joint dislocation 43	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Collateral ligament injury	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about technique and its rationale	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Reduction of hip dislocation 44	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about technique and its rationale	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Naso-Pharyngoscopy 45	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about the anatomy of the nasopharynx	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree



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4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Office procedures	1	2	3	4	5	6	7	8
Slit lamp examination 46	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about anatomy of structures in the eye	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Rectal examination 47	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate the prostate gland	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to locate the seminal vesicles	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unable to locate the cervix and uterus in a female patient	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Vaginal examination 48	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate the bladder	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to locate the adnexae	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unable to locate the recto-uterine pouch	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge	Unable to appreciate the position of the ureters	Strongly disagree	Strongly disagree

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4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Imaging procedure	1	2	3	4	5	6	7	8
Musculo skeletal ultrasound 49	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate anatomical structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Abdominal CT scan 50	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate abdominal structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Brain CT scan 51	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate abdominal structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

Imaging procedure	1	2	3	4	5	6	7	8
Chest X ray 52	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate the borders of the heart	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to count the ribs on X-Ray	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unable to visualize pulmonary vasculature	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Abdominal X-ray 53	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to differentiate small bowel from large bowel	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to visualize soft tissue	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unable to visualize the psoas line	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Pelvic X-ray 54	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate bony landmarks	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to evaluate the pelvic brim	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

	1	2	3	4	5	6	7	8
Neck X-ray 55	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unsure about assessment of soft tissue spaces	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unsure about assessment of bony landmarks	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure	Unsure about assessment of cartilage	Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Obstetric ultrasound 56	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate anatomical structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to do standard obstetric measurements	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Abdominal ultrasound 57	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself	Unable to locate anatomical structures	Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure	Unable to do standard obstetric measurements	Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree

1. I perform this procedure in my practice.
2. How many times did you perform this procedure in the past year?
3. The performance of this procedure is important in my practice situation.
4. I feel comfortable to perform this procedure.
5. I find difficulty to perform this procedure due to the following reason/s: (order in level of importance)
6. I met the following complication/s and have the following difficulties when performing this procedure
7. The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications.
8. Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure.

	1	2	3	4	5	6	7	8
Other:	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself		Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Other:	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself		Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree
	1	2	3	4	5	6	7	8
Other:	Yes	More than 20	Essential	Very comfortable	Knowledge of the procedure itself		Strongly agree	Strongly agree
		10-20	Desirable but not essential	Fairly comfortable	Equipment necessary for the procedure		Agree	Agree
	No	5-10	Useful	Uncomfortable	Practical skills to perform the procedure		Disagree	Disagree
		Less than 5	Not necessary	Very uncomfortable	Regional anatomy knowledge		Strongly disagree	Strongly disagree



## 8. Addendum 2. Scoring options

### Scoring option A

#### Scoring system

1. Incidence of performance	50%-74%	1 point
	75%-100%	2 points
2. Essentiality	50-75%	1 point
	76-100%	2 point
3. Comfortability	uncomfortable > 30%	3 points
	uncomfortable > 20%	2 points
	uncomfortable > 10%	1 point
4. Difficulty or complication related to anatomy experienced by	25-34%	1 point
	35-50%	2 points
5. More than 80% thought that improvement of critical anatomy knowledge necessary to perform the procedure will reduce difficulties and complications.	80-90%	1 point
	91-100%	2 points
6. More than 80% thought that improvement of anatomy knowledge necessary for the procedure will increase confidence in performing the procedure.	80-90%	1 point
	91-100%	2 points

-----  
**Total: 13 points**

#### Emergency procedures:

1. Eye injury examination
2. Reduction of shoulder dislocation
3. Vascular access: Greater saphenous vein
4. Oro/nasotracheal intubation
5. Subclavian vein catheterization
6. Lumbar puncture

#### Surgical procedures:

1. Caesarian section
2. Reduction of uncomplicated forearm fractures
3. Wrist and digital nerve block
4. Appendectomy

#### Office procedures:

1. Epistaxis and nasal packing
2. Knee joint aspiration
3. Rectal examination
4. Aspiration of pleural effusion

#### Imaging procedures:

1. Obstetric ultrasound
2. Abdominal ultrasound

## Scoring option B

### Scoring system

1. Incidence of performance	50%-74%	1 point
	75%-100%	2 point
2. Essentiality	60-79%	1 point
	80-100%	2 point
3. Comfortability	uncomfortable > comfortable	2 points
	uncomfortable > 10%	1 point
4. Difficulty or complication related to anatomy experienced by	25-34%	1 point
	35-50%	2 point
5. More than 80% thought that improvement of critical anatomy knowledge necessary to perform the procedure will reduce difficulties and complications.	80-90%	1 point
	91-100%	2 points
6. More than 80% thought that improvement of anatomy knowledge necessary for the procedure will increase confidence in performing the procedure.	80-90%	1 point
	91-100%	2 points

-----  
**Total: 12 points**

### Emergency procedures:

1. Eye injury examination
2. Reduction of shoulder dislocation
3. Oro/nasotracheal intubation
7. Vascular access: Greater saphenous vein
5. Subclavian vein catheterization
6. Lumbar Puncture

### Surgical procedures:

1. Caesarian section
2. Reduction of uncomplicated forearm fractures
3. Wrist and digital nerve block
4. Choice of 2 that need to be further selected

### Office procedures:

1. Epistaxis and nasal packing
2. Rectal examination
3. Knee joint aspiration
4. Choice of 3 that need to be further selected

### Imaging procedures:

1. Obstetric ultrasound
2. Abdominal ultrasound

## Scoring option C

### Scoring system

- |  |         |
|--|---------|
| 1. Incidence of performance (>50%)   | 1 point |
| 2. Essentiality (>60%)   | 1 point |
| 3. Comfortability (more are uncomfortable than comfortable)  | 1 point |
| 4. Difficulty or complication related to anatomy experienced by more than 25% of doctors   | 1 point |
| 5. More than 80% thought that improvement of critical anatomy knowledge necessary to perform the procedure will reduce difficulties and complications. | 1 point |
| 6. More than 80% thought that improvement of anatomy knowledge necessary for the procedure will increase confidence in performing the procedure.       | 1 point |

-----  
Total: 6 points

**Procedures that scored highest in every section (emergency procedures, surgical procedures, office procedures and imaging procedures) were subjected to the following to select the number (emergency procedures = 6, surgical procedures = 4, office procedures = 4, imaging procedures = 2) in every category: Sum of following categories: Uncomfortable + very uncomfortable + the single highest difficulty or complication.**

#### Emergency procedures:

1. Central venous catheterization – (subclavian and internal jugular vein catheterization)
2. Cricothyroidotomy
3. Pericardiocentesis
4. Vascular access: Greater saphenous vein
5. Oro/nasotracheal intubation
6. Lumbar puncture

#### Surgical procedures:

1. Appendectomy
2. Caecarian Section
3. Reduction of uncomplicated forearm fractures
4. Ectopic pregnancy surgery

#### Office procedures:

1. Epistaxis and nasal packing
2. Rectal examination, proctoscopy and sigmoidoscopy
3. Knee joint aspiration
4. Wrist block and digital nerve block

#### Imaging procedures:

1. Obstetric ultrasound

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## Scoring option D

### Scoring system

- |  |         |
|--|---------|
| 1. Incidence of performance (>50%)   | 1 point |
| 2. Essentiality (>60%)   | 1 point |
| 3. Comfortability (more are uncomfortable than comfortable)  | 2 point |
| 4. Difficulty or complication related to anatomy experienced by more than 25% of doctors   | 2 point |
| 5. More than 80% thought that improvement of critical anatomy knowledge necessary to perform the procedure will reduce difficulties and complications. | 1 point |
| 6. More than 80% thought that improvement of anatomy knowledge necessary for the procedure will increase confidence in performing the procedure.       | 1 point |

-----  
Total: 8 points

### **Emergency procedures:**

1. Cricothyroidotomy
2. Internal jugular vein catheterization
3. Pericardiocentesis
4. A choice of 5 with score of 6 that need to be further selected

### **Surgical procedures:**

A choice of 5 that need to be further selected

### **Office procedures:**

1. Epistaxis and nasal packing
2. Rectal examination
3. A choice of 4 that need to be selected)

### **Imaging procedures**

1. Obstetric ultrasound
2. Abdominal ultrasound

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*(The following table content is extremely faint and illegible due to low contrast and blurring in the original image. It appears to be a list of tables with columns for table number, title, and page number.)*