APDVS Committee of Fundamentals of Vascular & Endovascular Surgery Report 2015-2016

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Disclosures

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- None
- ~~I didn't show up and left Mal with all the work~~

Committee FVEVS

- Members
  - Malachi Sheahan
  - Murray Shames
  - Jason Lee
  - David Rigberg
  - Jean Bismuth
- Contributors
  - John Eidt
  - Cassidy Duran
  - Brian Dunkin
  - Claudie Sheahan
  - Rabih Chaer
  - Erica Mitchell
  - Carlos Bechara

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FLS & FES

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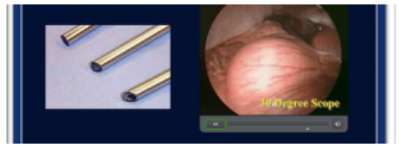
FLS News

SAGES-ACS Fundamentals of Laparoscopic Surgery™ (FLS) announces new supplier for the FLS Trainer Box and Accessories
FLS Opens International Test Centers, Issues 10,000th Certification
FLS Testing available at the SAGES Annual Meeting 2015 in Nashville, TN!
New Pricing for Residency Programs
New Retest Policy for FLS

FLS Supporting Literature



Scott DJ, Hafford M, Willis RE, Gugliuzza K, Wilson TD, Brown KM, Vansickle KR. Ensuring competency: Are fundamentals of laparoscopic surgery training and certification necessary for practicing surgeons and operating room personnel? Surg Endosc. 2013 Jan;27(1):118-26. ... learn more...

View the Interactive Demo

Flash Demo

Download FLS Flyer 2013

limbs & things
CLOSER TO LIFE

SAGES – FUNDAMENTALS OF ENDOSCOPIC SURGERY

DEVELOPED BY FES /SAGES

Developed by FES /SAGES

The SAGES Fundamentals of Endoscopic Surgery™ (FES) program is a comprehensive educational and assessment tool designed to teach and evaluate the fundamental knowledge, clinical judgment and technical skills required in the performance of basic gastrointestinal (GI) endoscopic surgery (endoscopy). Our goal is to provide participants with an opportunity to learn the fundamentals of endoscopic surgery in a consistent, scientifically accepted format, and to test cognitive and technical skills – all with the goal of improving the quality of patient care.

FES was designed for medical and surgical residents, fellows, practicing general surgeons, gastroenterologists, and other physicians to learn and test basic endoscopic skills required to form a foundation in the practice of flexible endoscopy.

Search this website... Search

CONTACT INFORMATION

THE FUNDAMENTALS OF ENDOSCOPIC SURGERY (FES)

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E-mail: Jessica@fesprogram.org

FES NEWS

PRESENTING THE FIRST EVER HANDS ON SKILLS ASSESSMENT EXAMINATION FOR ENDOSCOPY CERTIFICATION

Click here for the official press release

April 15-18, 2015
Nashville, TN

Introduction

- Fundamentals Technical Skills assessments
  – mandatory steps to certification for General Surgery
- No vascular or endovascular correlate to an FLS model

Bismuth, et al., October, 2010

Section	Comment	Maximum score
Academic	Review a paper from a journal.	32
Clinical Cases	Vivas on 4 clinical cases: Aortic, Lower Limb, Endovascular and Miscellaneous	64
Overall Viva	Viva on 8 topics	32
Open Technical	Practical surgical skills test on three models: aortic anastomosis, femoro-distal anastomosis and SFJ ligation	48
Endovas-cular	Practical endovas-cular skills test on a model	16
Total score		192

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FEBVS

Fellow of the European Board of Vascular Surgery

Murat Kayabali

has passed the assessment
of the European Board of Vascular Surgery
in Amsterdam, The Netherlands.
Thursday 16 September 2010.

Julian Scott	David Bergqvist	Armando Mansilha
Chairman	President	Secretary General

Fundamentals of Vascular and Endovascular Surgery

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- Endovascular model (3D Systems Simbionix)
  - Physical model
  - Virtual model

- Vascular models (WL Gore & Associates)
  - Clockface
  - Patch
  - End-to-side

Core Concepts for FVEVS

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- All models will be patented
- None of the core developers of the models stand to personally gain from the models financially. Although the developers will retain the IP, the models will otherwise be owned by the APDVS.
- We have designated one major vendor (Simbionix/3D Systems) to cover all endovascular models and a second vendor (WL Gore & Associates) to provide materials for the surgical models. This setup very much mirrors what SAGES uses for the FLS trainers.
- All purchases of the models will happen via a link off of the APDVS website to the aforementioned vendors, again mirroring what SAGES uses for the FLS trainer.
- In order to support educational endeavors vendors will discount their products so that we could secure 5-10% of overall cost to provide grants in the name of our vendors, to be presented to grant applicants with the most deserving proposals. This will be a peer-reviewed process executed by the Education Committee.
- Data will be collected from ten initial launch centers in a prospective fashion; these data will serve to further refine the models and the overall implementation.
- We would eventually expect that trainees cannot sit for boards without having passed the minimum requirements for the Fundamentals of Vascular and Endovascular Surgery.

MODEL FOR FEVS

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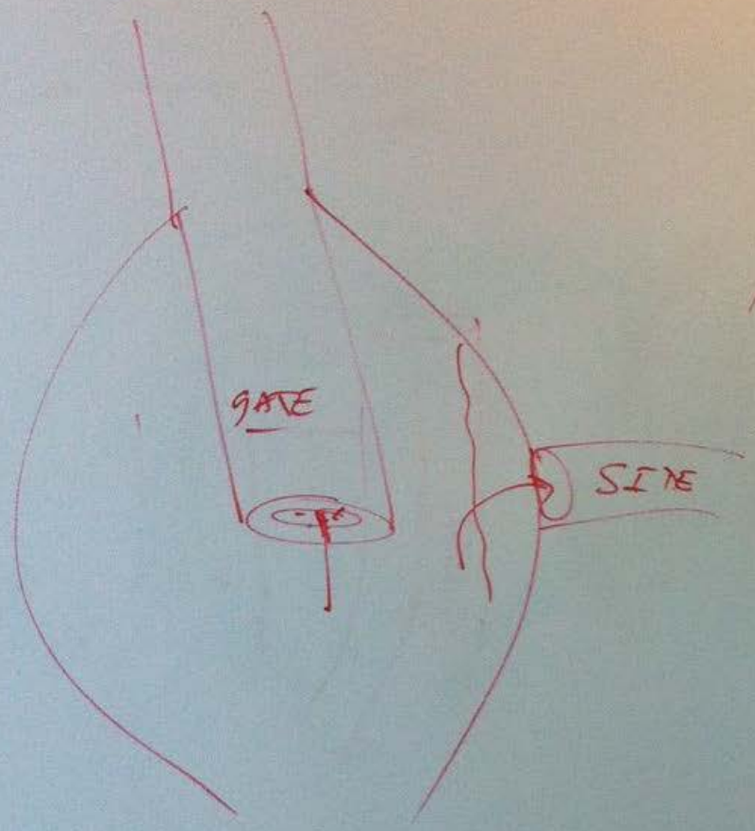
2012 Houston



BASIC SKILLS

1. ACCESS- → U/S GUIDED PUNCTURE
→ WIRE EXCHANGE
→ SHEATH
2. WIRE / CATHETER EXCHANGE VS STABILITY
3. IMAGING- ANGLE/VIEW
- VIRTUAL ANATOMY - LANDMARKS
4. PUSH - PULL -
5. CATHETER FORMATION - e.g. SIMMONS
6. SELECTIVE CATHETERIZATION -
- ANTEGRADE / RETROGRADE
7. CANNULATING GATE
8- CANNULATE - BRANCH ANEURYSM
9. SNARE-
10- TARGET PLACEMENT

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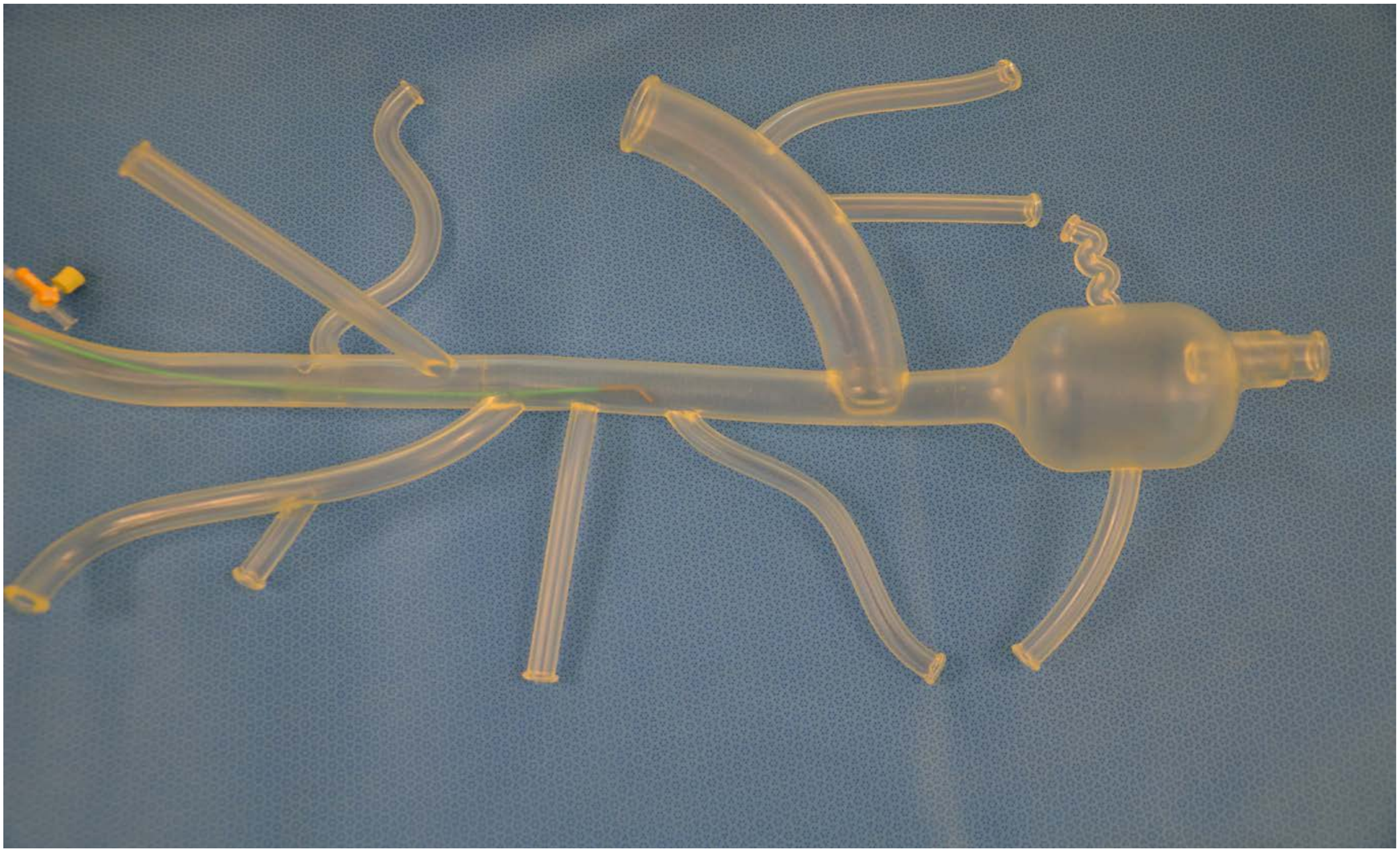

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FEVS Model

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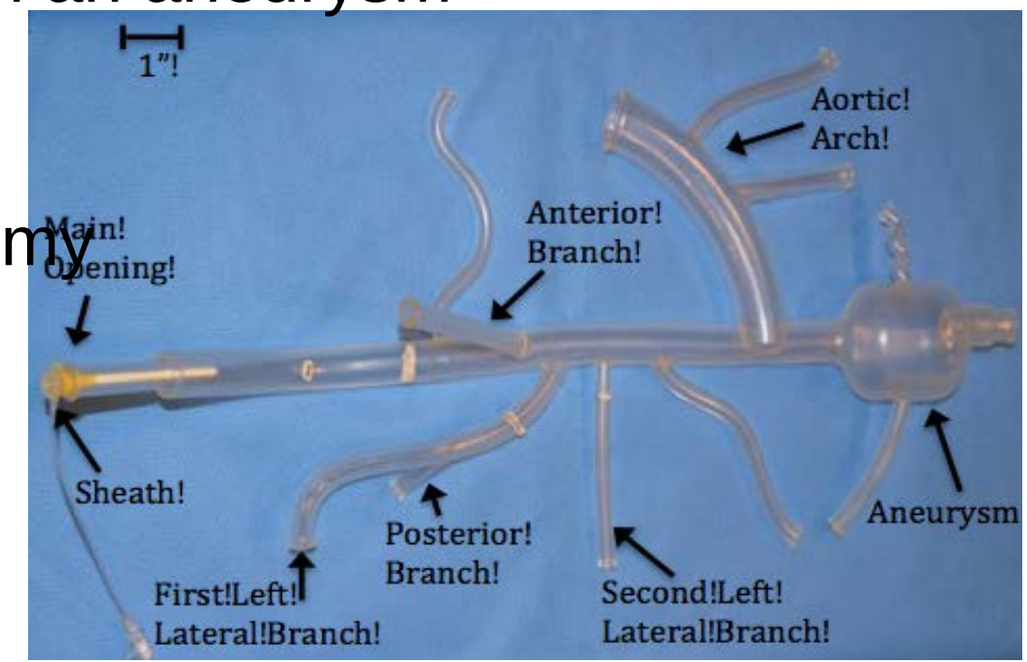
Objective

Develop and validate a model for “Fundamental EndoVascular Skills (FEVS) assessment.

Fundamental Tasks

1) Navigate up and over bifurcation
2) Cannulate anterior branch
3) Navigate into a 3rd order vessel (posterior branch)
4) Cannulate right angle (renal) branch
5) Cannulate a branch vessel extending from an aneurysm
6) Stable wire/catheter exchange
7) Gate cannulation
8) Cannulate branch off of type 3 arch anatomy



Experimental Methods

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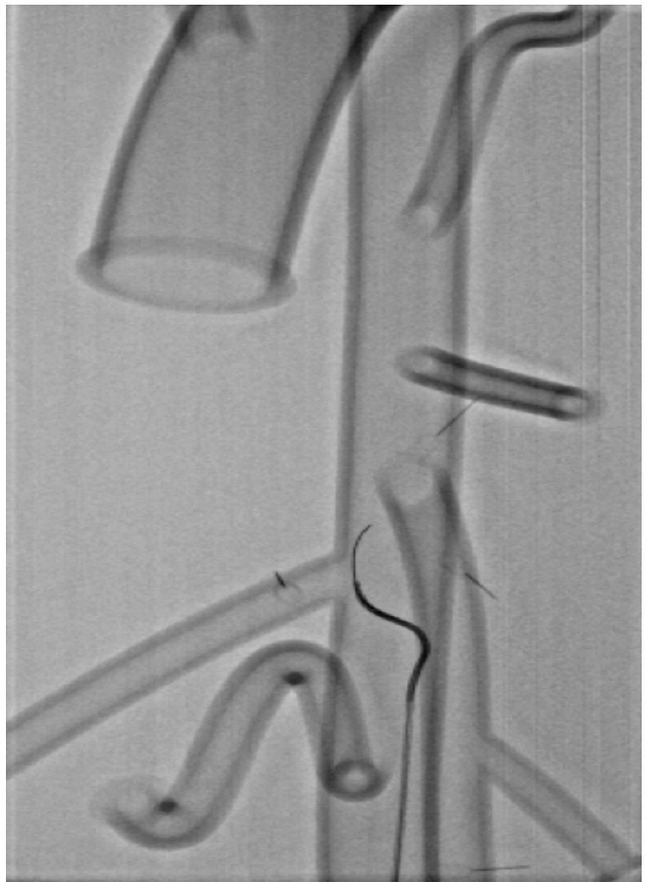
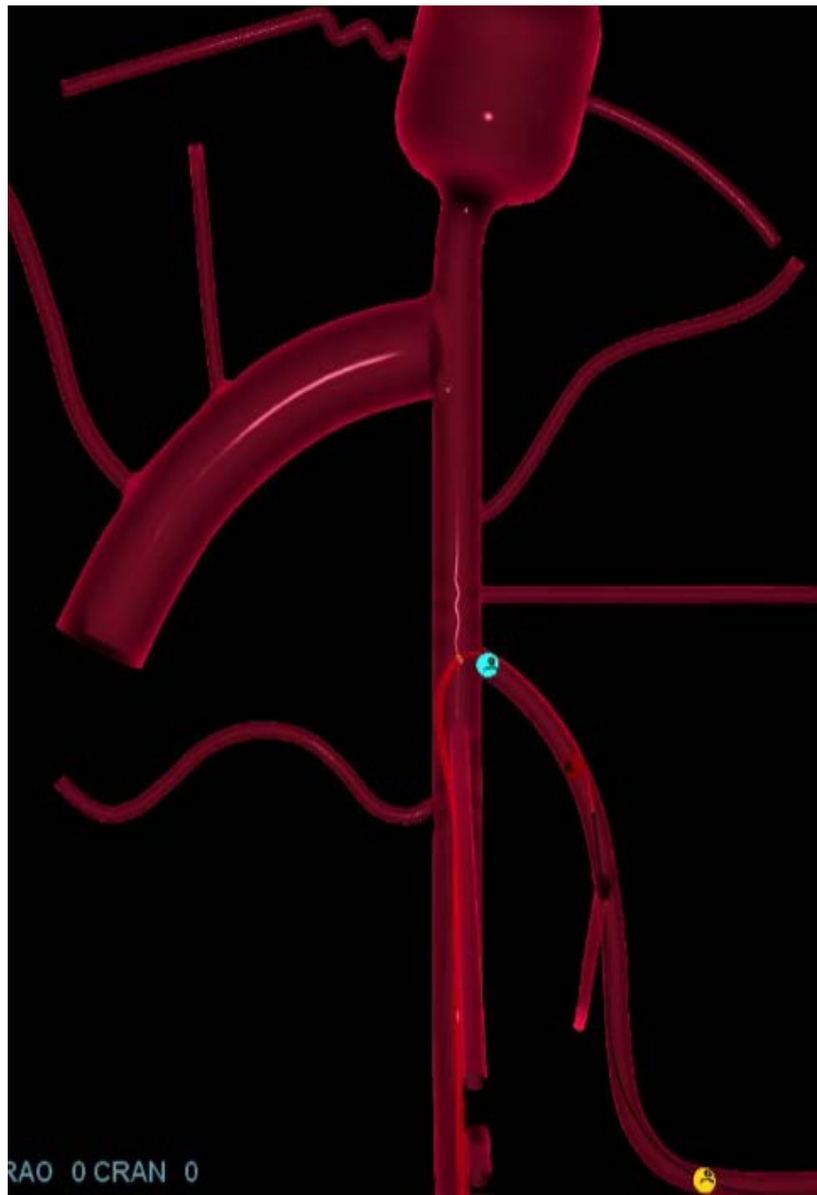
- Procedure: Collect catheter-tip data from 20 subjects performing 4 tasks on FEVS model over 3 sessions:
  - Platforms: Silicone physical model, endovascular VR simulator
    - based on FEVS model for fundamental endovascular skills,
  - Tasks: Anterior branch, right angle, 3rd order vessel/posterior, up and over
- Subjects classified based on endo experience:
  - Non-competent: <30 prior endovascular interventions,
  - Competent: >30 endovascular interventions)





Assessment Methods

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Outcome Based[1]	Assessment based on task completion time
Structured Grading[1]	FEVS Grading tool
Motion Analysis[1]	Assessment based on metrics derived from motion data

FEVS Grading Tool **0**

Metric	Rating	Points
Catheter, no wire	**No** Yes	0
Insufficient wire	**No** Yes	0
Buckling catheter	**No** Yes Yes + wire loss	0
Failure to reshape	**No** Yes	0
Attempts at ostium with wire	**< 3** 4 - 6 > 6	0
Attempts at ostium with catheter	**< 3** 4 - 6 > 6	0
Failure to progress	**< 20 sec** 20 - 40 sec 40 - 60 sec > 60 sec	0
Wire stability	**Stable (< 2 cm movement)** Ante- or retrograde > 2 cm Ante- AND retrograde > 2 cm	0

Quantitative Metrics – Smoothness

- Smooth, well-coordinated movements are features of well-developed and trained motor behavior[1]
- Motion-based metrics can delineate expert versus novice behaviors for basic dynamic tasks[2]
- Metrics include:
  - Submovement analysis
    - task broken into subsegments of movement
      - quantified by duration and total number of submovements
      - Longer duration and smaller total number correlate with expertise
    - Spectral Arc Length-
      - Describes frequencies of changes in acceleration (jerkiness)

[1]Rosenbaum, et al., 2010; [2]Huegel, et al., 2009

Time and Metric Scoring

	1st left lateral	2nd left lateral	Anterior	Posterior	Total
Competent	4.7	1.63	2.06	1.6	10
Non-competent	10.1	4.5	6.6	4.3	25.5

P-value=<.004

Task Completion Times

	Right Angle Time (s)	Up and Over Time (s)	Anterior Time (s)	3rd order; posterior Time (s)
Competent	35.4	41.7	79.6	112.4
Non-competent	31	44.4	81.4	121.9
p-value	.75	.35	.89	.59

Results: Motion Analysis

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Metric	Model (r)	Model (p)	VR Sim (r)	VR Sim (p)
No. Submovements	0.80	0.001	0.71	0.003
Avg Submovement Duration (s)	0.79	0.001	0.85	0.001
Spectral Arc Length	0.77	0.001	0.84	0.001

Motion scores combining manual/simulator performance metrics for novice and expert users

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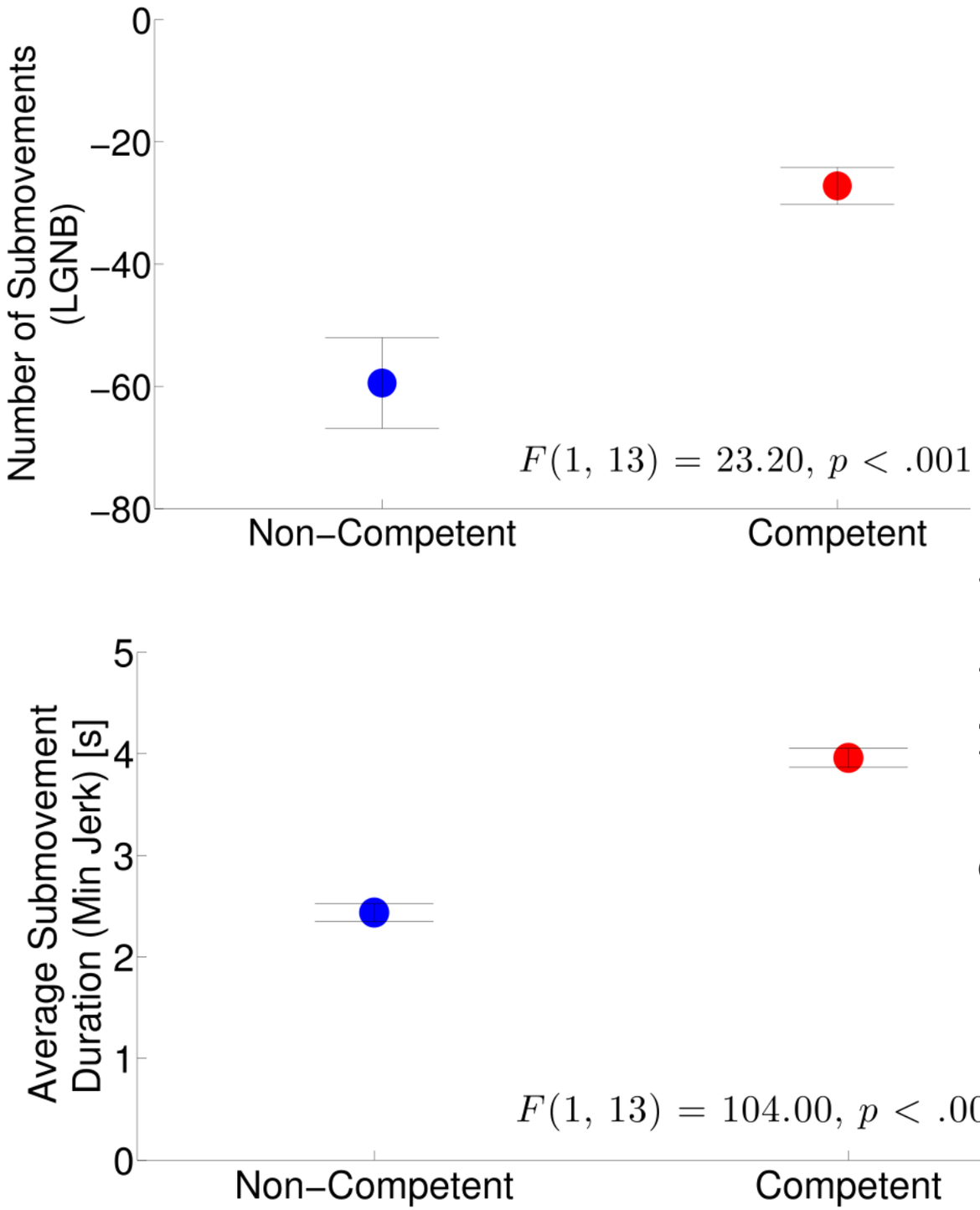

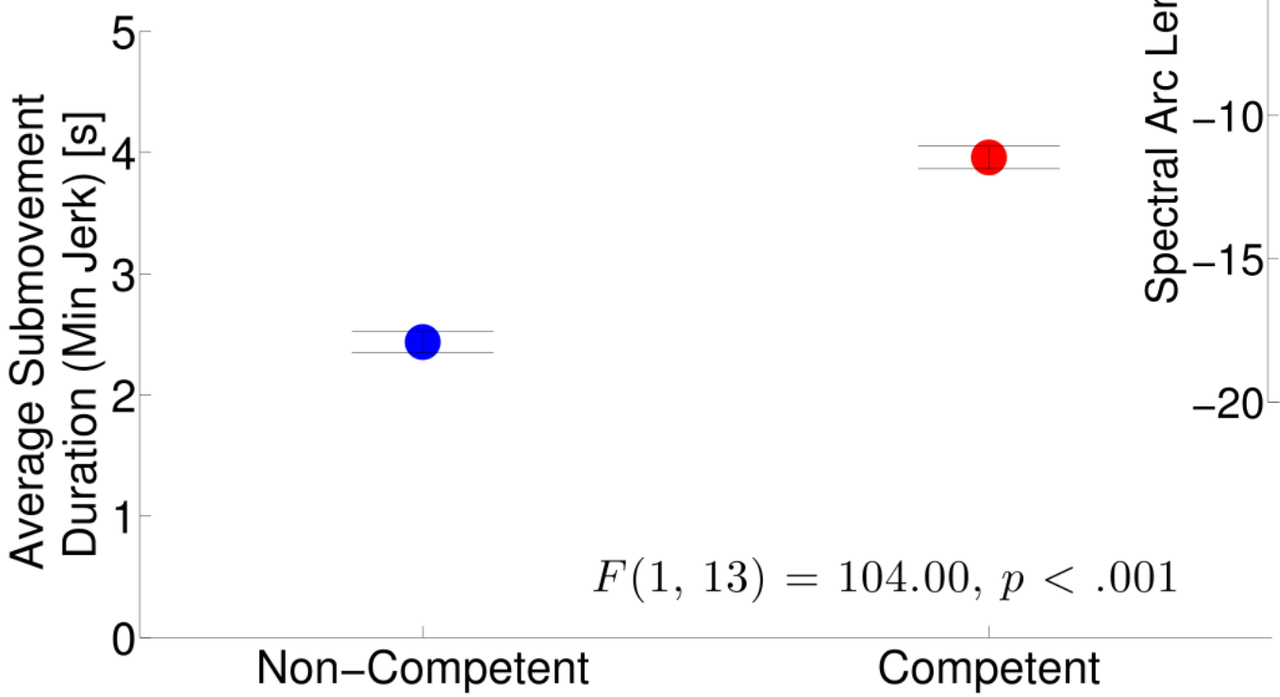

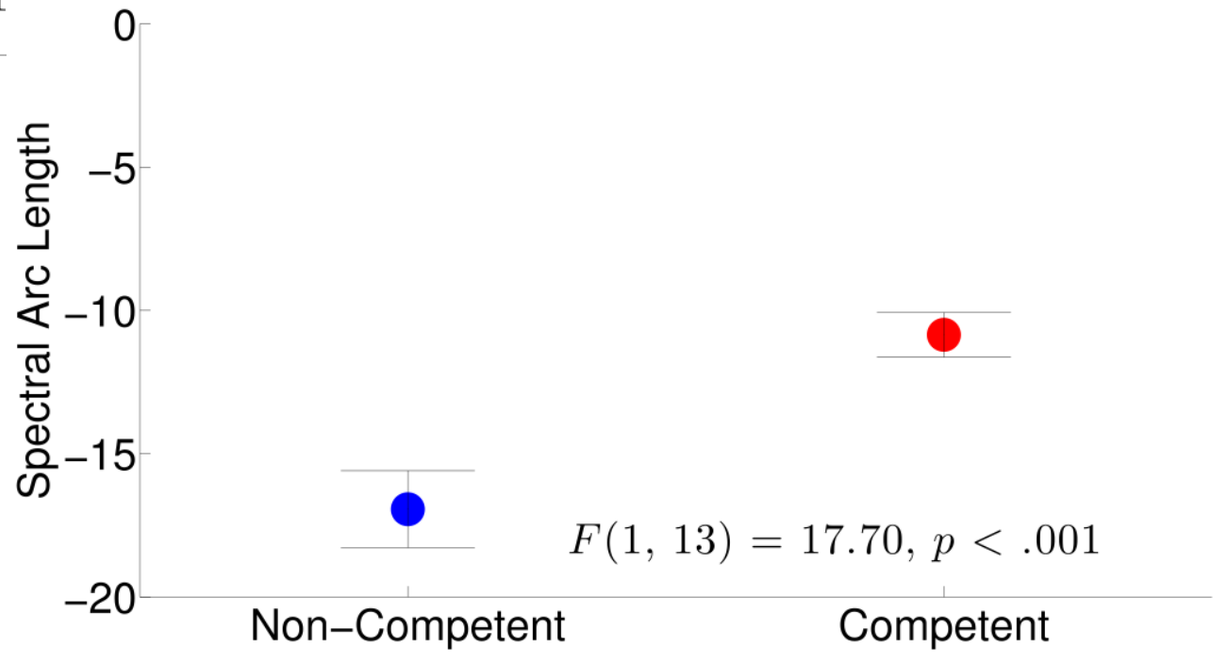

Conclusions

- Reliable correlations and between-subjects ANOVA results shows motion metrics objectively determine skill
- Time alone is a poor measure of expertise
- Error-based metric scoring differentiates competent from non-competent performance
  - Assessment based on evaluation by a trained grader and potentially automated in VR Simulator

Model Validation

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- Pilot presented at the VAM – June, 2013
- Validation presented at VAM – June, 2015

MODEL FOR FVS

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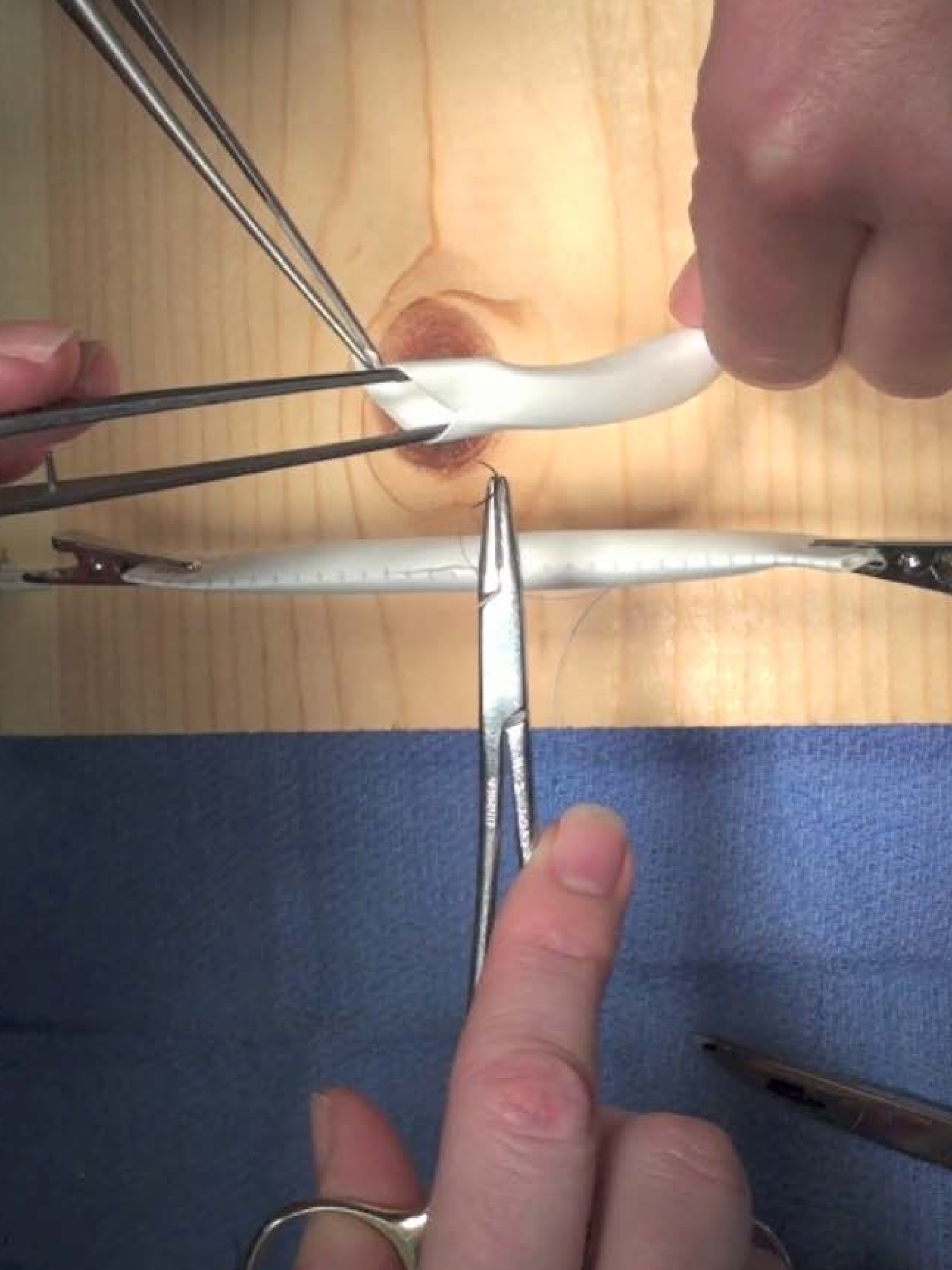
Fundamentals of Vascular Surgery

The End to Side Model

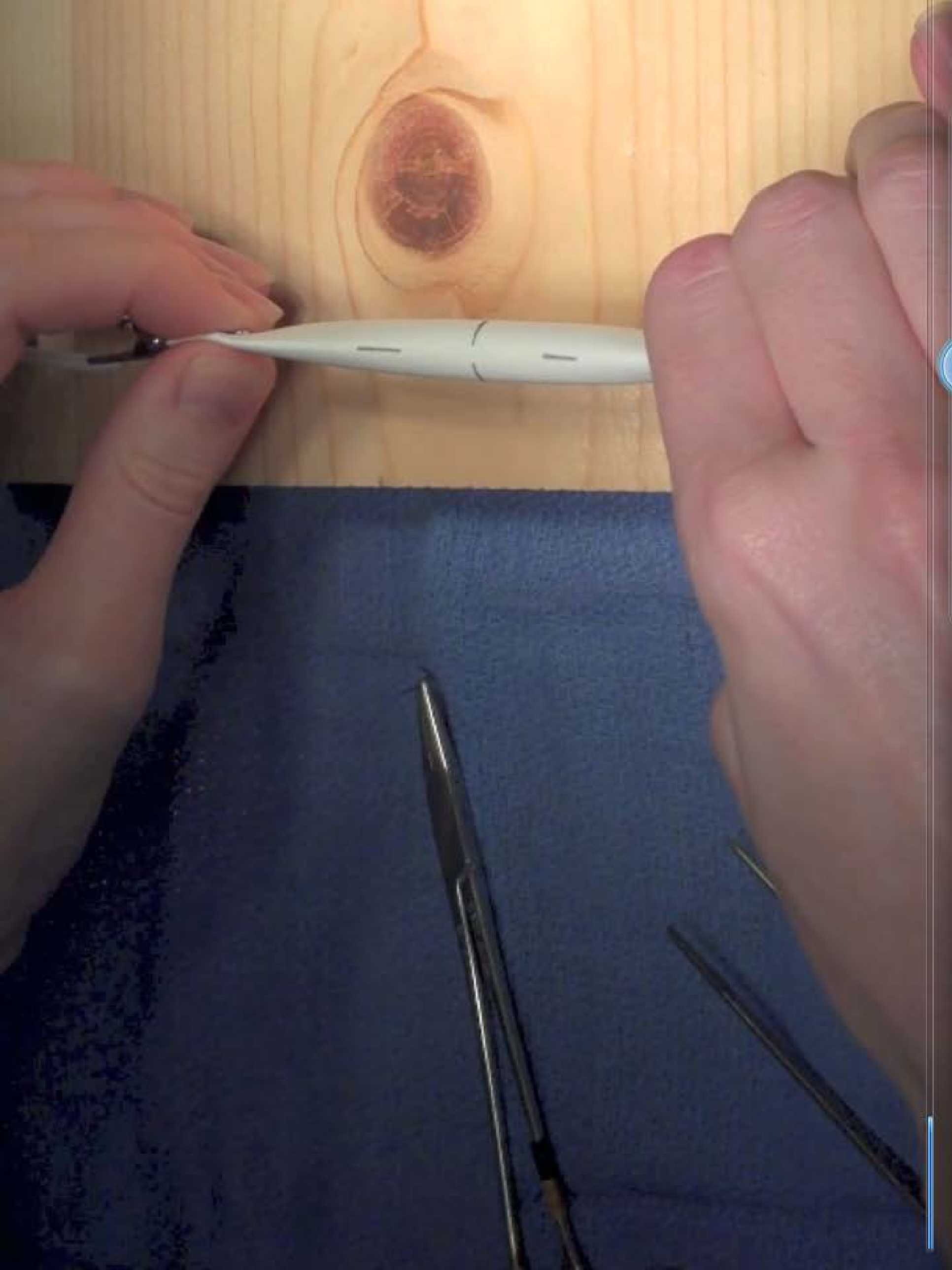


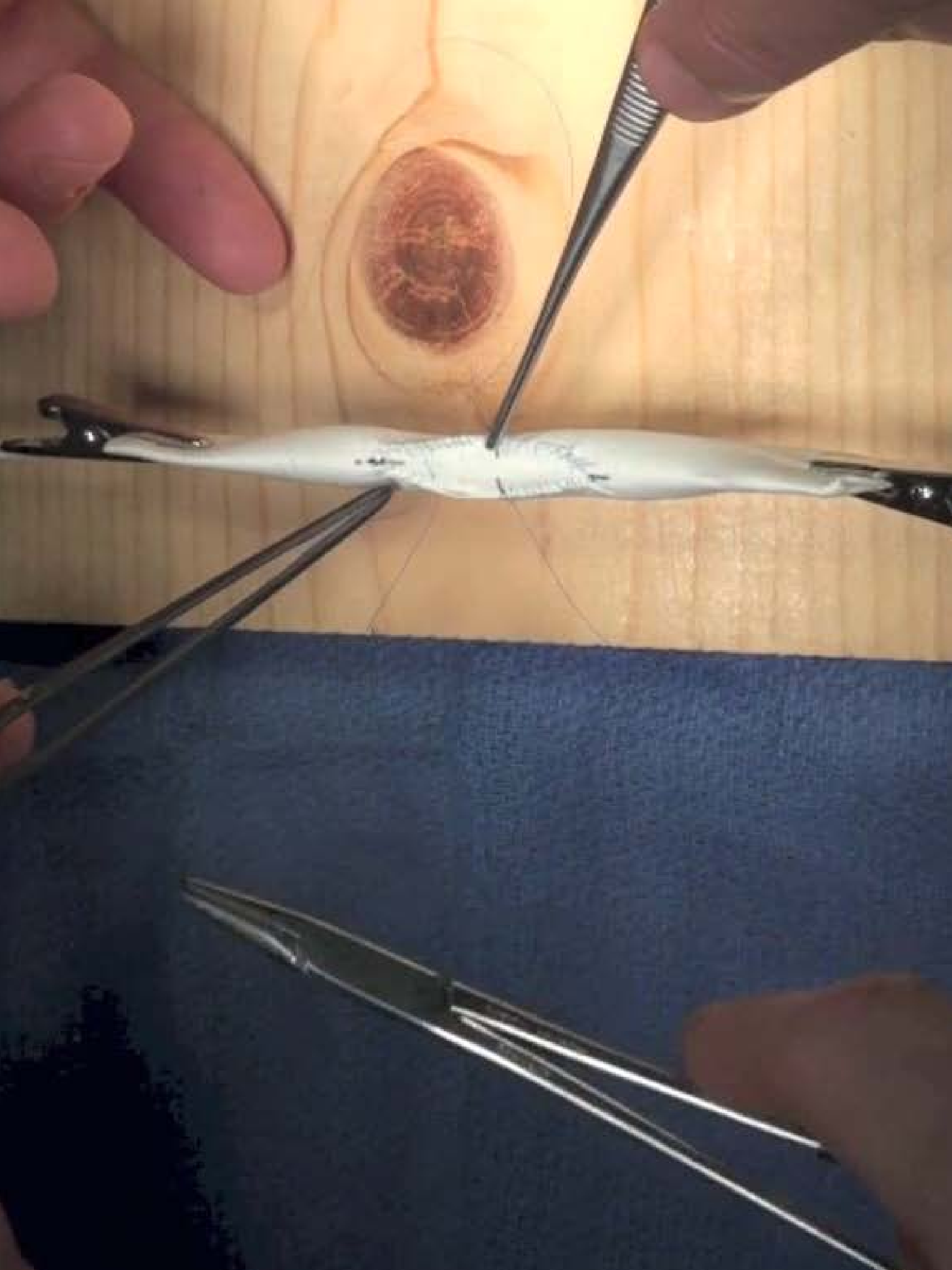
NOT FOR
HUMAN USE

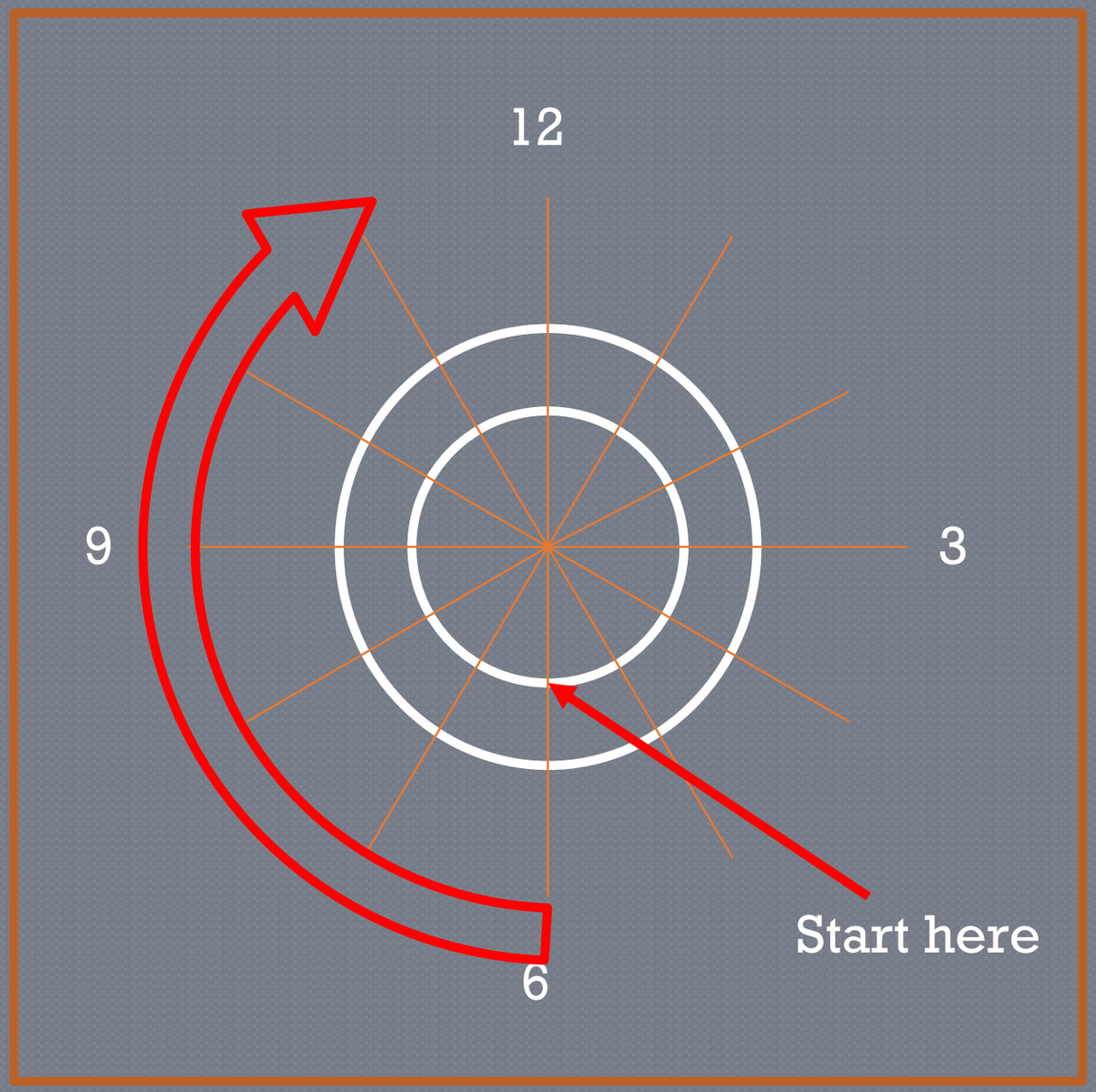
DEMO

Fundamentals of Vascular Surgery

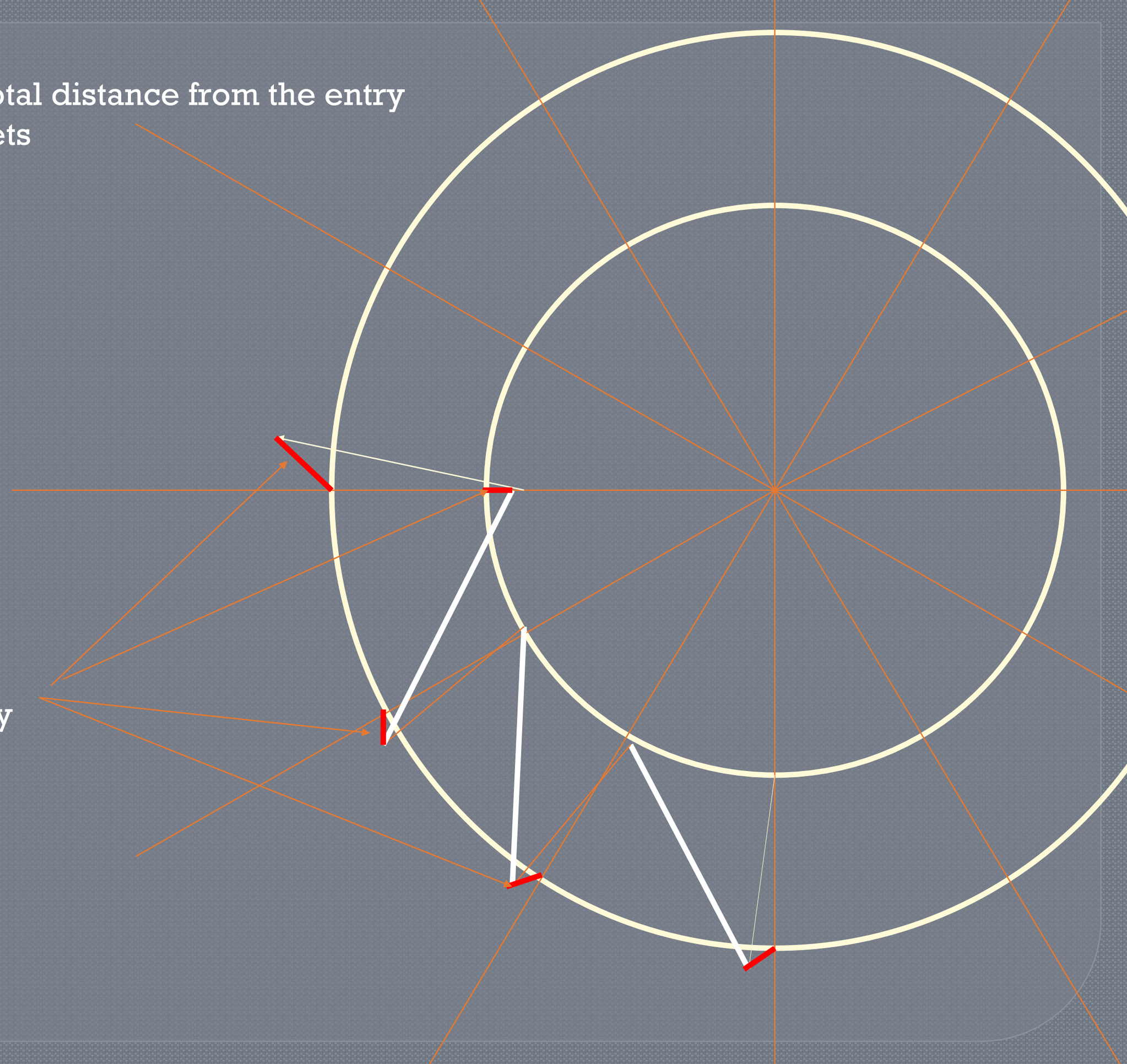
The Patch Model





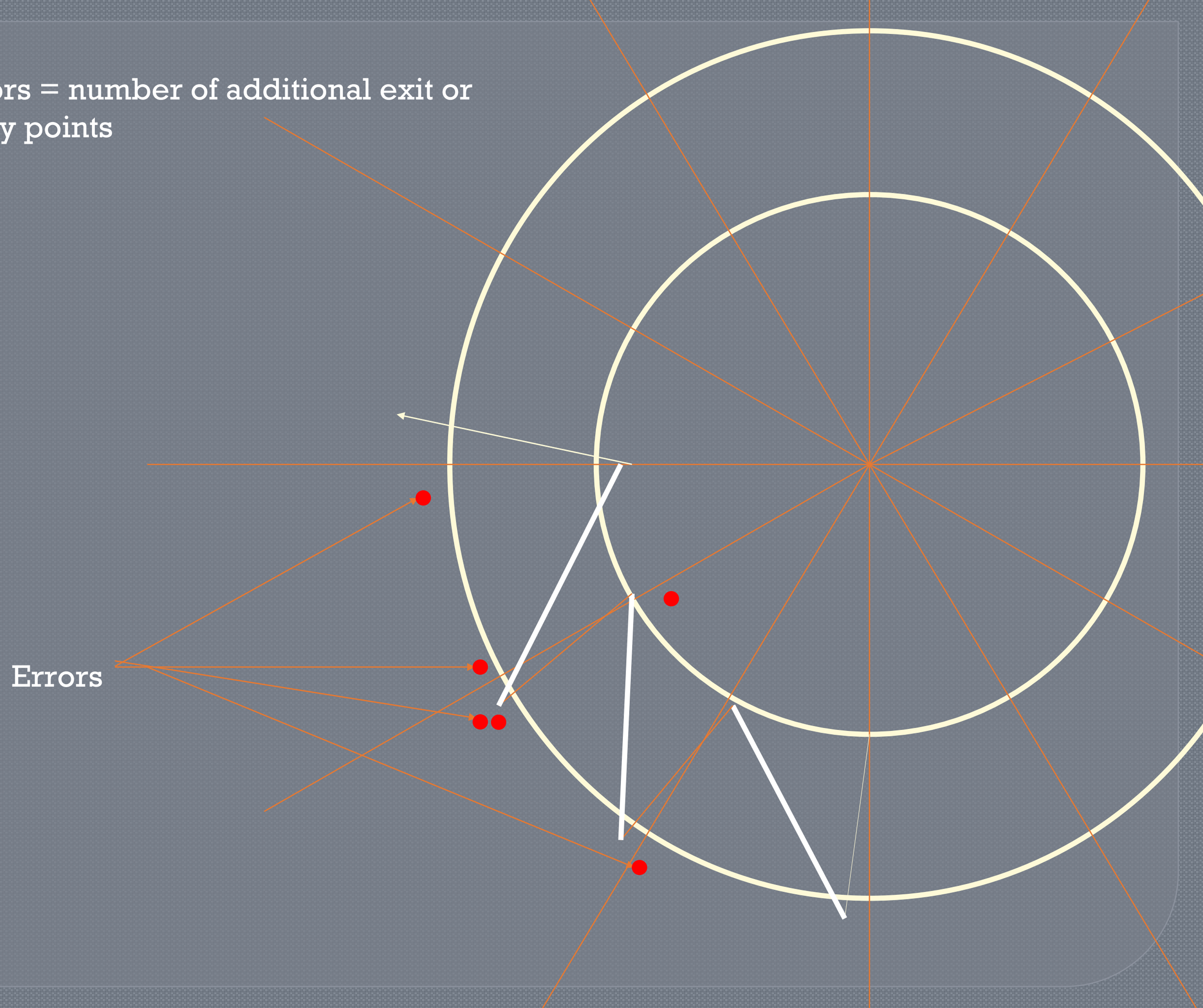

12
9
3
6
Start here

Accuracy = total distance from the entry and exit targets



Accuracy

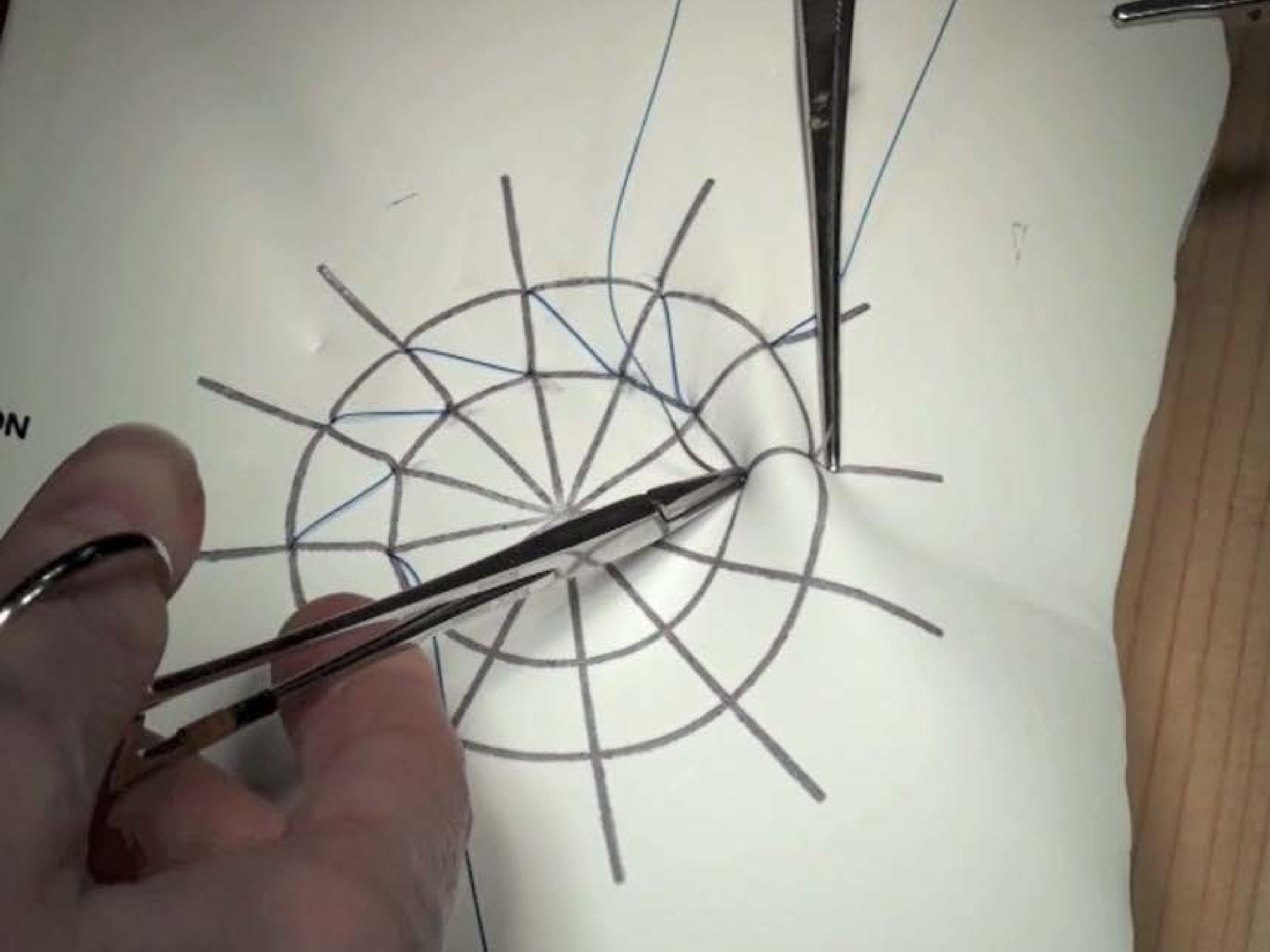
Errors = number of additional exit or entry points



Fundamentals of Vascular Surgery

The Clock Face Model

NO
NOT FC
Prc



Global Rating Score

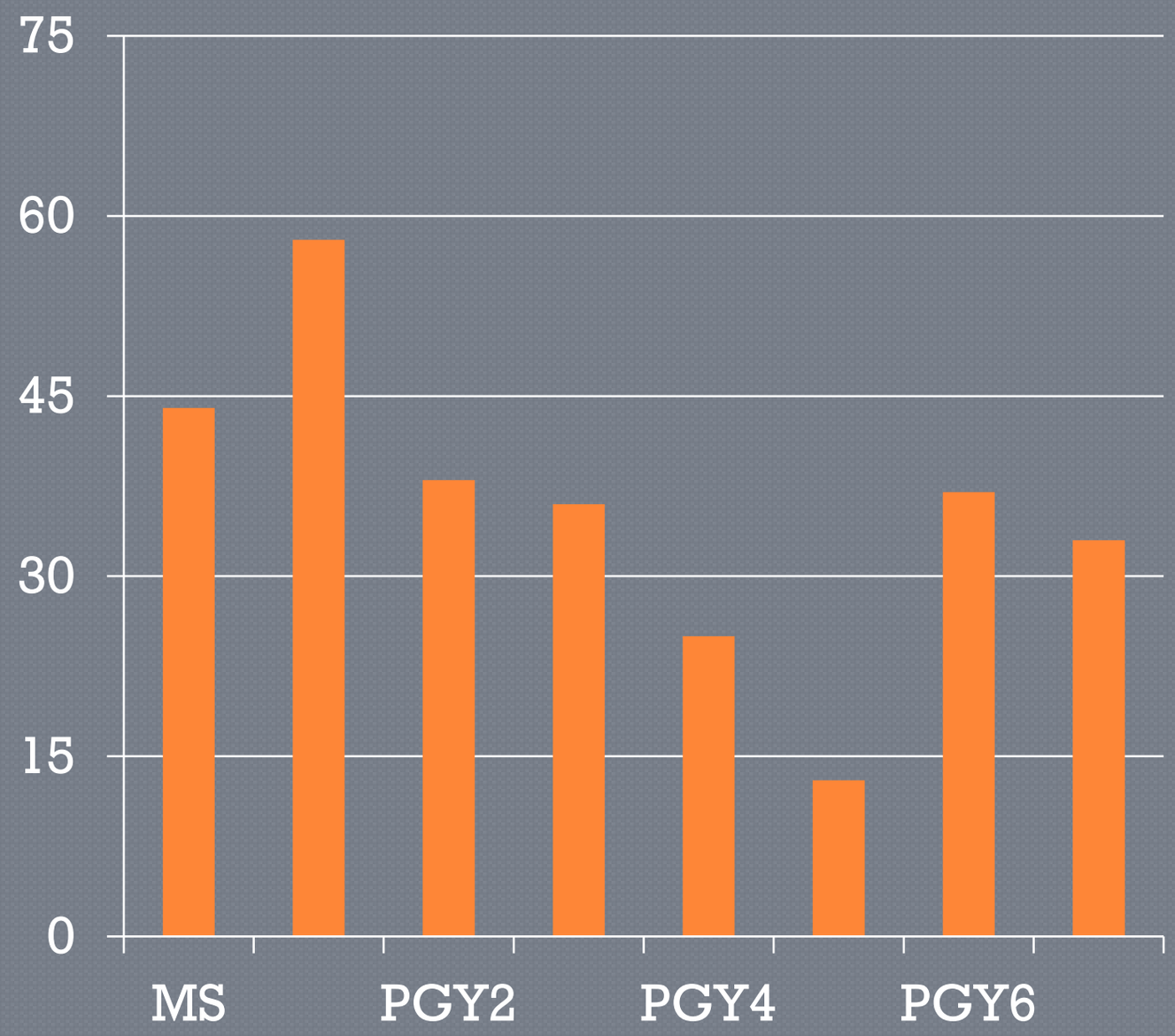
	1	2	3	4	5
Respect for Tissue	Frequent unnecessary tissue force or damage to vessels		Careful tissue handling, occasional inadvertent damage		Consistently handled tissue carefully (appropriately), minimal tissue damage
Time and Motion	Many unnecessary moves		Efficient time and motion, some unnecessary moves		Clear economy of motion, and maximum efficiency
Instrument Handling	Repeated tentative or awkward moves, inappropriate use of instruments		Competent use of instruments, occasionally stiff or awkward		Fluid concise moves with appropriate instruments
Knotting and suturing	Defective techniques resulting in poor tissue apposition and unsafe knots		Knotting and suturing usually reliable but sometimes awkward		Sound techniques and smooth action
Use of Assistant	Consistently places assistant poorly or fails to equip them		Appropriate use of assistant		Uses assistant to the best advantage at all times
Procedural Flow	Frequently stopped and seems unsure of next move		Demonstrates some forward planning, reasonable progression		Effortless, obviously planned course
Quality of Final Product	Final product well below standard and likely to fail		Final product has deficiencies but would probably function adequately		Excellent final product with no flaws and likely to function well

Global Summary (GS)

Global Summary	
Level at which completed elements of the skill were performed on this occasion	☐
Level 0	Insufficient evidence observed to support a summary judgment
Level 1	Unable to perform the procedure, or part observed, under supervision
Level 2	Able to perform the procedure, or part observed, under supervision
Level 3	Able to perform the procedure with minimum supervision (needed occasional help)
Level 4	Competent to perform the procedure unsupervised (could deal with complications that arose)

Results

- 283 Trainees
- 85 female (30%)



Inter-rater Reliability

- Eleven assessors, all with previous experience
- Cronbach's α=0.84

Internal Consistency

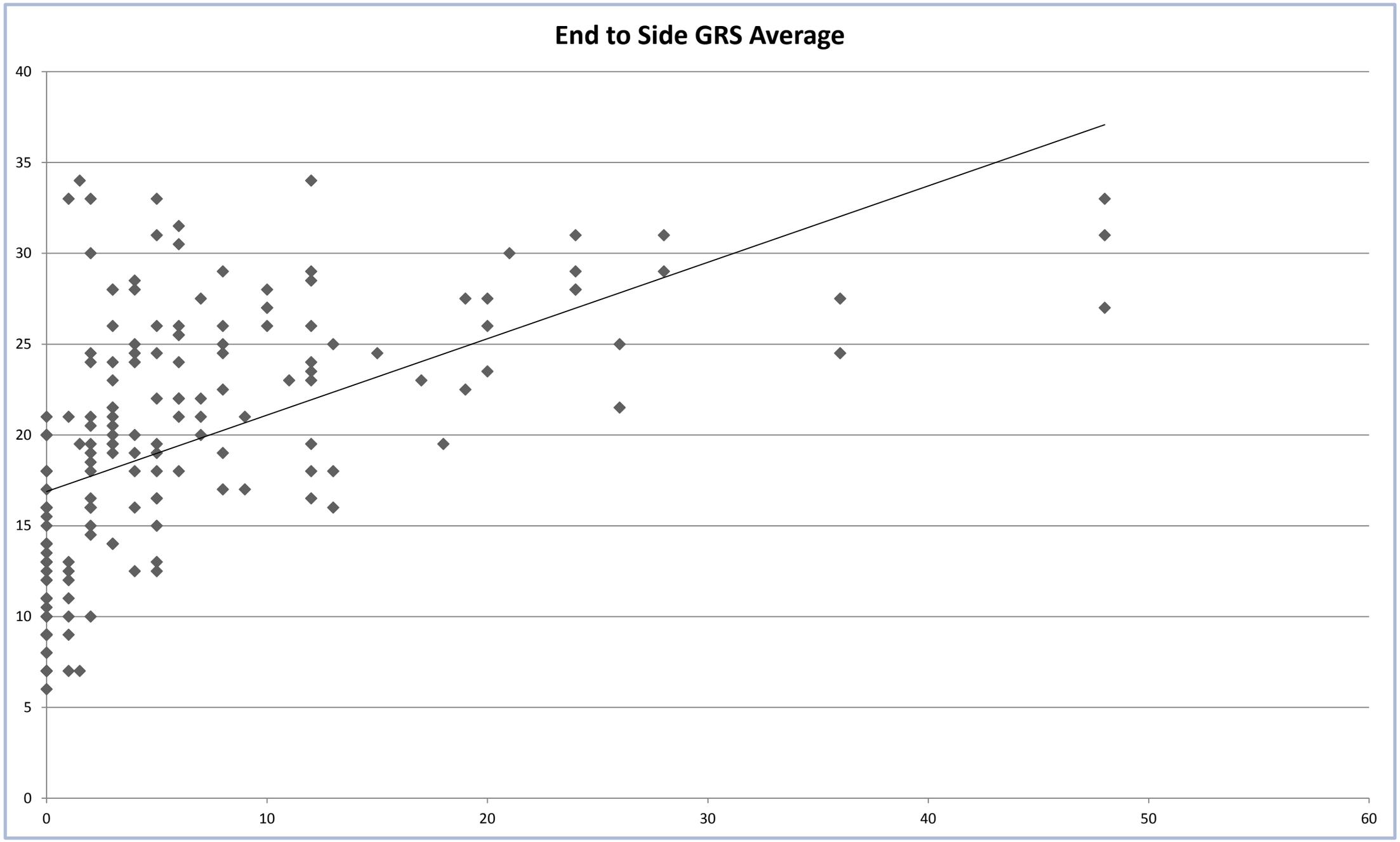
- Spearman's Rank Order Correlation (rho)=0.81
- All participants, all three models

Construct Validity

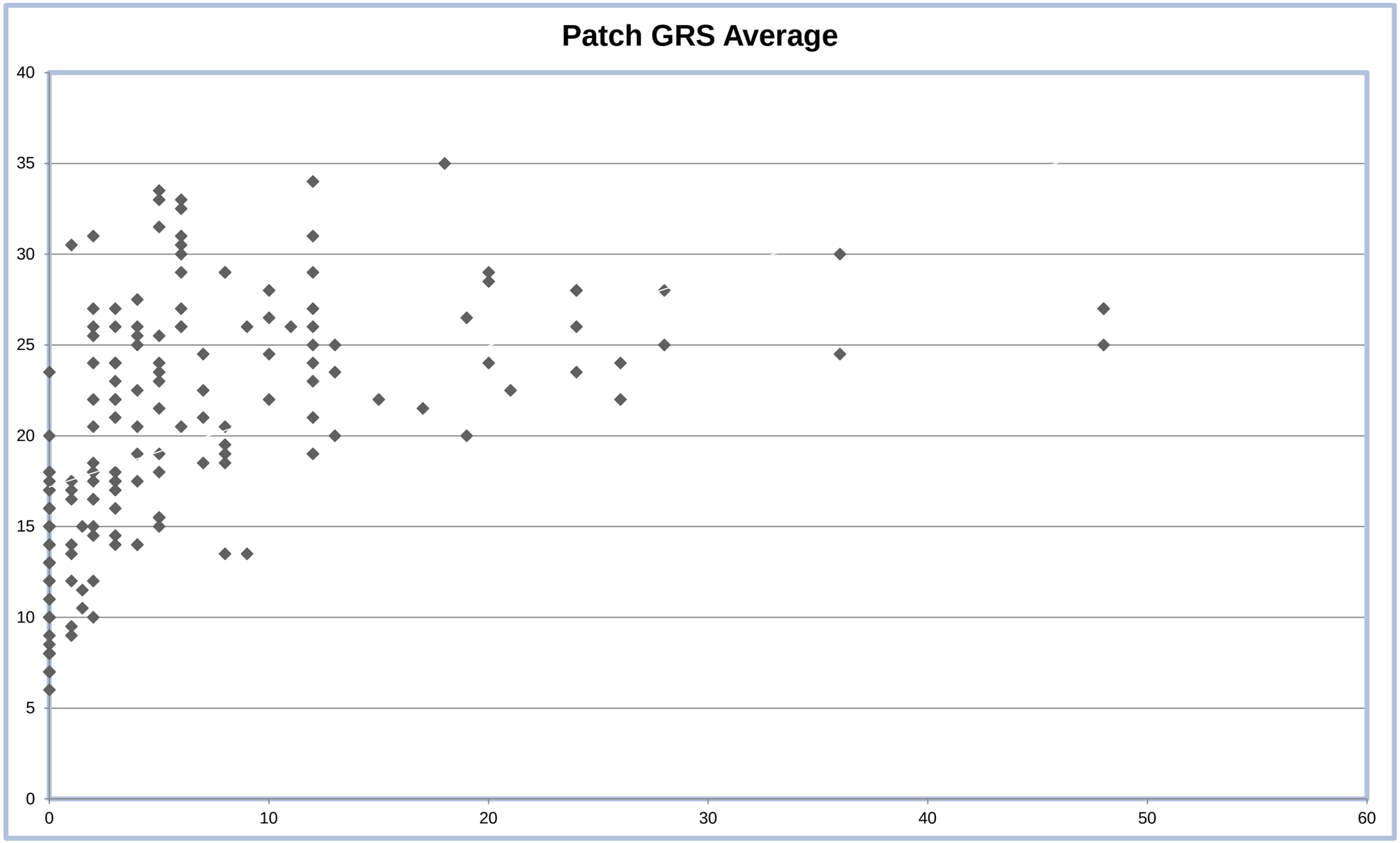
- Discern Junior (PGY 0-2) from Senior (PGY 3-5)
  - End to Side (18.5 vs 29.8, $p<.001$)
  - Patch (22.1 vs 28.6, $p<.05$)
  - Clock Face (21.6 vs. 32.4, $p<.001$)

*Mann-Whitney U test

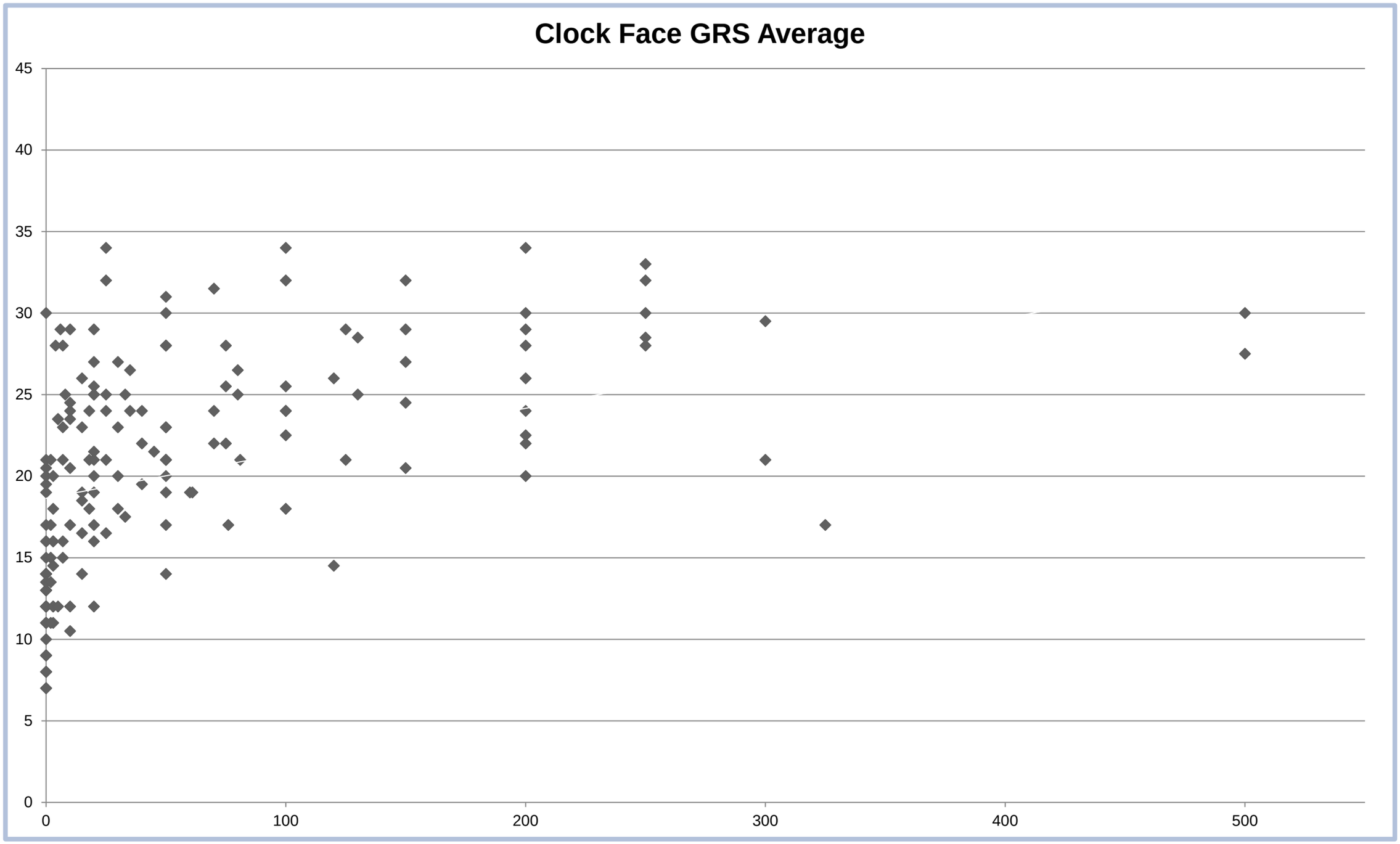
ES GRS vs Experience (Months)



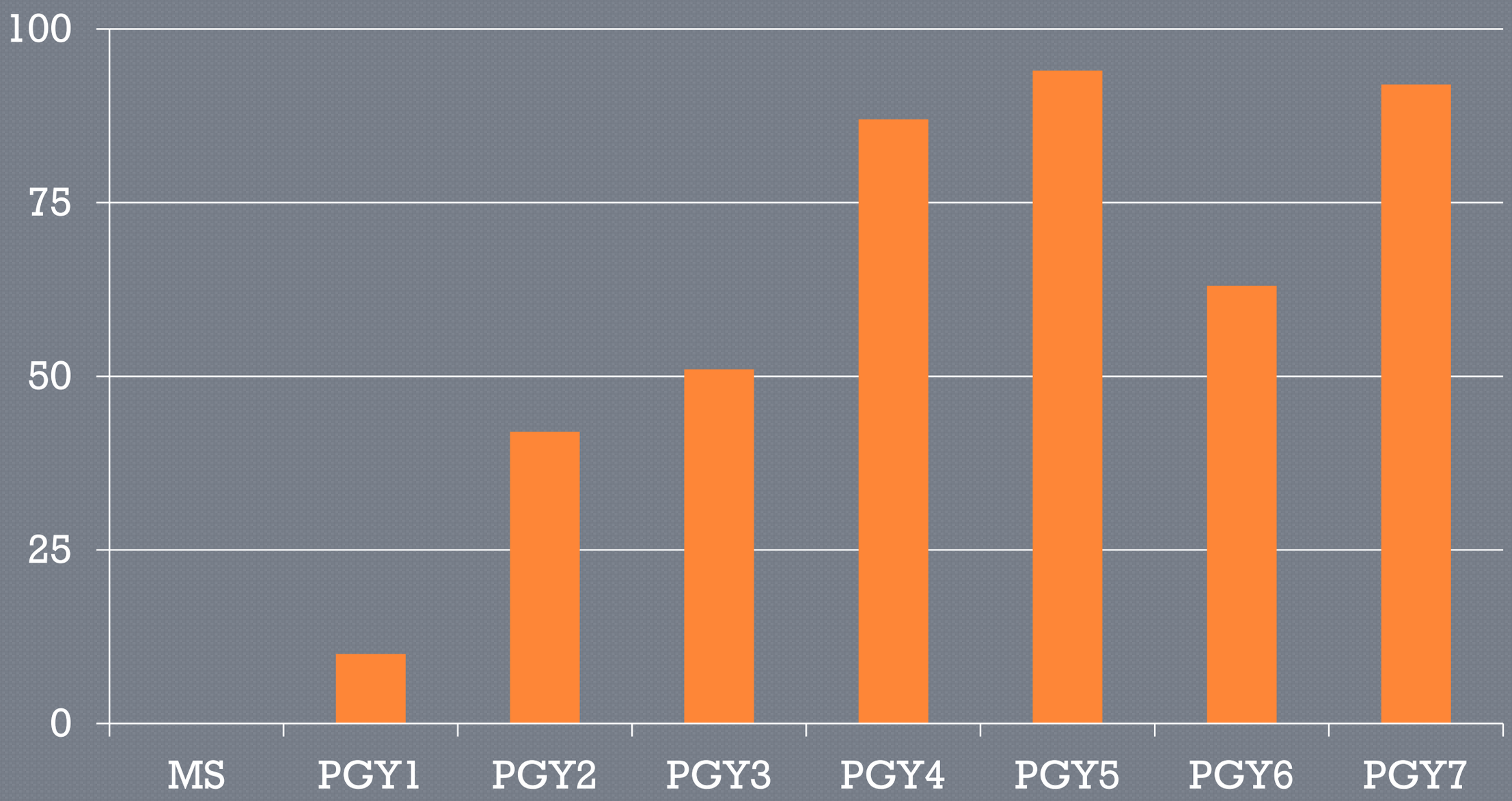
Patch GRS vs Experience (Months)



Clock GRS vs. Experience (Open Cases)



Passing Score



Conclusion

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- An experienced assessor using the Fundamentals of Vascular Surgery exam can effectively evaluate the technical skills of a vascular trainee.

Goals for 2015-2016

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- Goals set forth by APDVS President Linda Harris
  - Identify 10 programs nationally for the limited roll-out
  - Complete committee Bylaws
  - Complete contracts with vendors:
    - 3D Systems/Simbionix - done
    - WL Gore - in process
  - Contracts to be reviewed by APDVS/SVS legal
  - Identify process for involving junior faculty

Bylaws for Committee of Fundamentals of Vascular & Endovascular surgery (FVEVS)

Article I – Name

The name of this organization shall be the "*Committee of Fundamentals of Vascular & Endovascular surgery* " (hereinafter the "Committee").

Article II – Objectives

A. The objectives of this Committee shall largely be:
   1. Develop Fundamentals of Vascular Surgery (FVS) and Fundamentals of Endovascular Surgery (FEVS)
   2. Implement Fundamentals of Vascular Surgery (FVS) and Fundamentals of Endovascular Surgery (FEVS)
   3. Manage Fundamentals of Vascular Surgery (FVS) and Fundamentals of Endovascular Surgery (FEVS)

      a. To improve the science and art of vascular surgery and endovascular therapies;
      b. To promote basic and clinical research for improving the quality and safety of vascular surgical and endovascular procedures and vascular care in general;
      c. To foster interest and develop research in vascular education, simulation and assessment.
      d. To do any and all things which may be necessary or incidental to

Timeline

- The initial rollout to 10 centers, is a proposal which is based on counsel with developers of FLS and FES.
- Centers will be selected based on strict criteria
- FVS kits will include graft material, suture boards, tube, videos, and evals.
- FEVS options are virtual package or physical model. Price to be fixed
- Metrics defined - Refinement by collaboration with University of Houston psychometricians

Future

- Invitation to present FVEVS to the VSB this May

Thank you

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Assessors

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Audra Duncan
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Jeff Indes
Ash Mansour
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Peter Nelson
Tapash Palit
John Rectenwald
Will Robinson
Bruce Torrance

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Cassidy Duran
Emily Kalata
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Linda Harris