

Applying Deliberate Practice to Plastic Surgery Residency Training

Jack Burns, MS¹; Jeffrey Cone, MD²; Jessica Ching, MD²; Paul Smith, MD² ¹Morsani College of Medicine, University of South Florida, FL 33612 ²Division of Plastic Surgery, University of South Florida, FL 33612

Disclosure

• There is nothing to disclose.

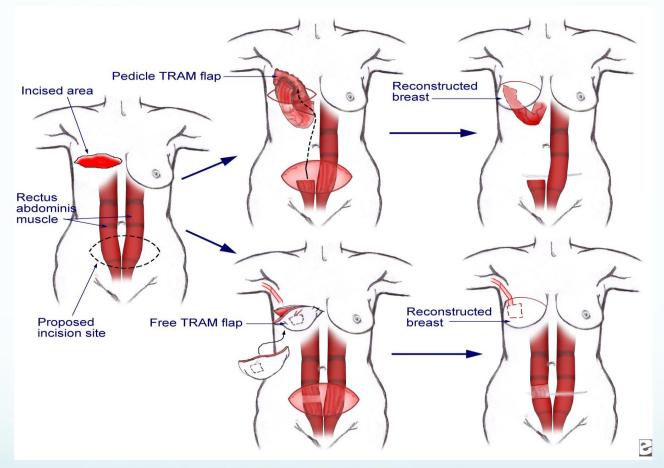
Background

- Deliberate Practice is defined as a highly structured activity in which the explicit goal of the activity is to improve performance.
- In the field of medicine, deliberate practice is more specifically described as an activity in which there is:
 - Repetitive performance of intended cognitive or psychomotor skills
 - Rigorous skills assessment
 - Continual feedback
 - Improved skills performance

Purpose

 The purpose of this study was to assess the impact of K. Anders Ericsson's theory of deliberate practice on resident education by evaluating procedure times of breast reconstruction utilizing transverse rectus abdominis myocutaneous (TRAM) flaps.

TRAM Procedure



TRAM Procedure

- TRAM procedures may consist of either pedicled flaps or free flaps.
 - In pedicled TRAM procedures, the rectus abdominis remains tethered to the abdominal wall and is tunneled under the skin to reconstruct the breast.
 - The free TRAM flap consists of muscle, fat, skin, and vessels from the lower abdomen that is then transplanted to the recipient site on the chest wall.

Methods

- A retrospective review of TRAM flap breast reconstruction was performed of residentassociated cases at the Moffitt Cancer Center from 2009-2011.
- Residents were trained according to the deliberate practice didactic model over their four-month rotations and trained along a continuum of increasing resident independence.
- Operative times were categorized into the 1st, 2nd, 3rd, and 4th months of the rotation.

Results

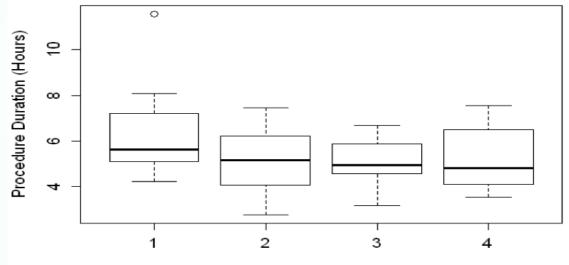
- A total of 75 cases (n=75) met inclusion criteria
- Mean duration of procedures for the 1st, 2nd, 3rd, and 4th months were 6.16 hours, 5.21 hours, 5.20 hours, and 5.24 hours, respectively.
- While the decline in procedure time during the rotation was not statistically significant (p=0.2440), the correlation coefficient for operative times for these cases over the four months was significant at -0.25 (r=-0.25, p=0.048).

Procedure Duration

Procedure Duration of TRAM Cases					
Stastical Variable	Month 1	Month 2	Month 3	Month 4	P Value
Number of Cases	n = 17	n = 21	n = 16	n = 21	
Mean Procedure Duration (Hours)	6.16	5.21	5.20	5.24	
Standard Deviation	1.80	1.44	0.98	1.39	p = 0.2440
Median Procedure Duration (Hours)	5.63	5.17	4.93	4.80	
Procedure Duration Range (Hours)	4.2 - 11.6	2.8 - 7.5	3.2 - 6.7	3.6 - 7.6	

• The median procedure duration decreased during each of the month-long blocks, but the results were not significant (p=0.2440).

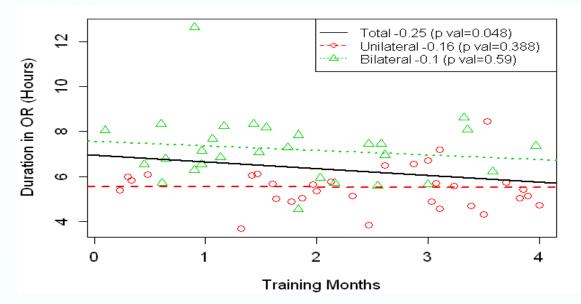
Procedure Duration



Training Months

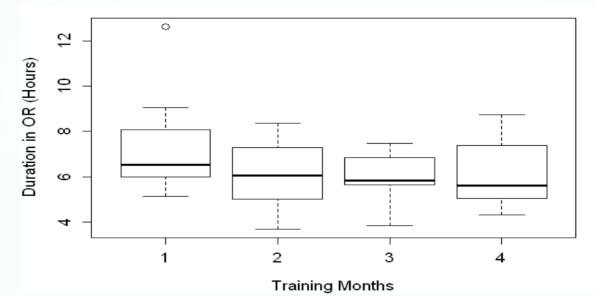
- The solid black lines represent the median procedure duration of the corresponding month blocks.
- The correlation coefficient was -0.18 (r=-0.18).

Duration in OR



- The black line represents all cases, whereas unilateral cases are in red and bilateral cases are in green.
- The correlation coefficient was -0.25, which is represented by the slope of the black line.
- The correlation coefficient was significant (p=0.048).

Duration in OR



- The solid black lines represent the median OR times of the corresponding month blocks.
- The correlation coefficient was -0.25 (r=-0.25).

Conclusion

- This study marks the first application of the theory of deliberate practice to a complex skill set in the surgical literature.
- The data shows a decrease in operative times over each month interval of the residents' rotations.
- Further evaluation is warranted to determine whether this didactic model can be formalized and potentially accelerate the acquisition of the complex skill set required for breast reconstruction via TRAM flaps.

References

- Ericsson KA, Krampe RT, Tesch-Romer C. The role of deliberate practice in the acquisition of expert performance. *Psychological Review*. 1993, 100(3):363-406.
- Cone JD, Tavana ML, Ching JA, Smith PD. The Bikini Inset: A reliable method for postoperative breast reconstruction with transverse rectus abdominis myocutaneous and free abdominal tissue transfer. *Annals of Plastic Surgery*. 2012, 68(5):420-4.

References

- Ward P, Hodges NJ, Starkes JL, Williams MA. The Road to Excellence: Deliberate practice and the development of expertise. *High Ability Studies*. 2007, 18(2):119-153.
- Duvivier RJ, van Dalen J, Muijtjens AM, Moulaert V, van der Vleuten C, Scherpbier A. The role of deliberate practice in the acquisition of clinical skills. *BMC Medical Education*. 2011, 11:101.