

# BSc in Surgery & Anaesthesia



## “Selection for Surgical Training”



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# What is Selection?

- Personnel selection is a process used to determine which individuals are best suited for a particular job.<sup>1</sup>

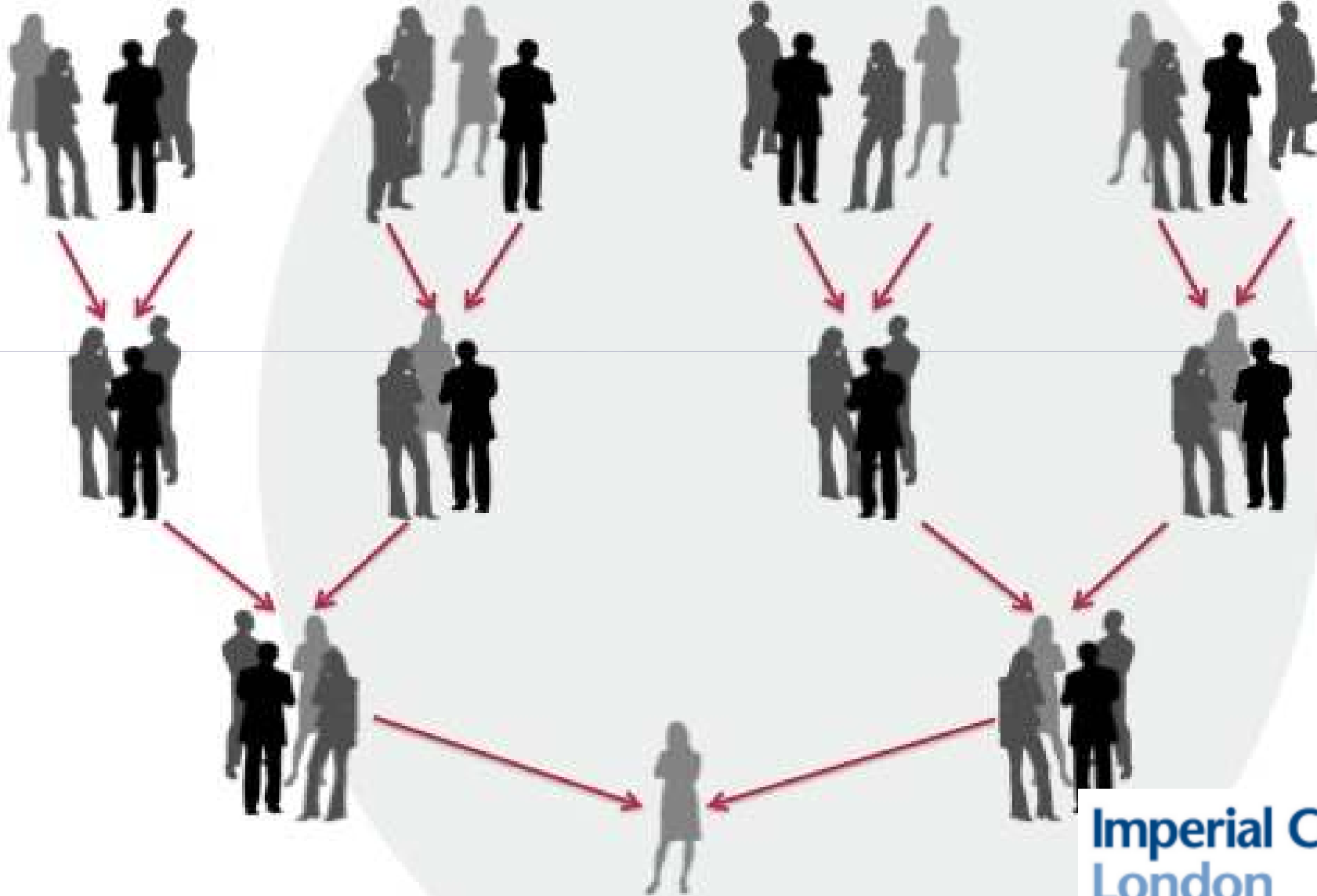
# Why is Selection important?



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# Selection Methodology



# Reliability & Validity

## ELECTION SPECIAL

# The Washington Times

MILD  
High 61, Low 45 — 812

www.washingtontimes.com

WEDNESDAY, NOVEMBER 8, 2000 \*\*\*

25 cents

# PRESIDENT BUSH

## Florida pushes Texan over the top with bare majority

### HOUSE RACES

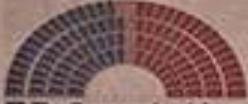
Republicans	Democrats
207	189
Included 2	Excluded 1



Rep. Constance Morella defeats Terry Liernan in Maryland's 5th District.

### SENATE RACES

Republicans	Democrats
49	46
Selected 1	



The Democrats pick up seats in Florida and Delaware.

### Allen defeats Robb, claims 'sweet' win

By Stephen Dean and Gerald Musmann

RICHMOND — Republican challenger George F. Allen last night defeated Sen. Charles S. Robb of Virginia, denying him a third term and delivering to the GOP the last statewide office held by a Democrat.

Mr. Allen raked up 52 percent of the vote to Mr. Robb's 48 percent, with about 94 percent of precincts reporting.

"Tonight, my friends, we begin moving forward and it sure is sweet," Mr. Allen told a packed ballroom at the Richmond Marriott just after 9:30 p.m.

"The people of Virginia have spoken, and they've endorsed our vision, constructive vision for the future, and I can't wait to go to work for the hard-working, tax-paying families, individuals and businesses in the Commonwealth of Virginia and America."

The Republican crowd in Virginia started singing to the "Hallelujah



Thursday night: George W. Bush and wife Laura arrive to vote at the Travis County Courthouse in Austin, Texas.

### The lead seesawed through the night

By Bill Sammon

George W. Bush, the son of the president who was inaugurated by the Clinton-Gore team eight years ago, avenged his father's early blue morning by defeating Al Gore, creating only the second father-son presidential dynasty in history.

Mr. Bush's "compassionate conservatism" revitalized the White House to Republican control.

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# How do we select now?



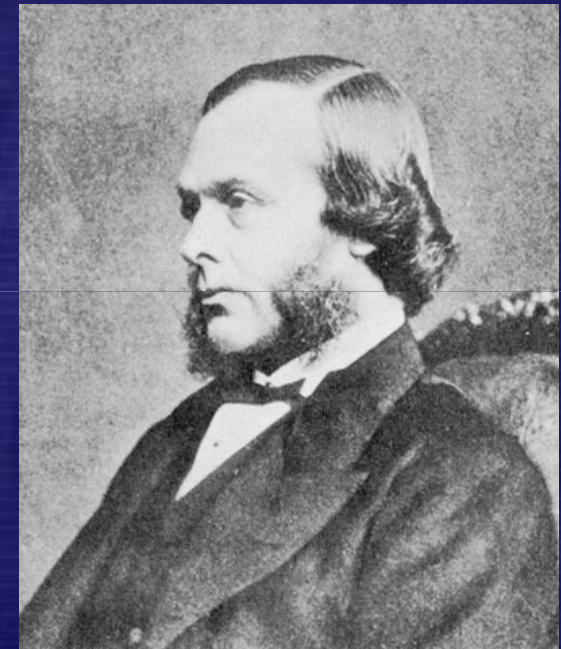
# Person Specification

2012 Person Specification		
Application to enter Specialty Training at CT1: Core Surgical Training		
Entry Criteria		
	Essential	When Evaluated <sup>1</sup>
Qualifications	MBBS or equivalent medical qualification.	Application form
Eligibility	<ul style="list-style-type: none"> <li>Eligible for full registration with the GMC at time of appointment<sup>2</sup> and hold a current licence to practice.<sup>3</sup></li> </ul> <p>Either</p> <ul style="list-style-type: none"> <li>Evidence of current employment in a UKFPO affiliated Foundation Programme</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>12 months experience after full GMC registration or equivalent and evidence of achievement of <b>Foundation competences between 31st July 2009 and 1st August 2012</b> from a UKFPO affiliated Foundation Programme or equivalent in line with GMC standards/Good Medical Practice including:                             <ul style="list-style-type: none"> <li>Make the care of your patient your first concern</li> <li>Protect and promote the health of patients and of the public</li> <li>Provide a good standard of practice and care</li> <li>Treat patients as individuals and respect their dignity</li> <li>Work in partnership with patients</li> <li>Be honest and open and act with integrity</li> </ul> </li> <li>Eligibility to work in the UK.</li> <li>Not previously relinquished, released or removed from a Core Surgical training programme except under exceptional circumstances</li> </ul>	Application form  Application form  Interview / Selection centre <sup>2</sup>
Fitness To Practise	Is up to date and fit to practise safely.	Application form  References
Language Skills	All applicants to have demonstrable skills in written and spoken English adequate to enable effective communication about medical topics with patients and colleagues demonstrated by one of the following: <ul style="list-style-type: none"> <li>that applicants have undertaken undergraduate medical training in English; or</li> <li>have achieved the following scores in the academic International English Language Testing System (IELTS) in a single sitting within 24 months of time of application – Overall 7, Speaking 7, Listening 7, Reading 7, Writing 7.</li> </ul> If applicants believe they have adequate communication skills but do not fit into one of these examples they must provide supporting evidence	Application form  Interview / Selection centre
Health	Meets professional health requirements (in line with GMC standards/Good Medical Practice).	Application form  Pre-employment health screening

Career Progression <sup>4</sup>	<ul style="list-style-type: none"> <li>Ability to provide a complete employment history</li> <li>Evidence that career progression is consistent with personal circumstances</li> <li>Evidence that present achievement and performance is commensurate with totality of period of training</li> <li>18 months or less experience<sup>5</sup> in surgery (not including Foundation modules) by time of appointment<sup>2</sup> <ul style="list-style-type: none"> <li>For OMFS applicants. Only surgical experience gained after completion of second degree will be counted.</li> </ul> </li> </ul>	Application form
Application Completion	ALL sections of application form completed FULLY according to written guidelines	Application form

Selection Criteria			
	Essential	Desirable	When Evaluated
Clinical Skills	<b>Technical Knowledge &amp; Clinical Expertise:</b> <ul style="list-style-type: none"> <li>Capacity to apply sound clinical knowledge &amp; judgement &amp; prioritise clinical need</li> <li>Demonstrates appropriate technical competence &amp; evidence of development of excellent diagnostic skills &amp; judgement</li> <li>Validated logbook documentation of surgical exposure to date</li> </ul>	<b>Personal Attributes:</b> <ul style="list-style-type: none"> <li>Shows aptitude for practical skills, e.g. hand-eye co-ordination, dexterity, visuo-spatial awareness</li> <li>Attendance at relevant courses, for example ALS, ALERTS or equivalent</li> </ul>	Application form  Interview / Selection centre  References
Academic / Research Skills	<b>Research Skills:</b> <ul style="list-style-type: none"> <li>Demonstrates understanding of the basic principles of audit, clinical risk management &amp; evidence-based practice</li> <li>Understanding of research basic research principles, methodology &amp; ethics, with potential to contribute to research</li> </ul> <b>Teaching:</b> <ul style="list-style-type: none"> <li>Evidence of contributing to teaching &amp; learning of others</li> </ul>	<ul style="list-style-type: none"> <li>Evidence of relevant academic &amp; research achievements, e.g. degrees, prizes, awards, distinctions, publications, presentations, other achievements</li> <li>Evidence of active participation in audit</li> <li>Evidence of participation in risk management and/or clinical/laboratory research</li> </ul>	Application form  Interview / Selection centre

# Predicting Performance





# Predicting Performance



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# Predicting Performance

 **ROYAL  
AIR FORCE**



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London**

# Predicting Performance



# Systematic Review

## Identification

No of records identified through database searching

No of additional records identified through other sources

## Screening

No of records after duplicates removed

No of records screened

No of records excluded

## Eligibility

No of full-text articles assessed for eligibility

No of full-text articles excluded, with reasons

## Included

No of studies included in qualitative synthesis

No of studies included in quantitative synthesis (meta-analysis)

# Systematic Review - Methods

- Inclusion Criteria
- Search Strategy
- Assessment of Study Quality

# Systematic Review

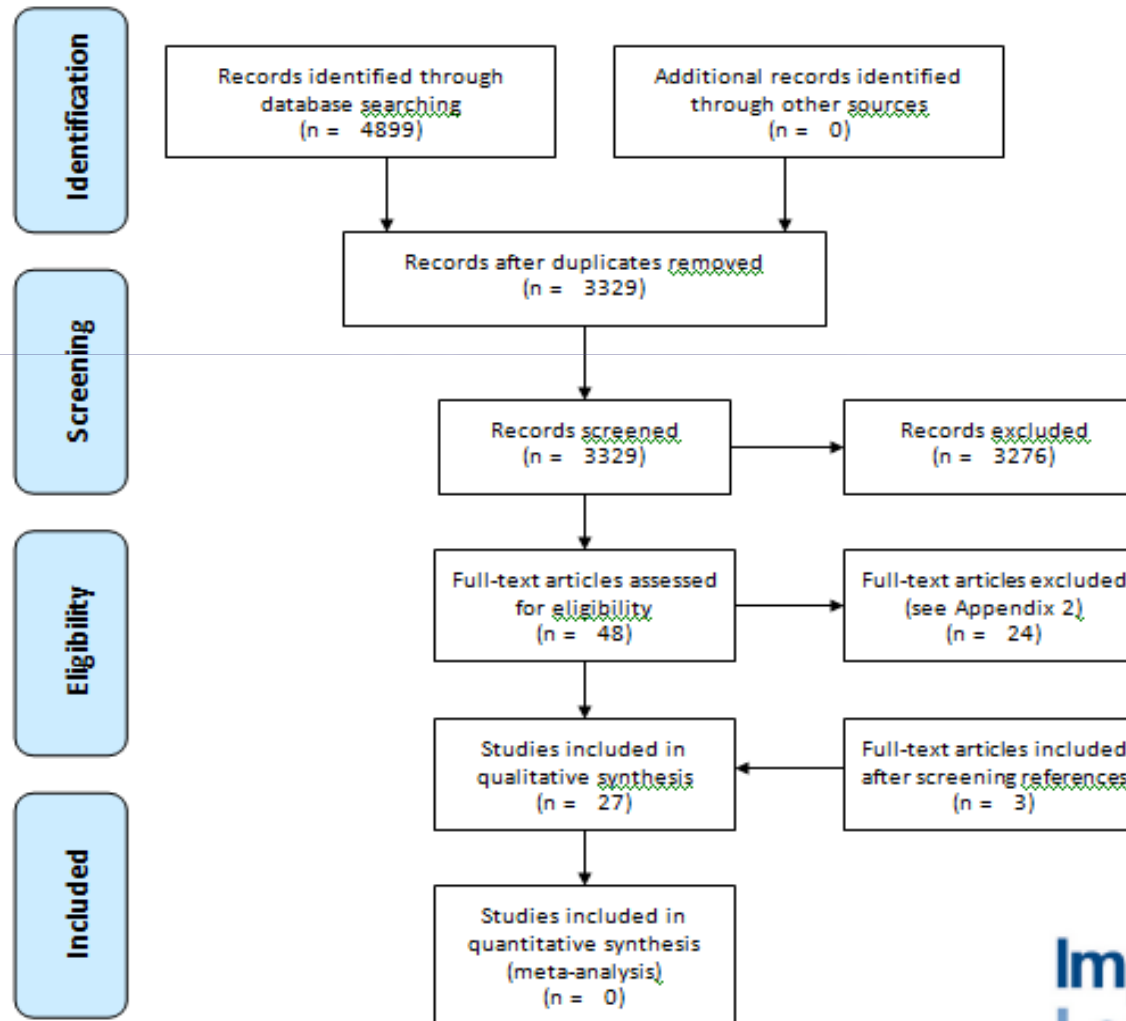
Database	Further information on database	Search terms	Number of articles
	The National Library of Medicine's database, providing abstracts and indexing	<ol style="list-style-type: none"> <li>Personnel Selection (MeSH)</li> <li>Job Application (MeSH)</li> <li>Aptitude (MeSH)</li> <li>Aptitude Test (MeSH)</li> <li>Employee Performance Appraisal (MeSH)</li> <li>Select*</li> <li>recruit*</li> <li>aptitud*</li> <li>1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8</li> </ol>	
Medline	for about 4,600 biomedical journals published in the U.S. and 70 foreign countries, and includes additional older citations and out of scope citations from Medline journals.	<ol style="list-style-type: none"> <li>Education, Medical, Graduate (MeSH)</li> <li>Medical Staff, Hospital (MeSH)</li> <li>"Internship and Residency" (MeSH)</li> <li>Junior doctor</li> <li>Residen*</li> <li>Trainee</li> <li>10 OR 11 OR 12 OR 13 OR 14 OR 15</li> <li>Specialties, Surgical (MeSH)</li> <li>surg*</li> <li>specialt*</li> <li>17 OR 18 OR 19</li> <li>9 16 20</li> </ol>	1942

Database	Further information on database	Search terms	Number of articles
Embase	Excerpta Medica database is a major biomedical and pharmaceutical database indexing over 3,500 international journals in the following fields: drug research, pharmacology, pharmaceuticals, toxicology, clinical and experimental human medicine, health policy and management, public health, occupational health, environmental health, drug dependence and abuse, psychiatry, forensic medicine and biomedical engineering.	<ol style="list-style-type: none"> <li>Personnel Selection (MeSH)</li> <li>Job Application (MeSH)</li> <li>Aptitude (MeSH)</li> <li>Aptitude Test (MeSH)</li> <li>Employee Performance Appraisal (MeSH)</li> <li>Select*</li> <li>recruit*</li> <li>aptitud*</li> <li>1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8</li> <li>Education, Medical, Graduate (MeSH)</li> <li>Medical Staff, Hospital (MeSH)</li> <li>"Internship and Residency" (MeSH)</li> <li>Junior doctor</li> <li>Residen*</li> <li>Trainee</li> <li>10 OR 11 OR 12 OR 13 OR 14 OR 15</li> <li>Specialties, Surgical (MeSH)</li> <li>surg*</li> <li>specialt*</li> <li>17 OR 18 OR 19</li> <li>9 16 20</li> </ol>	2689
CENTRAL	Component of Cochrane Library (high quality evidence to inform both practitioners and researchers)	(select* OR aptitud* OR recruit*) ((junior doctor) OR trainee OR residen*) (specialt* OR surg*)	88
ERIC	Sponsored by the of the U.S. Department of Education and searches journals, reports, theses and conference papers	(select* OR aptitud* OR recruit*) ((junior doctor) OR trainee OR residen*) (specialt* OR surg*)	0

# Systematic Review



Figure 01: PRISMA Flow Diagram



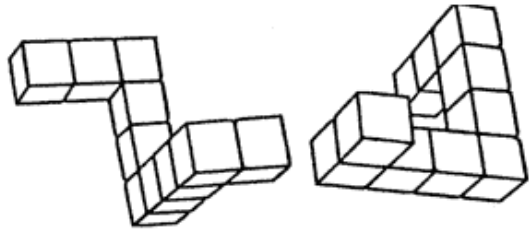
# Academic Achievement

Author	Year	Country	Study Type	Population	n	Method								
						Predictor					Outcome			
						AOA <sup>1</sup>	MSP <sup>2</sup>	USMLE	Research	TPO <sup>3</sup>	ITE <sup>4</sup>	Faculty rating	Board exam	Dexterity
Kron	1985	USA	Retrospective correlation <sup>5</sup>	Surgical residents	62	✓	✓		✓	✓*		✓		
Papp	1997	USA	Retrospective comparative <sup>6</sup>	Surgical residents	32	✓						✓		
							✓					✓		
								✓				✓		
									✓			✓		
Turner	2006	USA	Retrospective correlation <sup>7</sup>	Orthopaedic residents	64	✓				✓*	✓*		✓*	
							✓			✓*	✓*		✓*	
								✓		✓	✓*		✓	
Brothers	2007	USA	Retrospective correlation <sup>8</sup>	Surgical residents	152		✓				✓*	✓*	✓*	
								✓			✓*	✓**	✓*	
									✓		✓**	✓	✓**	
Andriole	2008	USA	Retrospective correlation <sup>9</sup>	Surgical residents	67		✓					✓*		
Goldberg	2008	USA	Retrospective correlation <sup>10</sup>	Surgical residents	113		✓					✓*		
								✓					✓**	
Balgado	2009	USA	Prospective correlation <sup>11</sup>	Surgical residents	8				✓				✓	
de Vergilio	2010	USA	Retrospective correlation <sup>12</sup>	Surgical residents	607			✓				✓*		
Dougherty	2010	USA	Retrospective correlation <sup>13</sup>	Orthopaedic residents	202			✓				✓*		
Scolillo	2010	USA	Retrospective comparative <sup>14</sup>	Surgical residents	62	✓							✓*	
							✓						✓*	
								✓					✓*	
Swanson	2010	USA	Retrospective correlation <sup>15</sup>	Orthopaedic residents	2654			✓				✓*		

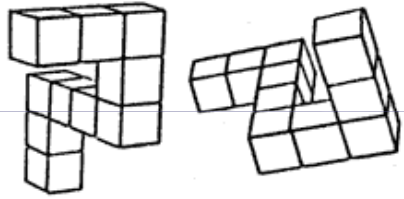
\* = significant positive correlation; \*\* = significant negative correlation



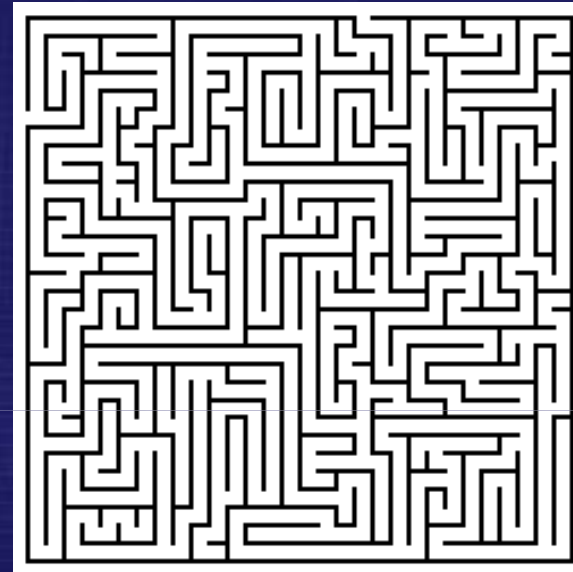
# Visual-Spatial Perception

(a) 


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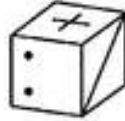
(b) 




**Mental Rotation Test**—Are these two figures the same except for their orientation?



**Example**

 X

A  B  C 

D  E  F 

NONE OF THE CUBES

NONE

I DO NOT KNOW THE SOLUTION

?

# Visual-Spatial Perception

Author	Year	Country	Study Type	Population	n	Method								
						Predictor <sup>1</sup>			Outcome <sup>2</sup>					
						Low-level	Intermed-level	High-level	Time	Errors	Efficiency	Learning Curve	Validated Scale	Faculty Rating
Wanzel	2003	Canada	Prospective correlation <sup>7</sup>	Dental students	27	✓			✓		✓		✓	
							✓		✓		✓		✓	
								✓	✓		✓		✓	
McClusky	2005	USA	Prospective correlation <sup>4</sup>	Medical Students	11		✓					✓		
								✓				✓		
Ritter	2006	USA	Prospective correlation <sup>5</sup>	Medical students	11		✓					✓		
								✓				✓		
Van Herzele	2010	UK	Prospective correlation <sup>8</sup>	Medical students	20		✓		✓			✓		

Schauneman	1984	USA	Prospective correlation <sup>7</sup>	Surgical residents	42		✓						✓		
Gibbons	1985	USA	Prospective correlation <sup>9</sup>	Surgical residents	58			✓					✓		
Daary	1992	UK	Prospective correlation <sup>9</sup>	Surgical trainees	22	✓								✓	
							✓								✓
								✓							✓
Steele	1992	UK	Prospective correlation <sup>10</sup>	Surgical trainees	10			✓	✓			✓			
Wanzel	2002	Canada	Prospective correlation <sup>11</sup>	Surgical residents	37		✓						✓		
								✓						✓	

Schauneman	1984	USA	Prospective correlation <sup>7</sup>	Surgical residents	42		✓							✓	
								✓						✓	
Gibbons	1985	USA	Prospective correlation <sup>9</sup>	Surgical residents	58			✓						✓	
Daary	1992	UK	Prospective correlation <sup>9</sup>	Surgical trainees	22	✓								✓	
							✓								✓
								✓							✓
Steele	1992	UK	Prospective correlation <sup>10</sup>	Surgical trainees	10			✓	✓				✓		
Wanzel	2002	Canada	Prospective correlation <sup>11</sup>	Surgical residents	37		✓						✓		

Gallagher	2003	Ireland	Prospective correlation <sup>12</sup>	Lap novices; surgeons	96								✓	✓	
Schijven	2004	Holland	Prospective correlation <sup>13</sup>	Surgical residents	33								✓		✓
Stefanidis	2006	USA	Prospective correlation <sup>14</sup>	Surgical residents	19		✓						✓	✓	✓
								✓						✓	
Rissucci	2001	USA	Prospective correlation <sup>15</sup>	Senior surgeons	94	✓							✓	✓	
							✓							✓	
								✓						✓	
Wanzel	2003	Canada	Prospective correlation <sup>3</sup>	Craniofacial surgeons	20	✓							✓	✓	✓
							✓							✓	
								✓						✓	

\* = significant positive correlation; \*\* = significant negative correlation



# Psychomotor Aptitude



# Psychomotor Aptitude

Author	Year	Country	Study Type	Population	N	Method					Outcome				
						Predictor <sup>1</sup>				Outcome					
						GMD	FMD	RT	HSC	Time	Errors	Efficiency	Learning Curve	Rating Scale	
McClusky	2005	USA	Prospective correlation <sup>2</sup>	Medical students	11	✓	✓	✓	✓				✓ <sup>**</sup>		
Ritter	2006	USA	Prospective correlation <sup>3</sup>	Medical students	11	✓	✓	✓	✓				✓ <sup>**</sup>		
Van Herzele	2010	UK	Prospective correlation <sup>4</sup>	Medical students	20	✓				✓ <sup>***</sup>		✓ <sup>***</sup>		✓ <sup>**</sup>	
							✓			✓		✓		✓ <sup>**</sup>	
Scheuneman	1984	USA	Prospective correlation <sup>5</sup>	Surgical residents	42	✓								✓	
Steele	1992	UK	Prospective correlation <sup>6</sup>	Surgical trainees	10		✓				✓ <sup>***</sup>		✓ <sup>**</sup>		
									✓		✓		✓ <sup>**</sup>		
Dashfield	2001	UK	Prospective correlation <sup>7</sup>	Surgical trainees	15				✓			✓ <sup>***</sup>	✓ <sup>**</sup>		
Schijven	2004	Holland	Prospective correlation <sup>8</sup>	Surgical residents	33		✓						✓		
									✓				✓		
Stefanidis	2006	USA	Prospective correlation <sup>9</sup>	Surgical residents	19	✓				✓	✓		✓		
							✓			✓	✓		✓ <sup>**</sup>		
								✓		✓	✓		✓		
Wenzel	2003	Canada	Prospective correlation <sup>10</sup>	Dental students	27		✓			✓		✓		✓ <sup>**</sup>	
				Craniofacial surgeons	20		✓			✓		✓		✓	

<sup>\*</sup> = significant positive correlation; <sup>\*\*</sup> = significant negative correlation

# Video Games

Author	Year	Country	Study Type	Population	N	Method				
						Predictor		Outcome		
						VGE <sup>1</sup>	VGM <sup>2</sup>	Time	Errors	Efficiency
<a href="#">Miskry</a>	2003	UK	Prospective correlation study <sup>3</sup>	Gynaecology trainees	46		✓	✓*		
<a href="#">Grantcharov</a>	2003	Denmark	Prospective comparative study <sup>4</sup>	Surgical trainees	25	✓		✓	✓**	✓

\* = significant positive correlation; \*\* = significant negative correlation

# Conclusion



# Future Research



## Surgical Safety Checklist

**Before induction of anaesthesia** →

(with at least nurse and anaesthetist)

**Has the patient confirmed his/her identity, site, procedure, and consent?**

Yes

**Is the site marked?**

Yes

Not applicable

**Is the anaesthesia machine and medication check complete?**

Yes

# References

1. Society for Industrial and Organisational Psychology, Inc. 2003. Principles for the validation and use of personnel selection procedures, Fourth Ed. Retrieved December 15, 2010, from [http://www.siop.org/\\_Principles/principles.pdf](http://www.siop.org/_Principles/principles.pdf).
2. Randall R, Davies H, Patterson F, Farrell K. 2006. Selecting doctors for postgraduate training in paediatrics using a competency based assessment centre. *Arch Dis Child* 91(5): 444–8.
3. Beard J, Strachan A, Davies H, Patterson F, Stark P, Ball S, Taylor P, Thomas S. 2005. Developing an education and assessment framework for the Foundation Programme. *Med Educ* 39 (8): 841–51.
4. Patterson F, Ferguson E, Norfolk T, Lane P. 2005. A new selection system to recruit general practice registrars: preliminary findings from a validation study. *BMJ* 330 (7493): 711-4.
5. Patterson F, Ferguson E, Lane P, Farrell K, Martlew J, Wells A. 2000. A competency model for general practice: implications for selection, training, and development. *Br J Gen Pract* 50(452): 188–93.
6. Baldwin PJ, Paisley AM, Paterson-Brown S. 1999. Consultant surgeons' opinion of the skills required of basic surgical trainees. *Br J Surg* 86: 1078-82.
7. Cuschieri A, Francis N, Crosby J, Hanna GB. 2001. What do master surgeons think of surgical competence and revalidation? *Am J Surg* 182: 110–16.