Is visuospatial ability of importance for patient safety?

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Objectives

- To assess the learning curve in a laparoscopic simulator

- To investigate if the visuospatial ability correlates with performance in the simulator

Background

- Previous studies have suggested that simulator training improves the surgical result for residents in general surgery and OBGYN

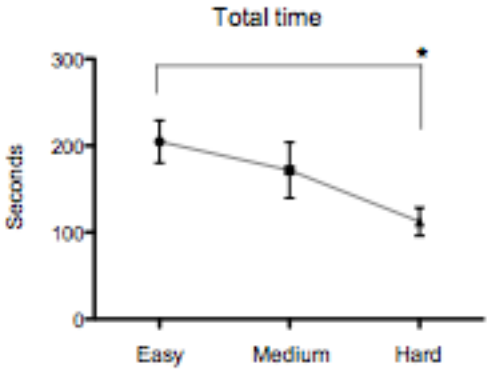
- Previous studies have indicated that the visuospatial ability of novices is correlated to performance in a simulator

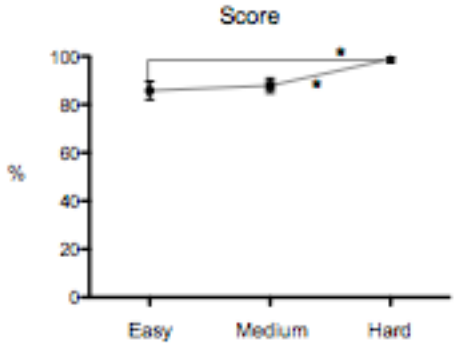
Methods

- Participants were tested for visuospatial ability by the Mental Rotation Test A (MRT-A)
- Participants conducted three consecutive virtual tubal occlusions followed by three virtual salpingectomies
- Performance in the simulator was measured by Total time, Score and Ovarian diathermia damage
- Linear regression was used to analyze the relationship between visuospatial ability and simulated laparoscopic performance

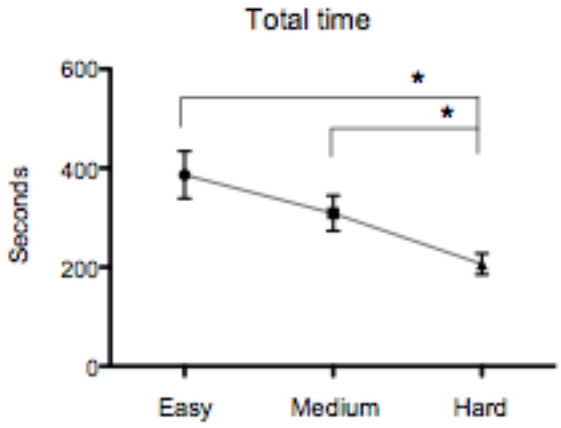
Learning curves

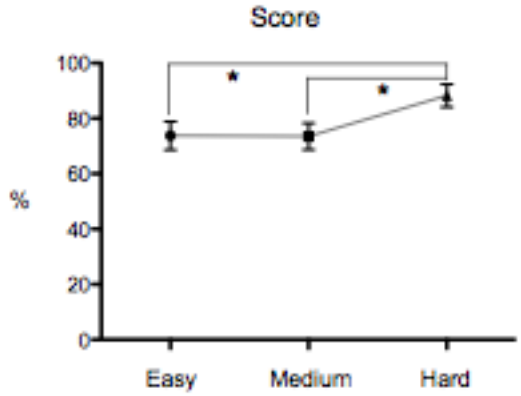
Tubal occlusion

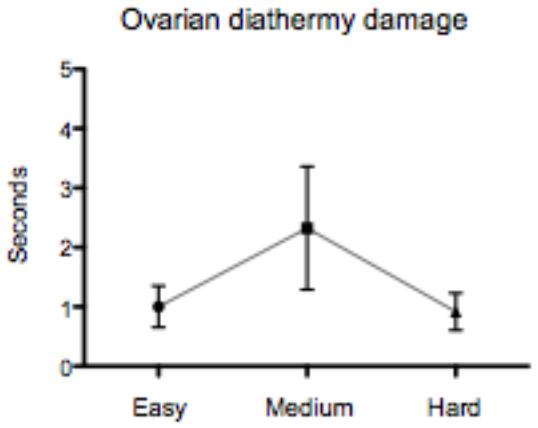




Salpingectomy







Correlations between the visuospatial ability and performance in the simulator

Table 2. Visual-spatial ability measured by MRT-A in relation to gynecological simulation parameters.

Tubal occlusion	**MRT-A**					
	Easy		**Medium**		**Hard**	
	r	*p*	*r*	*p*	*r*	*p*
Total time (s)	-0.30	0.31	**-0.62**	**0.03**	-0.57	0.07
Score (%)	0.31	0.31	**0.57**	**0.05**	0.46	0.15

Salpingectomy	**MRT-A**					
	Easy		**Medium**		**Hard**	
	r	*p*	*r*	*p*	*r*	*p*
Total time (s)	**-0.61**	**0.03**	**-0.64**	**0.02**	-0.43	0.17
Score (%)	0.49	0.09	**0.64**	**0.02**	0.56	0.06
Ovarian diathermy damage (s)	-0.52	0.07	**-0.60**	**0.03**	**-0.65**	**0.02**

Tubal occlusion

- training is most important for the outcome

Salpingectomy

- Total time can be improved independantly of visuospatial ability

Salpingectomy

Ovarian diathermia damage

- Learning curve did not improve
- Correlations indicating that visuospatial ability is of importance for the outcome

Conclusions

- Simulator training improves performance in the simulator and the performance is influenced, partially, by visuospatial ability
- Visuospatial ability is of importance for simulator performance
- Simulator performance is of importance for the surgical result and therby patient safety

Discussion

- How important is the visuospatial ability for patient safety?

- Should surgeons be tested and have individual training programs designed to improve surgical results and enhance patient safety?