

Evaluation of students' abilities to perform the videosurgery techniques

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Every medical student dilemma:

① What specialization should I choose?



② Which can I develop my full potential in?



③ Are these abilities congenital or can I acquire them by training?



◎ The era of videosurgery procedures = bigger requirements of surgical skills



◎ Surgeons vs pilots

◎ Methodes of evaluation

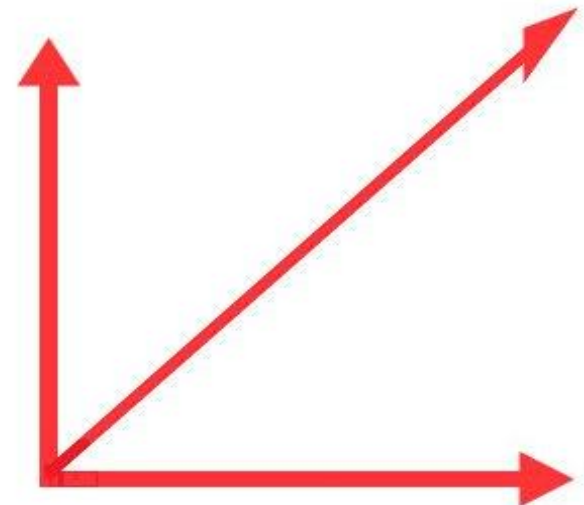


◎ Literature:

Gallagher i wsp. ANZ J Surg. 2008; 78 (4): 282-90

Suleman i wsp. JSLS. 2010; 14 (1) :35-40

Grantcharov i wsp. ANZ J Surg. 2009; 79 (3): 104-7



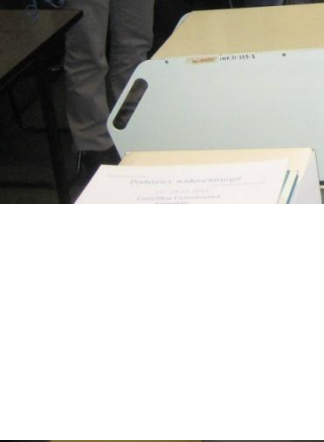
Aim of the study

- ① Search of methods to evaluate predisposition to perform videosurgical techniques
- ① Relation between stereoscopic vision and ability of videosurgical performance
- ① Procuration of abilities by training
- ① Dynamics of the progress and affecting it factors – sex, sight defects, prior experience





Study grup - students of Medical University of Łódź





80 students

from different years

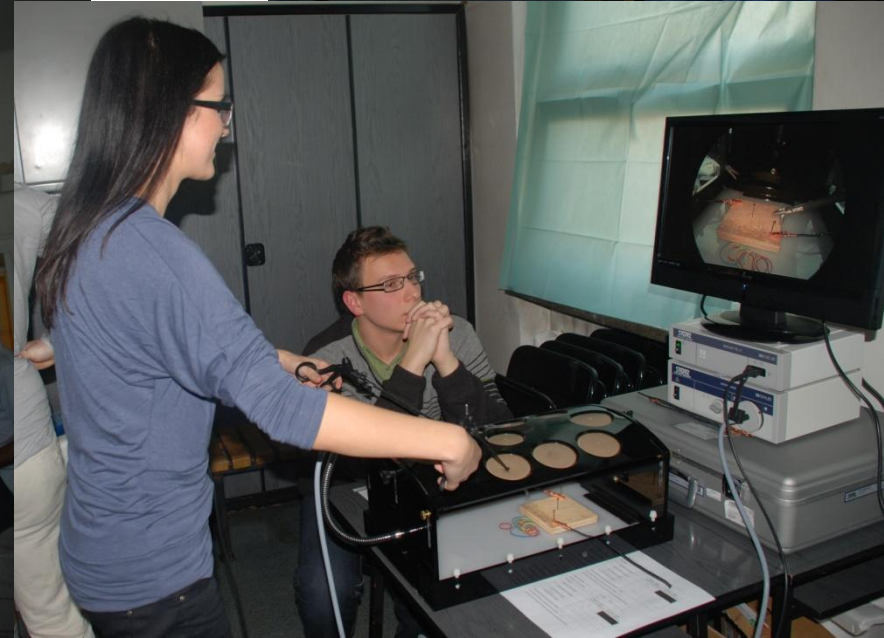


Recruitment method – first come, first served



Examination methods

- 🎯 5 minutes
- 🎯 2 trials
- 🎯 40 minutes training



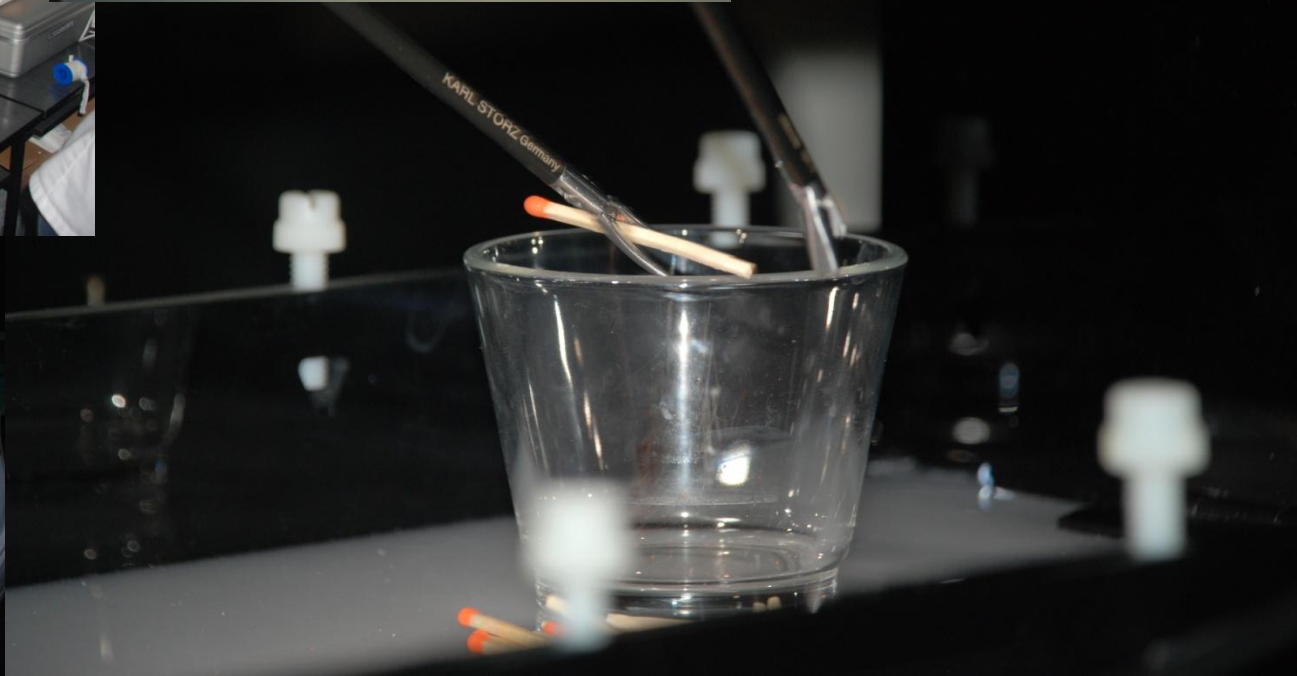
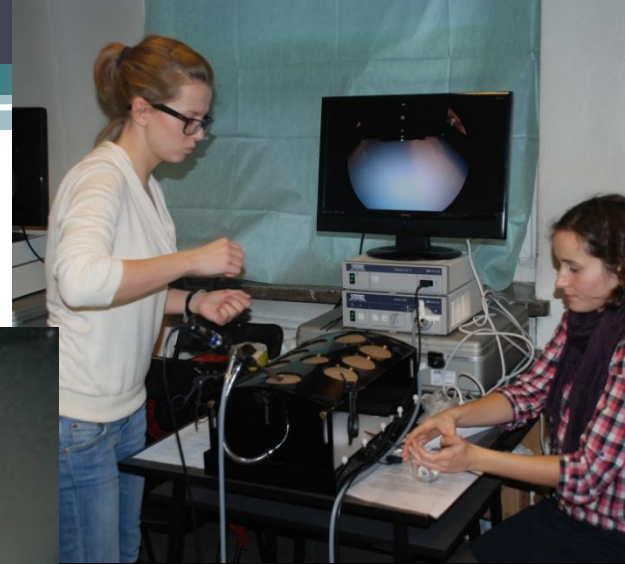
Examination methods

BRICKS



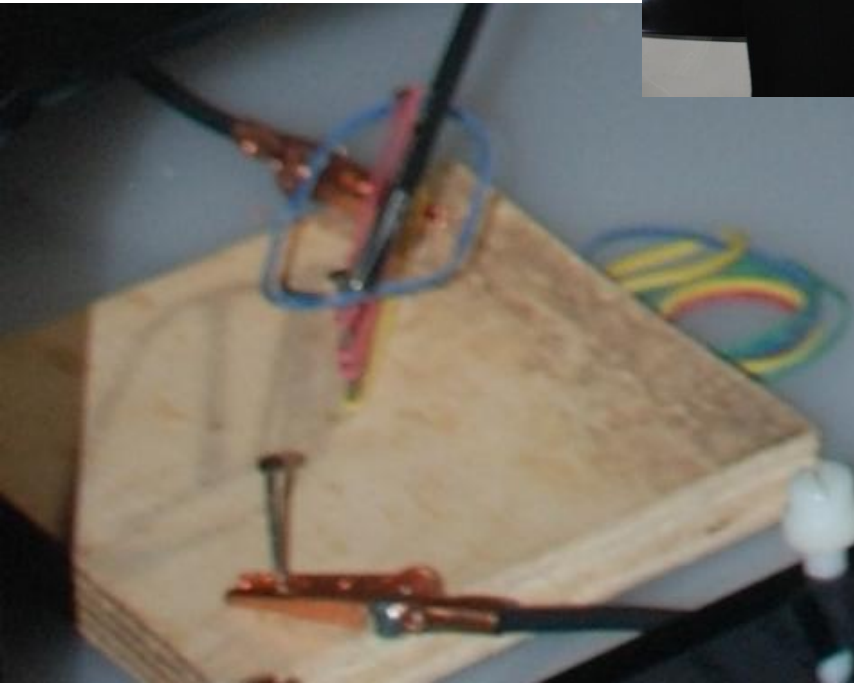
Examination methods

MATCHES



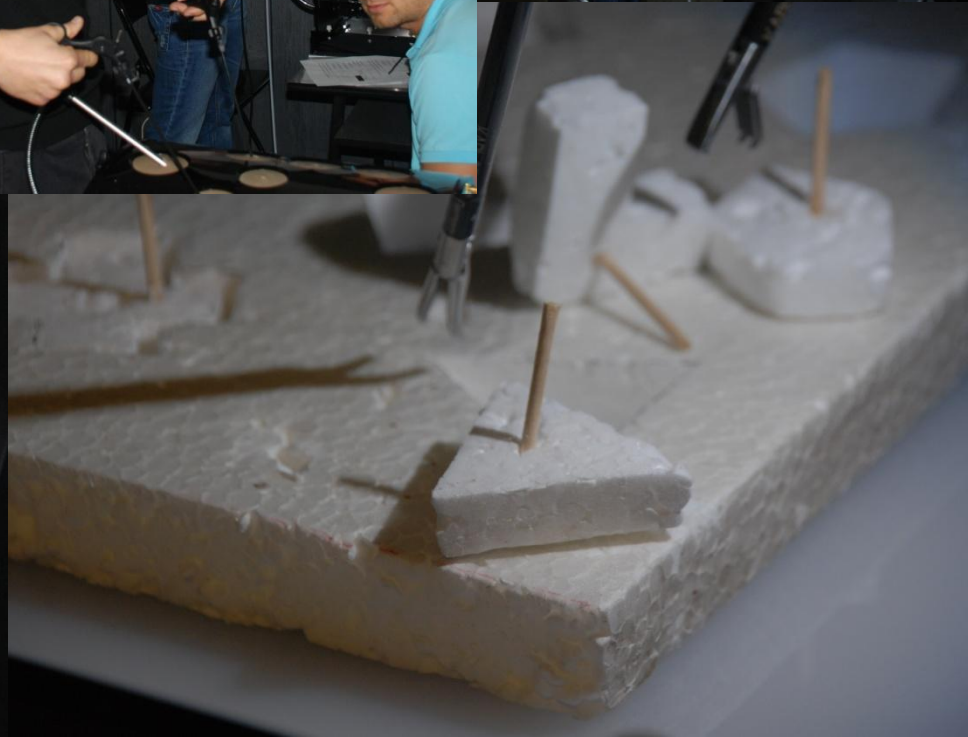
Examination methods

RUBBERS



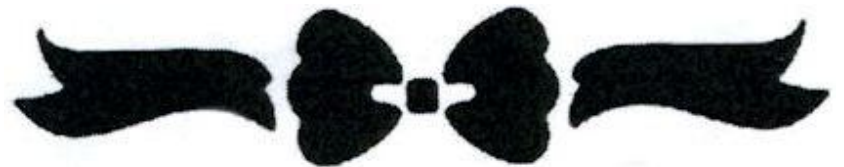
Examination methods

SPONGES



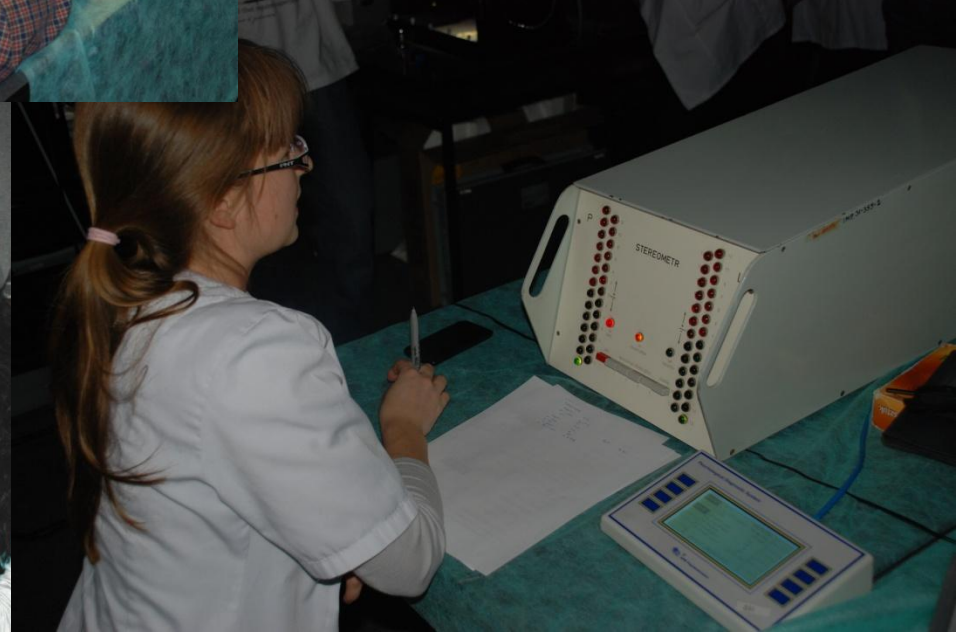
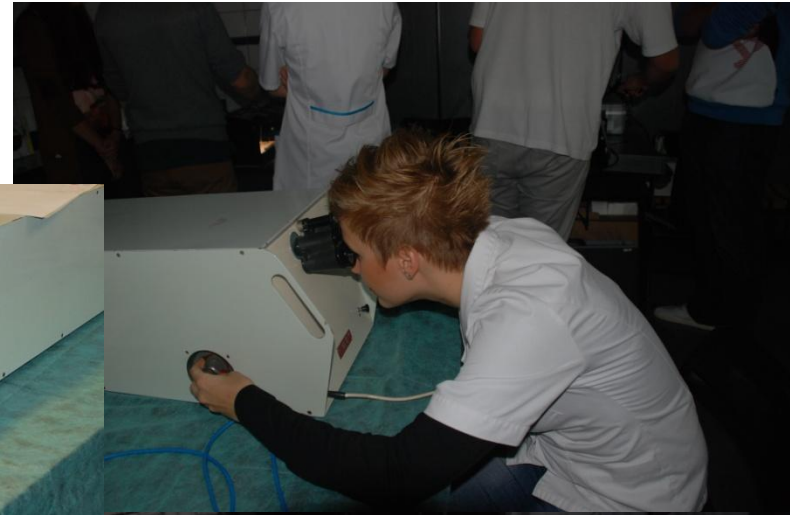
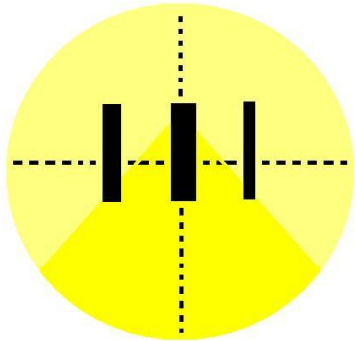
Examination methods

BLIND BOX



Examination methods

STEREOMETRY



Examination methods

THE FLY STEREOTEST



Examination methods

STATISTICAL ANALYSIS

- student's t-test
- Pearson correlation test
- Chi-squared test
- Fisher test

$$t = \frac{\bar{X}_D - \mu_0}{SD / \sqrt{n}}$$

$$E_{i,j} = \frac{\sum_{k=1}^c O_{i,k} \sum_{k=1}^r O_{k,j}}{N}$$

$$p = \frac{\binom{a+b}{a} \binom{c+d}{c}}{\binom{n}{a+c}} = \frac{(a+b)!(c+d)!(a+c)!(b+d)!}{a!b!c!d!n!}$$

$$\rho_{X,Y} = \frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y} = \frac{E[(X - \mu_X)(Y - \mu_Y)]}{\sigma_X \sigma_Y}$$

Results

Group characteristic

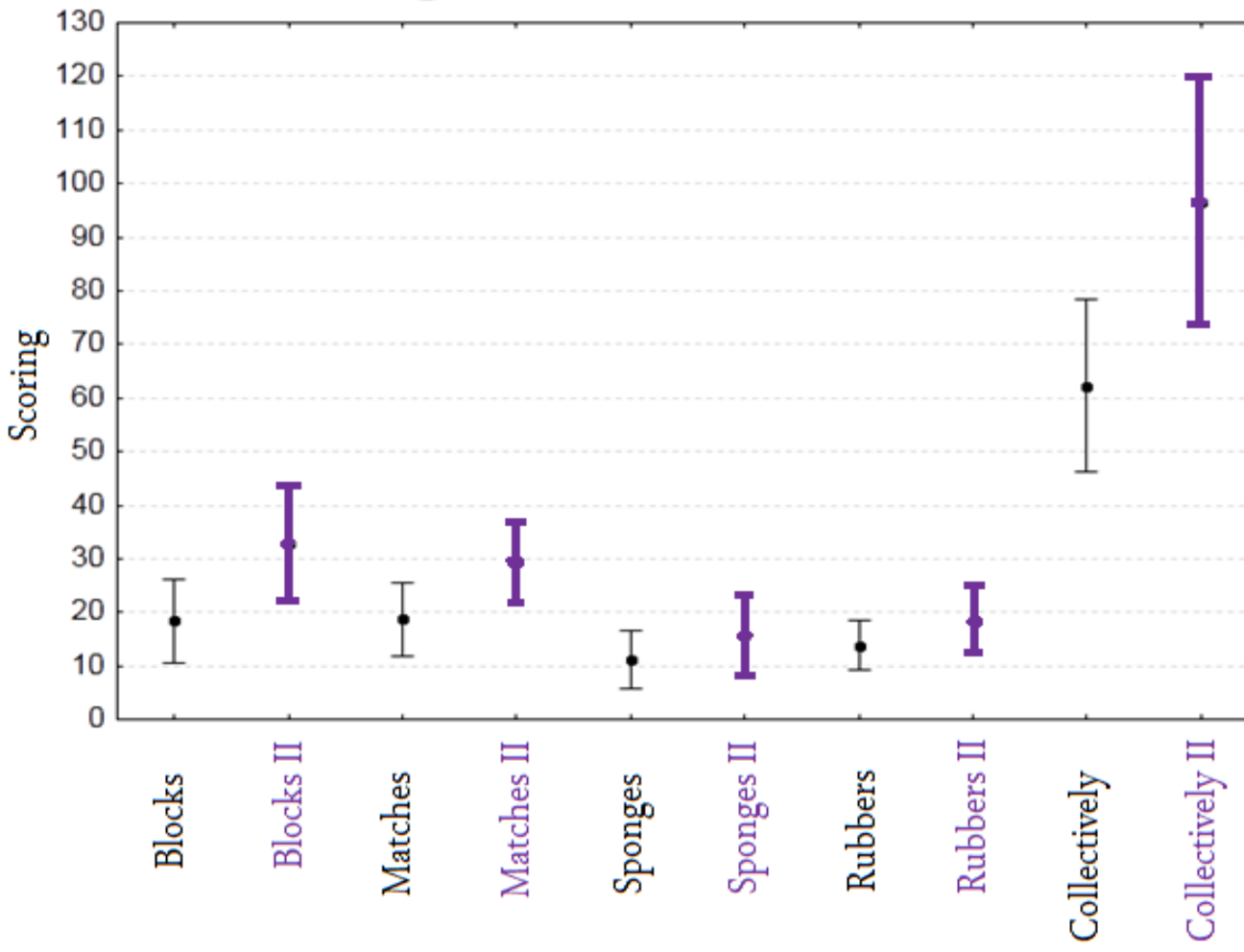


| | N |
|--|-----------|
| Astigmatism | 13 |
| Refraction deffect | 50 |
| Videosurgery experience - observation | 58 |
| Videosurgery experience - assisting | 31 |
| First to practice | 41 |



Results

Detailed scoring and comparison of the effectiveness of training



Results

BEFORE training

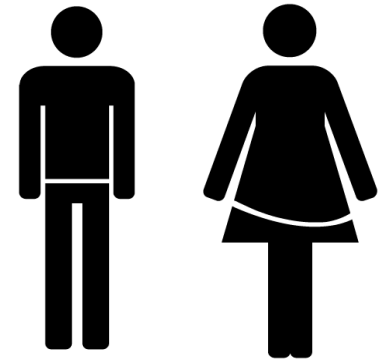
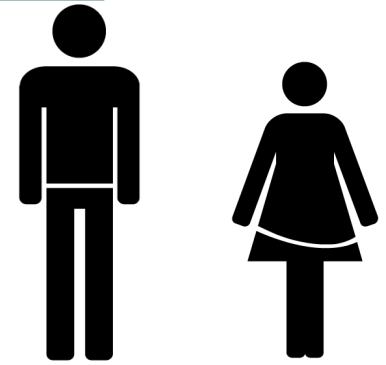
men scored slightly better than women

65 vs 59

AFTER training

the difference decreased

99 vs 94



Results

Students who had the possibility to **observe** videosurgery procedures before the course scored better than those who didn't

BEFORE training → 64 vs 57
AFTER training → 98 vs 94
the difference decreased



Students who could **assist** videosurgery procedures before the course scored better than those who didn't

BEFORE training → 66 vs 61
AFTER training → 102 vs 93
the difference remained

Const



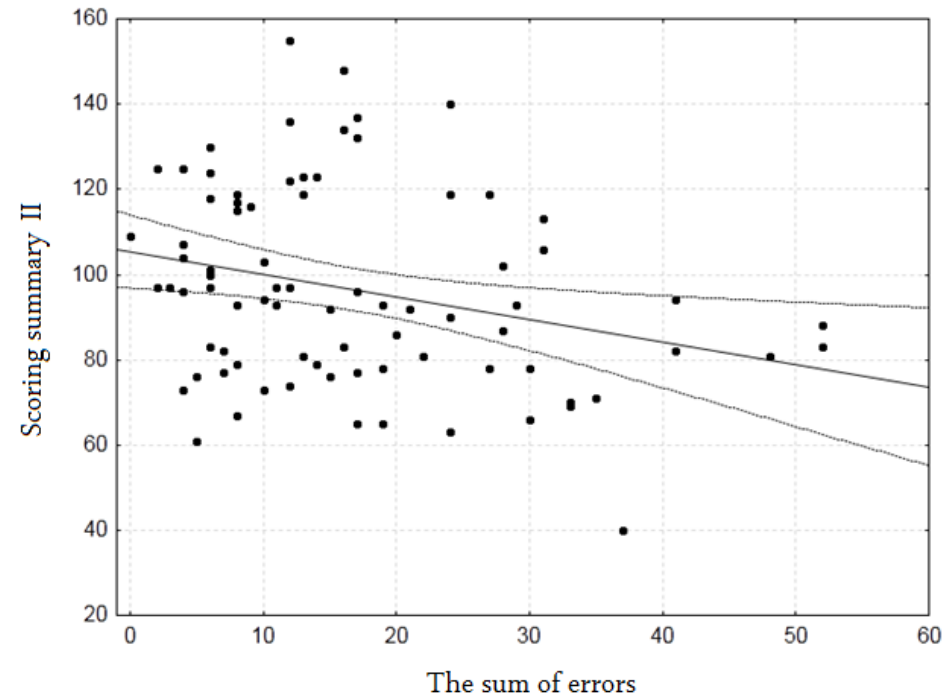
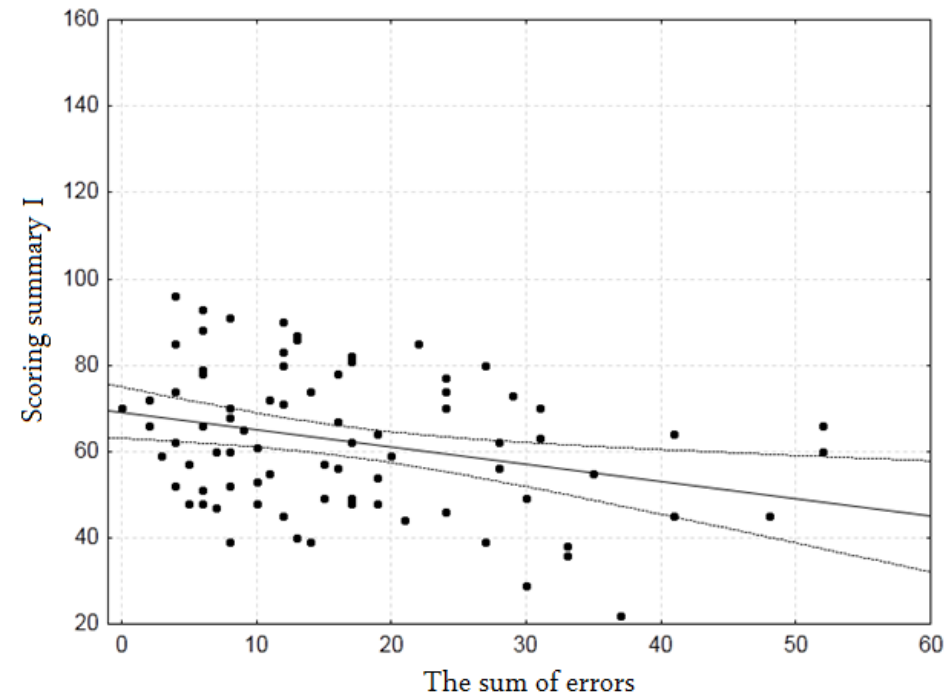
Results



Relation between total stereoscopy mistake and complete score in surgical abilities tests

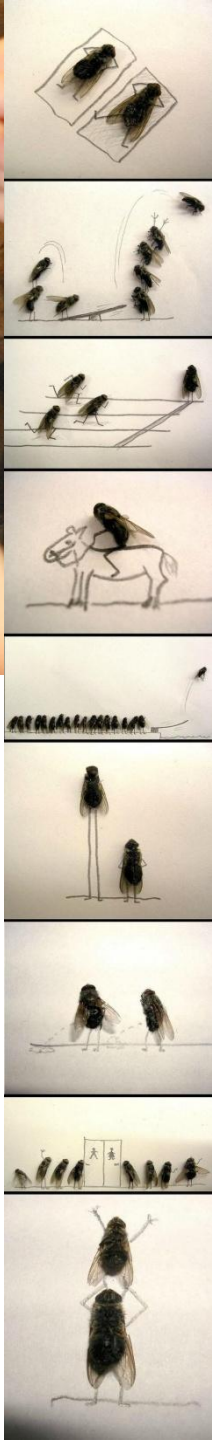
BEFORE training

AFTER training



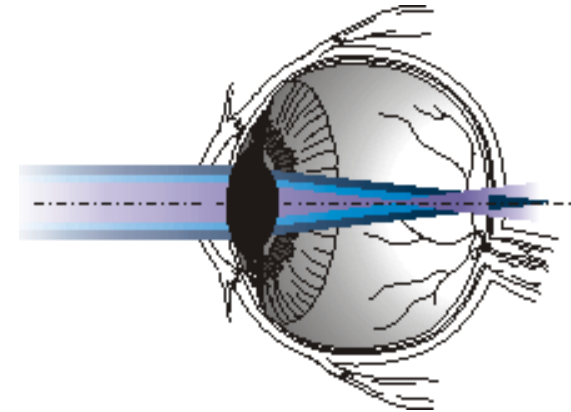
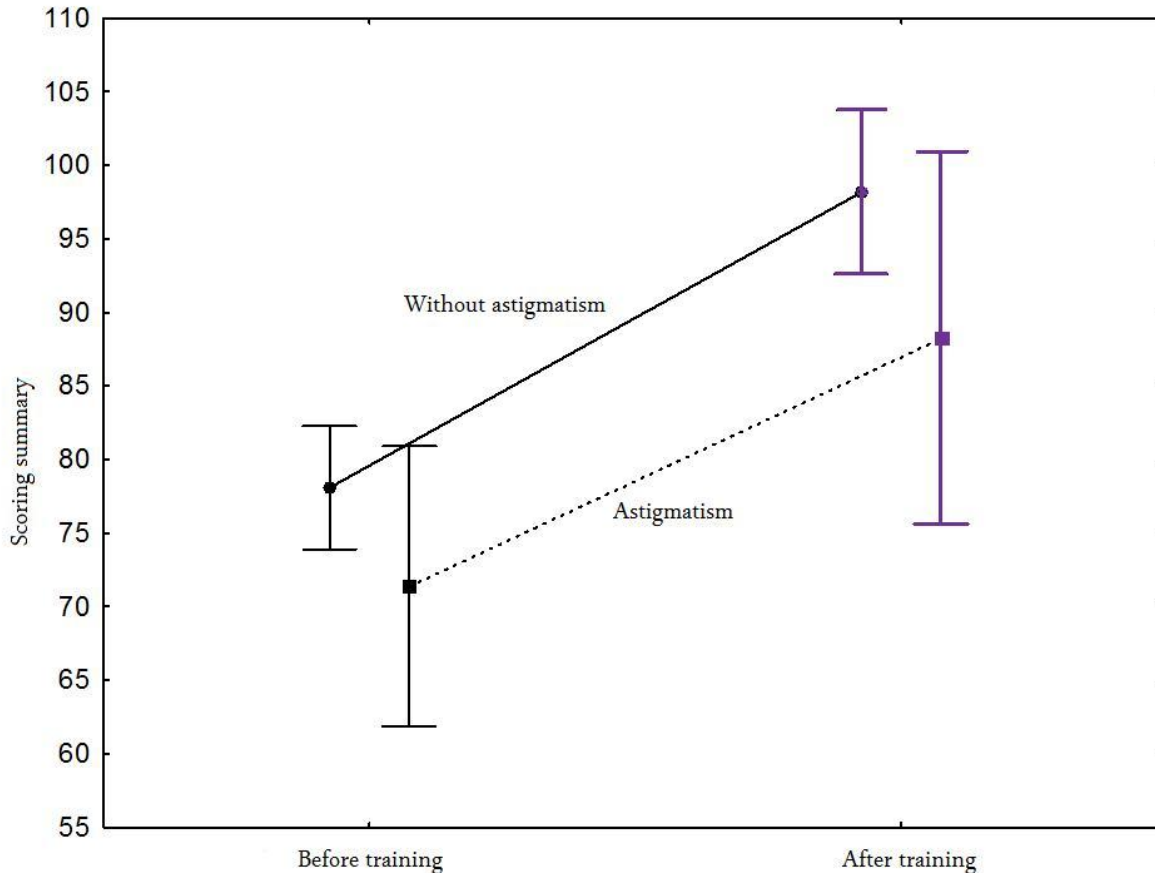
Results

Binocular vision as
fourtlessy performed fly
test – satistical
insignificant better scores
before and after training



Results

Students with astigmatism had lower scores on tests of manual than students without this defect as equivalent before training and after



Conclusion



⊙ There is a statistical correlation between the results obtained in the stereopsis vision tests and the score in tests which evaluate efficiency to use videosurgery instruments.

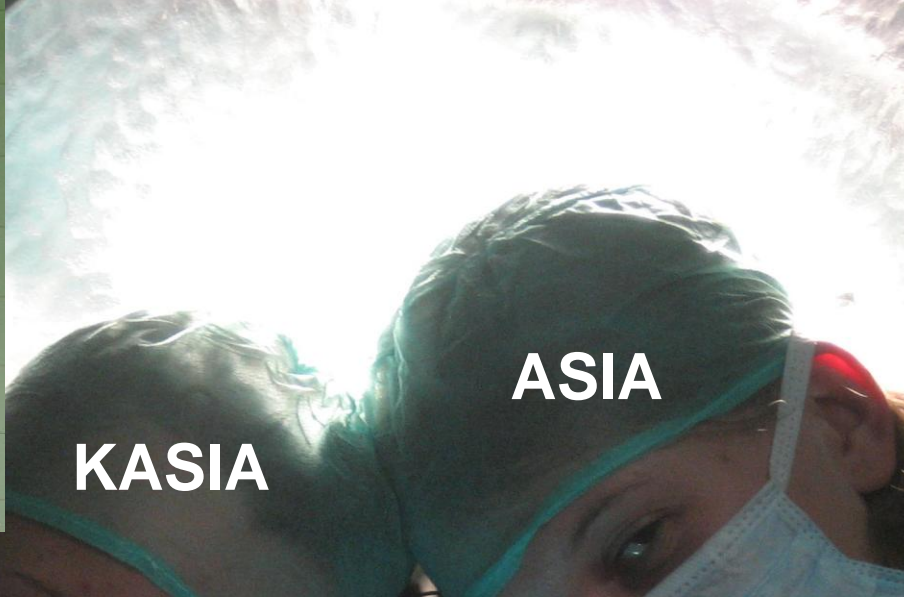
This suggests the possibility to **select a group of tests** for assessing predisposition to perform videosurgery techniques

⊙ Exercises on videosurgical trainers are associated with significant skill **progression** in performed tasks

⊙ The gender distribution **did not** significantly affect the test results of the videosurgery abilities



MAGDA



ASIA



ADAM



KASIA

MARYSIA

Thank you for your attention