

# The Retina Society 2020



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## ASSOCIATION OF WEIGHT-ADJUSTED CAFFEINE AND $\beta$ -BLOCKER USE WITH FELLOW PERFORMANCE DURING SIMULATED VITREORETINAL MICROSURGERY



- **No financial support.**
- **No conflicts of interest for any author.**



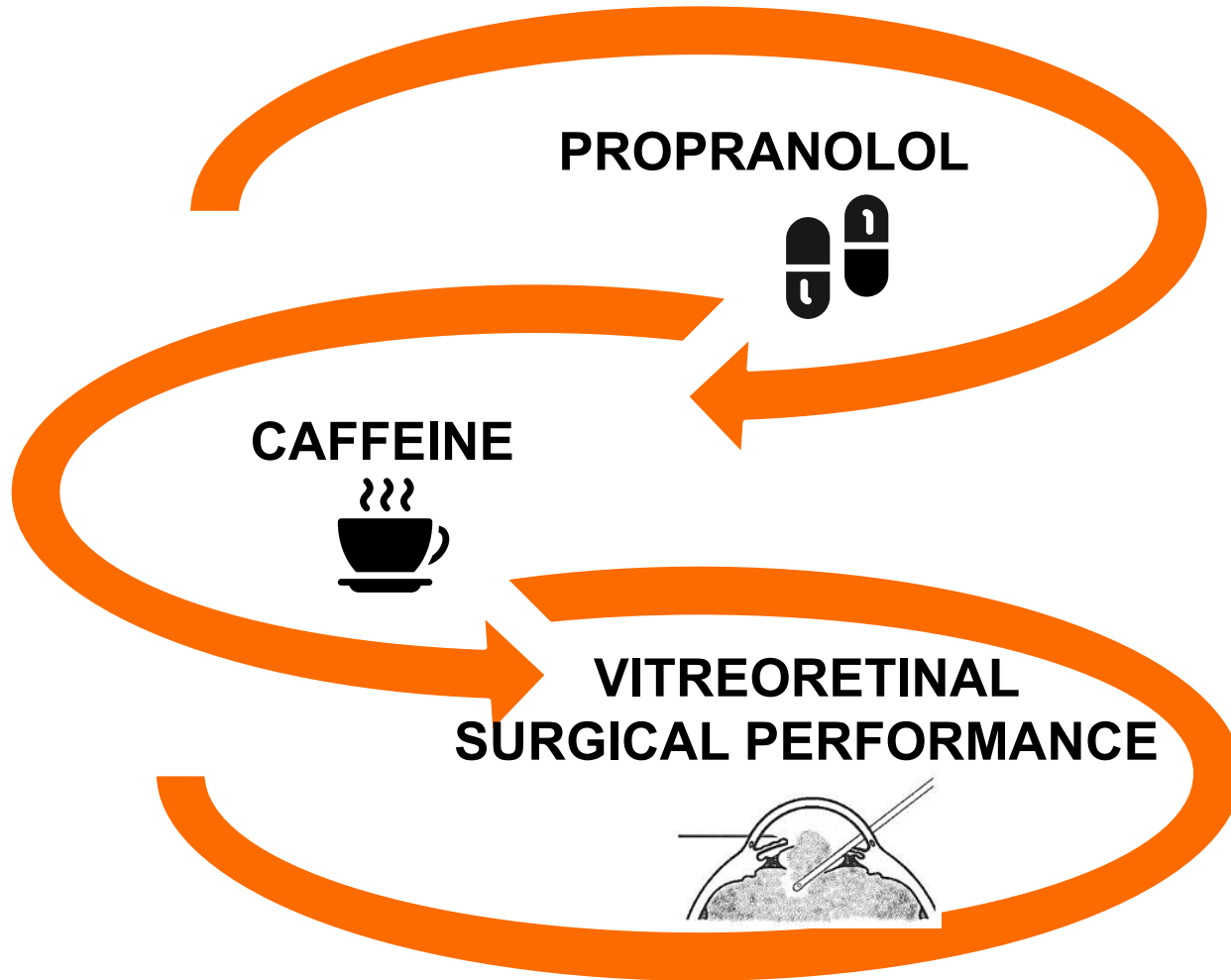
**Question:** Is there an association of weight-adjusted doses of caffeine alone, a  $\beta$ -blocker (propranolol) alone, or a  $\beta$ -blocker and caffeine combination with surgical performance by novice vitreoretinal surgeons?

**Findings:** Cross-sectional study of 15 vitreoretinal surgical fellows, propranolol alone was associated with improved surgical performance compared with caffeine alone and the combination of caffeine and propranolol.

**Meaning:** Caffeine is associated with worsening of surgical performance among novice vitreoretinal surgeons; however the addition of propranolol is associated with improved performance.



## PURPOSE



# PROSPECTIVE CROSS-SECTIONAL STUDY

## METHODS

### INCLUSION CRITERIA



< 2 yrs real surgical experience



> 2hrs experience with Eyesi

**15 vitreoretinal surgery fellows were enrolled**

### EXCLUSION CRITERIA



Having any previous  
systemic disease\*



caffeine intake >  
two 8-ounces cup/ day

**Before the study: ECG + 0.6 mg/kg propranolol**



## METHODS

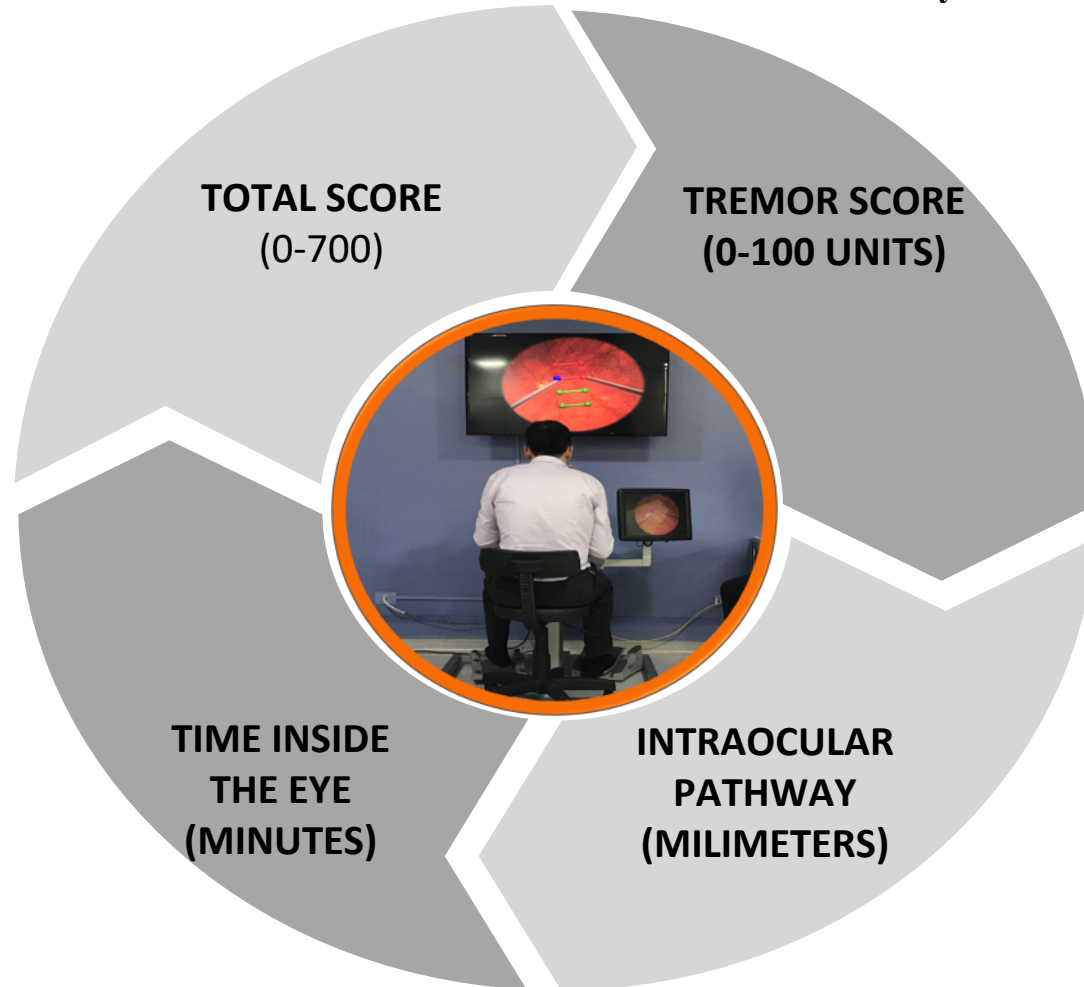


Eyesi (VRmagic GmbH, Mannheim, Germany)



# TASKS FOR VITREORETINAL SURGERY AT THE Eyesi™

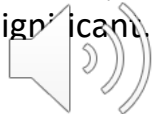
## METHODS



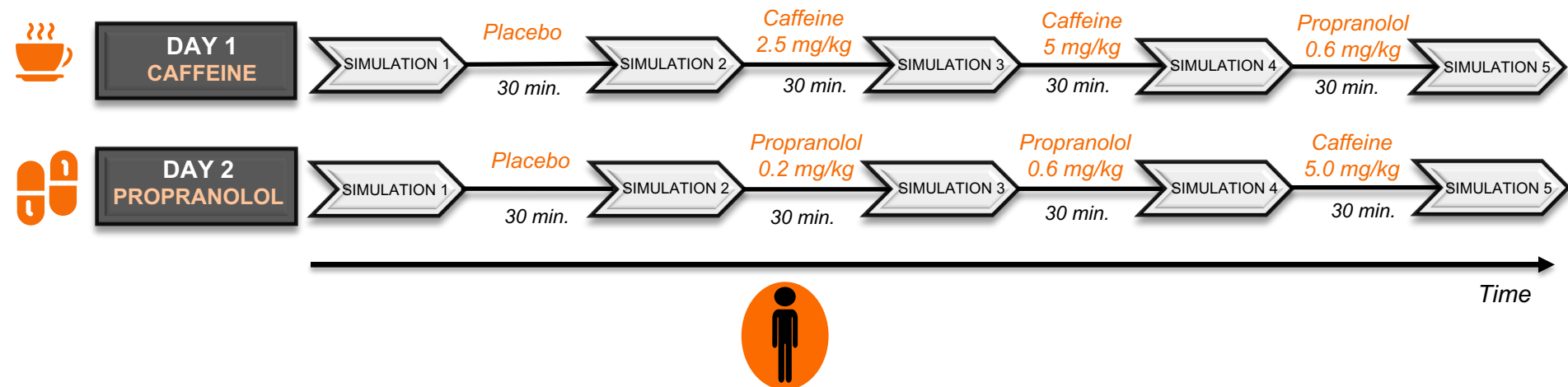
### \*STATISTICAL ANALYSIS

#### Multiple comparisons:

- 1-Non- parametric Friedman test;
- 2-Dunn-Bonferroni post hoc test;
- Two-sided;  $P < 0.05$  was significant.



# STUDY PROTOCOL/RESULTS



Blood pressure and heart rate

15 VR fellows (60% men)/2 hours training 1 day before study protocol

Age:  $29.6 \pm 1.4$  years

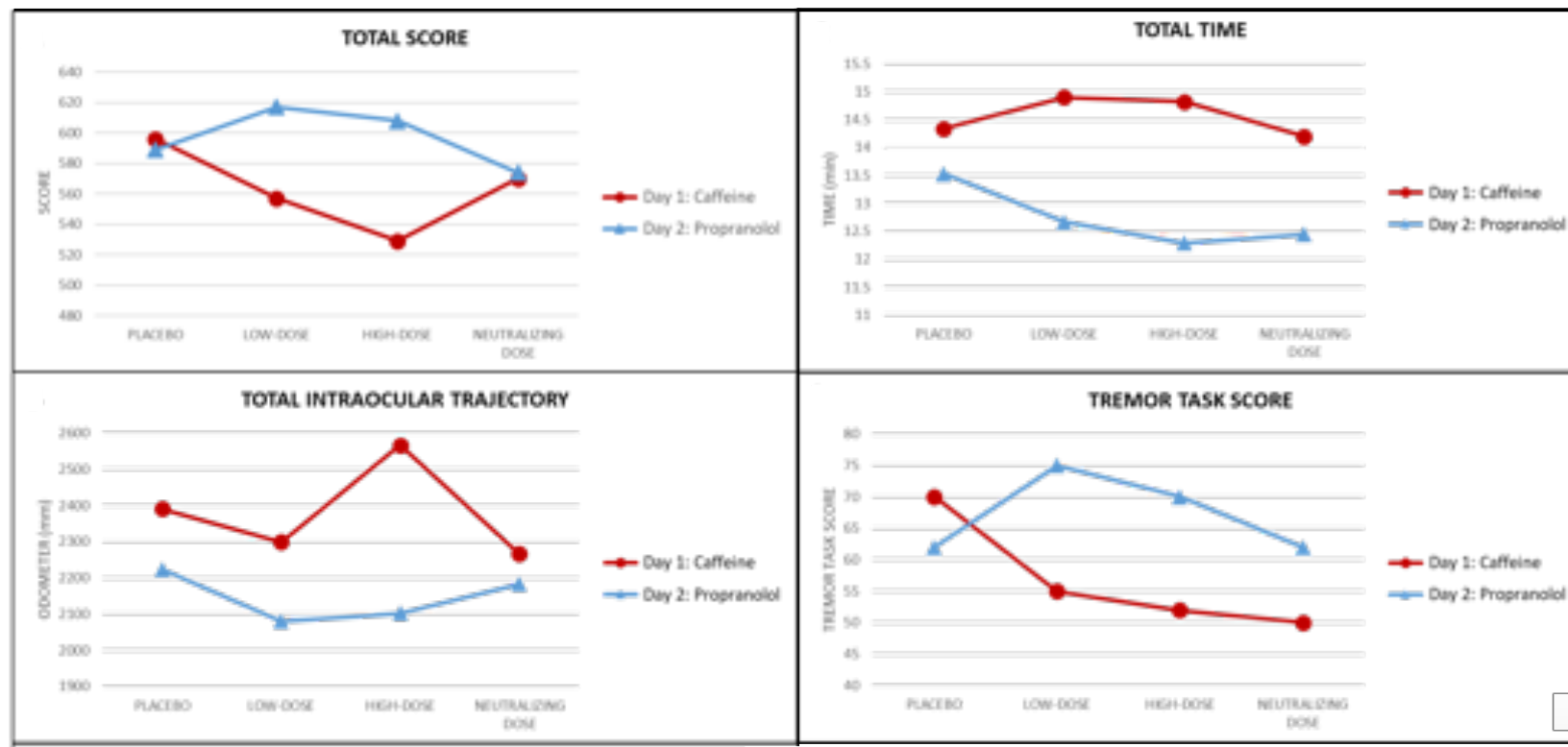
Training (1 day before) x simulation (data collection) were similar ( $p>0.05$ )





# RESULTS AFTER EXTERNAL EXPOSURE DURING THE 2-DAY ANALYSIS

## RESULTS



# SURGERY 1



**12 MONTHS POSTOP.: BCVA<sub>os</sub> = 20/40**



## CONCLUSIONS



### **CAFFEINE**

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Caffeine ingestion by novice vitreoretinal surgeons before microsurgical procedure worsened their surgical performance; surgeons had benefit from partially neutralizing dose of propranolol.



### **PROPRANOLOL**

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Isolated propranolol ingestion was associated with enhanced microsurgical performance by novice vitreoretinal surgeons.



### **CAFFEINE + PROPRANOLOL**

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The effect of caffeine and propranolol combination in surgical performance was not better than the performance of surgeons at baseline and it was worse than low-dose of propranolol alone.



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**THANKS YOU FOR YOUR ATTENTION!**

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