ASSOCIATION OF WEIGHT-ADJUSTED CAFFEINE AND β-BLOCKER USE WITH FELLOW PERFORMANCE DURING SIMULATED VITREORETINAL MICRO SURGERY

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**Question:** Is there an association of weight-adjusted doses of caffeine alone, a β-blocker (propranolol) alone, or a β-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

PROPRANOLOL

CAFFEINE

VITREORETINAL SURGICAL PERFORMANCE

PROSPECTIVE CROSS-SECTIONAL STUDY

15 vitreoretinal surgery fellows were enrolled

INCLUSION CRITERIA
- < 2 yrs real surgical experience
- > 2hrs experience with Eyesi

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)

TOTAL SCORE (0-700)

TIME INSIDE THE EYE (MINUTES)

INTRAOCULAR PATHWAY (MILIMETERS)

TREMOR SCORE (0-100 UNITS)

*STATISTICAL ANALYSIS
Multiple comparisons:
1-Non-parametric Friedman test;
2-Dunn-Bonferroni post hoc test;
Two-sided; $P < 0.05$ was significant.

Blood pressure and heart rate

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

Age: 29.6 ± 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

![Graphs showing results after external exposure during the 2-day analysis.](image-url)
SURGERY 1
12 MONTHS POSTOP.: BCVAos = 20/40
Caffeine ingestion by novice vitreoretinal surgeons before microsurgical procedure worsened their surgical performance; surgeons had benefit from partially neutralizing dose of propranolol.

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

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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