What's your best time? Chronometry in the learning of medical procedures

Reference: Pusic MV¹, Brydges R², Kessler D³, Szyld D¹, Nachbar M⁴, Kalet A⁵. What's your best time? Chronometry in the learning of medical procedures, Medical Education, May 2014, 48 (5): 479-88

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Tags
Clinical domain
General

Educational domain
Teaching and learning
Undergraduate
(medical school)
(Post)graduate
(Residency training)

Background
Measuring time to complete a task is often incorporated into simulation. Mostly it is used as surrogate marker of competence in simulation-based assessment. In Cook et al.’s landmark systematic review of learning + simulation (KeyLIME Podcast Episode #44) measuring time was rarely used to promote learning. Yet, this seems counterintuitive to how we use time in other "simulations" that are part of our everyday life….video games. The score clock in the corner of my son’s video games, definitely provides incentive to master a task and maximize efficiency.

Purpose
The purpose of this narrative review was to determine if incorporation of measurements of time (i.e. chronometry) improves learner performance.

Type of paper
Narrative review
Key Points on the Methods

The search strategy is reproducible (n=267), but subject to bias, as none of the PRISMA guidelines were explicitly followed. Essentially it was a simple PubMed search without safeguards to ensure the reliability of the articles chosen or the data selected.

Key Outcomes

Chronometrics correlate with learning; time to completion correlates with other markers of education success. Very few studies incorporate chronometry into instructional methods to promote learning.

Time may be an effective metric in deliberate practice simulation-based learning.

Positive effects of chronometry for learning
  - Increase learner arousal
  - Increase motivation
  - Promote over learning
  - Promote adaptive efficiencies
  - Promote metacognition

Positive effects of chronometry for assessment
  - Sensitive discrimination
  - Determine consistency
  - Promote efficiency as a metric

Negative effects of chronometry
  - Distraction from core objectives
  - May impair developmental arc
  - Context specificity

Key Conclusions

The authors conclude...“that chronometry has been underutilized in the learning of medical procedures. Although faster is not always better in medical procedures, clinicians are often under time pressure and therefore need to balance accuracy with speed... [Chronometry] has the potential to improve the conditions for deliberate practice and self-regulated learning.”

Shout out

Thanks to Dr. Kevin Eva for recommending this paper.