In the world of esports (competitive video games), hardware and software configurations are optimized for winning. In many games this means minimizing latency ('I see you before you see me') and maximizing refresh rate ('I see your move more accurately'). Most esports athletes and competitive players ensure this by using high-end hardware (computers, monitors, and GPUs) while turning off superfluous in-game graphics features. By doing so, one can achieve a latency of 15 ms and a refresh rate of 240 Hz. These figures are remarkable, but do they benefit competitive game players? Gamers have made anecdotal claims favoring 240 Hz, but no scientific studies have yet demonstrated the competitive benefit of modern display technologies.

We conducted two pilot studies that compare esports performance using common display settings. The task was to click on a moving target (visual size: 1 deg, speed: 5 deg/sec, direction changing at 1.5 times per sec). We compared the effect of refresh rates (60, 120, 240 Hz) using an LCD monitor. We also held the refresh rate fixed to 240 Hz and added artificial latencies of 0, 4, 8 ms, creating average latencies similar to 240, 120, 60 Hz conditions. We found that refresh rate provides improved task performance that cannot be fully explained by the latency reduction alone.