Game of Controllers: The Future of Robotic Surgery Is Here

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Complications of robotic-assisted surgery are on the rise, partly due to surgeons not receiving proper training. Using the current Da Vinci (DV) surgical system, 150-3,000 surgeries must be performed to achieve proficiency. To accelerate learning and improve performance, a new system was developed replacing the conventional Da Vinci controls with Nintendo Joycon (NJ) controls. The system was tested using NJ and the DV control systems, with two study groups (gamers n=6 and non-gamers n=6), in three simulated skills assessment tasks taken from the training curriculum for robotic surgery: round incision task, camera targeting task, and pegboard task. The simulation results were used to calculate Fundamentals of Robotic Surgery Skills Assessment (FRS) scores and learning rates. The results indicate that FRS scores and learning rates had improved significantly ($p<0.05$) for all three task types. Based on the data collected in this study, using a Nintendo Joycon control system improves overall skills assessment scores by 559% and accelerates learning by 335%. The data collected indicates that implementing a Nintendo Joycon control system will significantly accelerate learning and improve performance.

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