Study: Motor skills learned by practice

October 6 2005

Washington University biomedical engineers in St. Louis have demonstrated how people use experience to improve performance.

Kurt Thoroughman, a Washington University assistant professor of biomedical engineering, and Jordan Taylor, a doctoral student, tested a dozen volunteers who played a video game that involved a robotic arm.

Thoroughman and Taylor found the subjects learned different levels of the game in just 20 minutes of training over varying environmental difficulties.

The people participating in the study had to make reaching movements while holding a robotic arm whose perturbing forces changed directions at the same rate, twice as fast, or four times as fast as the direction of movement -- therefore exposing subjects to environments of increasing complexity across movement space.

Subjects learned all three environments and learned the low and medium complexity environments equally well. They also learned the high complexity environment, although not as well as the other two.

"We've demonstrated the richness of motor training determines not only what we learn, but how we learn," Thoroughman said. "We've shown for the first time that the learning process itself is flexible."

The research appeared in the Sept. 28 issue of Nature Neuroscience.