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Exercise-Intelligence

October, 2011: Skill Acquisition Study

Introduction:

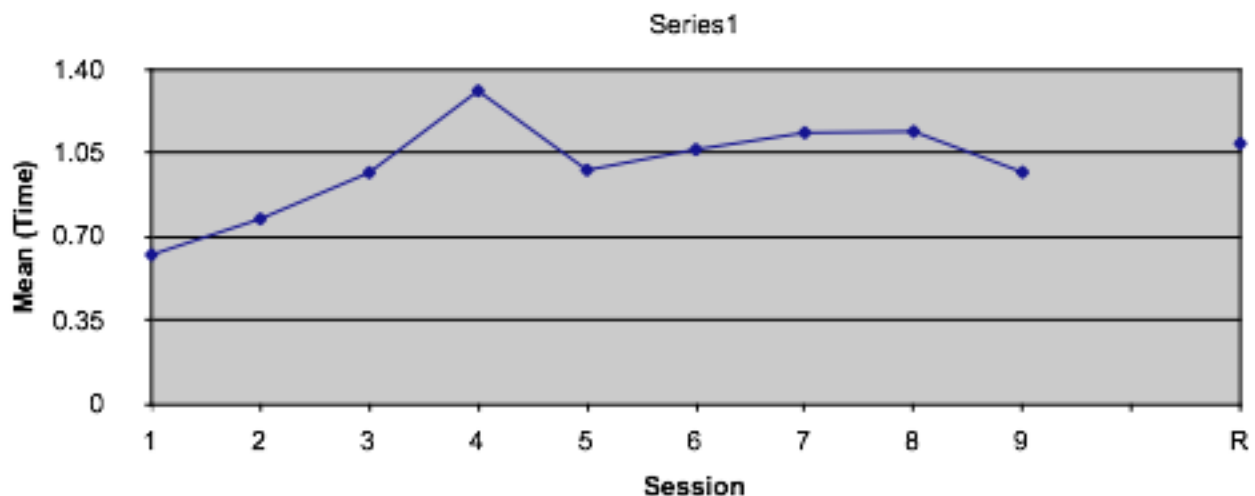
The purpose of this study was to observe learning of a novel, goal directed functional task, without investigator feedback or intervention. The specific task performed in this study was a Frisbee spinning task, specifically the subject accelerated a Frisbee, bottom side up, on his index finger. Using Gentile's taxonomy (Gentile, 2000), this skill would be classified as a body stationary task with object manipulation, in addition to being a closed skill with no intertrial variability. The investigator hypothesized that as the subject became more skillful at the task, the subject would be able to keep the Frisbee spinning for consistently longer periods of time. In addition to the overall time increase, the investigator also expected to see that the subject would perform this task with a greater degree of movement economy, specifically using less shoulder, elbow and wrist flexion and extension as well as less trunk and lower body movement in order to keep the Frisbee spinning.

Review of Recent Findings:

Many studies suggest that motor learning is best accomplished through the use of variable training. Although overall performance may show less error during the practice phase using a blocked training schedule, performance on retention and transfer tests, both markers that learning has occurred, tend to show better performance by subjects using a variable practice schedule. Researchers conclude that subjects using a variable practice schedule may be more engaged in cognitive problem solving during the practice phase, leading to a more well defined schema that can be scaled and adapted to other conditions.

Results:

Subject did display a quantitative time increase in ability to spin frisbee as well as a qualitative increase in motion economy in retention test, inferring learning had occurred.



Results can be interpreted to evaluate the necessity of feedback for skill acquisition, as well as the meaning of blocked practice. Although the subject received absolutely no feedback during the study, the subject was able to use a combination of subconscious and conscious control schemes to increase task skill. The importance to practice of these findings may be that perhaps, context dependent, clinicians should let subjects have more time to attempt to acquire skill acquisition before intervening. In addition, although this schedule would be considered blocked by conventional definition, the investigator challenges whether it is accurate to identify this as so, as the subject, on his own accord, attempted several grip variations on the frisbee during the course of the study in order to increase performance time. Thus, introducing variability into his practice schedule. The investigator believes that this is a significant reason as to why the subject performed well on the retention test. The investigator suggests an alternate version of blocked practice as a scheme that involves suggesting the subject specifically attempt to do the exact same skill, using the exact same method repeatedly.