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Effects of Feedback Content on Bivariate Error Measures in a Throwing Task

Ben Meyer. Shippensburg University, Shippensburg, PA

Numerous studies have confirmed that performance variability is an important variable in the study of skill learning. However, a large number of investigations have used inappropriate measures of variability. **PURPOSE**: The purpose of this study was to assess the effects of feedback content on accuracy and variability in a throwing task, using appropriate performance measures. **METHODS**: Twenty-four participants performed Koosh ball tosses to a floor-mounted target located at a 6 meter distance, using a blindfolded, non-dominant underhand throwing technique. On the first day of testing, 10 blocks of 6 tosses were performed, with participants receiving feedback about the 3 best or 3 worst tosses in each block. Half of the participants were made aware of the type of feedback (aware best (AB) or aware worst (AW)), while the other half were unaware (unaware best (UB) or unaware worst (UW)). On the second day of testing, retention and transfer (3 meter distance) tests were performed (with no feedback). Radial error (RE) and bivariate variable error (BVE) were used to assess accuracy and variability, respectively. **RESULTS**: Accuracy and variability values were similar across practice blocks in all feedback conditions (see Figures 1 & 2). In the transfer tests, participants receiving feedback about their worst trials had smaller error values. **CONCLUSION**: The two-dimensional error measures used in this study should continue to be used in future research projects.

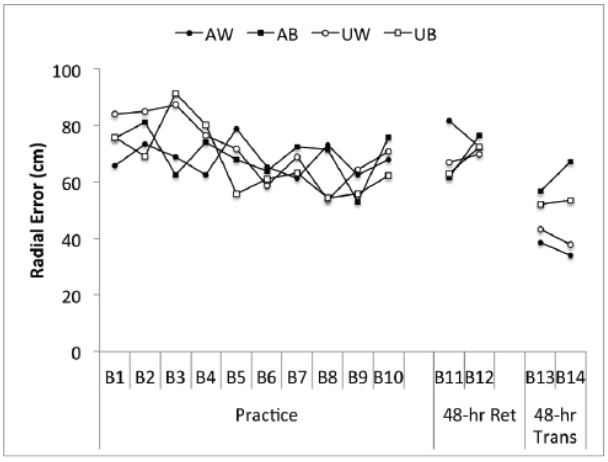

Figure 1. Radial error for practice, retention, and transfer tests.

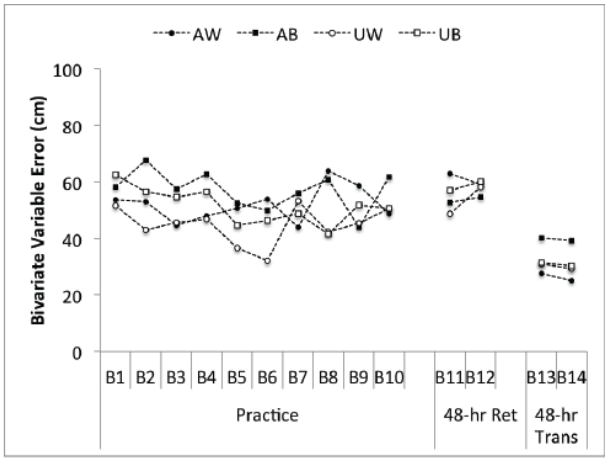

Figure 2. Bivariate variable error for practice, retention, and transfer tests.