

## The Effect of Performance Cues

### What Was the Question?

Evidence has shown that verbal and visual performance cues are useful in helping the learning process. These cues benefit most students by improving their performance at a faster rate. This occurs because the cues allow the learner to retain small pieces of information at a time, which helps them understand important performance components.

Indoor rock climbing is a life-long activity that is becoming increasingly popular in schools, so it is important for instructors to convey critical information to learners in the best possible way. The primary purpose of this study (McNamee & Steffen, 2007) was to determine the effects of instructional cues on college students' rock-climbing performance, and the secondary purpose was to create a content analysis of indoor rock climbing.

### What Was Done?

The study included 42 college students (18 males and 24 females), ages 18 to 27 years old, from two different indoor rock-climbing classes. The two groups employed in this study were created based on course enrollment. The control group (no cues = NC) contained 22 participants (12 females and 10 males) and the treatment group (cues = C) included 20 participants (12 females and 8 males). Both groups were taught by two different instructors for 14 days on a 30-foot tall, indoor climbing wall with 12 routes of various difficulty levels. All participants were taught the same basic rules and techniques for rock climbing, but the C group learned 12 cues while the NC group received no cues during instruction. Participants were pre- and posttested on their climbing ability using a modified version of the American Sport Climbing Federation's scoring system. Test and retest procedures were used

to examine the reliability of participants' scores, and strong consistency was reported (intraclass correlation (2, 1) = .97). A content analysis was conducted by developing a literature-based list of 20 critical cues for indoor rock climbing, which was then ranked by 10 professional rock-climbing instructors. The 12 most-agreed-upon cues were used in this study.

### What Was Found?

A one-way ANOVA was used to compare pretest scores of the NC and C groups, as well as the genders within each group, showing no significant between-groups difference in rock-climbing performance,  $F(1, 38) = 2.08, p = .06$ . A 2 (Gender) x 2 (Condition) x 2 (Test) ANOVA RM test revealed a significant interaction between Test and the C group,  $F(1, 38) = 4.54, p < .05$ ;  $ES = .11$ . Two key findings were revealed after the instructional period: (1) the C group performed significantly better than the NC group, and (2) females who received instruction with cues showed a significant increase in scores,  $F(1, 38) = 10.94, p < .01$ ;  $ES = .22$ .

### What Does the Study Mean?

These findings support previous research (Fronske et al., 1997; Masser, 1993; Ziegler, 1987) that has documented the value of providing learning cues to improve performance in different skills and activities. Brief phrases or simple words can increase learning and act as a stimulus for each part of a skill. The fact that females in the C group improved more than the females in the NC group supports the idea that females may learn more and improve skills more when provided with learning cues. The authors suggested two possible explanations for this gender effect: (1) the C females had more room for improvement, or (2) anthropometric differences in the

females in this study may have influenced the findings. The use of pretest group comparisons minimizes the potential accuracy of these explanations. It appears reasonable that the C group females could have responded powerfully to the provision of learning cues during instruction.

Indoor rock climbing, which enhances performance in fitness components, including muscle strength and endurance, flexibility, body fat percentage, and cardiovascular endurance, is a great fitness sport for people of all ages. This study "points to the uniqueness of teaching rock climbing as a physical activity" (McNamee & Steffen, 2007, p. 6) and supports the provision of learning cues to maximize performance, particularly in college women's indoor rock climbing.

### Reference

- Fronske, H., Blakemore, C., & Abendroth-Smith, J. (1997). The effect of critical cues on overhand throwing efficiency of elementary school children. *The Physical Educator, 54*, 88-95.
- Masser, L. S. (1993). Critical cues help first-grade students' achievement in handstands and forward rolls. *Journal of Teaching in Physical Education, 12*, 301-312.
- McNamee, J., & Steffen, J. (2007). The effect of performance cues on beginning indoor rock climbing performance. *The Physical Educator, 64*, 2-10.
- Ziegler, S. G. (1987). Effects of stimulus cueing on the acquisition of groundstrokes by beginning tennis players. *Journal of Applied Behavior Analysis, 20*, 405-411.

—Abstracted by Melissa Hodgson, undergraduate health and exercise science and teaching major at the College of New Jersey, Ewing, NJ.