Toward Evidence-Based Nursing Education: Deliberate Practice and Motor Skill Learning

The development of motor skills and the ability to perform procedures in the clinical setting are critical outcomes of nursing education programs. Yet the instruction of these skills in nursing has received minimal attention recently, even though nurse managers and new graduates themselves often report a lack of skills for entry into practice. Students learn multiple skills in their beginning nursing course, typically in a laboratory setting; they observe the skill, practice it until they can perform it accurately, and are assessed on their competency. Although students may be able to perform the skill at the time of assessment, skills are retained only if they are practiced.

Learning a motor skill is a permanent change in students’ capability to perform the skill (Schmidt & Lee, 2005; Wulf, Shea, & Lewthwaite, 2010). With learning, students retain the skill and can transfer it to practice situations that differ from those in the controlled learning laboratory. In developing motor skills, students progress through three phases: cognitive (understanding the skill and how to perform it accurately), associative (refining movements and becoming more consistent in performance), and autonomous (practicing until the skill is automatic and the learner does not need to think about each step) (Schmidt & Lee, 2005). Progressing through these phases of learning requires deliberate practice: (1) repetitive performance of cognitive or motor skills, (2) rigorous assessment of those skills, and (3) specific, instructional feedback on performance (Ericsson, 2004; Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson, Whyte, & Ward, 2007; McGaghie, Issenberg, Petrusa, & Scalese, 2006, 2010).

To learn skills, students need opportunities to practice them repetitively and receive feedback to guide their performance. Without deliberate practice, many skills taught in a beginning nursing course or later courses in the program are not likely to be retained. A meta-analysis of 53 studies on skill retention and decay revealed a significant loss of skills if not practiced or used (Arthur, Bennett, Stanush, & McNelly, 1998). Some skills begin to decay immediately after training; when skills are not practiced or used for 1 year, the average participant performs at less than 92% of their original skill level (Arthur et al., 1998). Some of the skills taught early in a nursing program may not be used for 1 year or longer; if they are not practiced within that time, they will not be retained.

Research findings have documented the outcomes of deliberate practice in acquiring, improving performance of, and retaining skills among medical learners (McGaghie et al., 2006, 2010). Fewer studies have been done in nursing. In a study on deliberate practice of cardiopulmonary resuscitation (CPR) psychomotor skills, nursing students not only retained their skills, but also gradually improved their performance over 12 months (Oermann, Kardong-Edgren, & Odom-Maryon, in press). Students (N = 606) in 10 schools of nursing were randomly assigned to an experimental group in which they had 6 minutes of monthly practice on a voice advisory manikin, which provided feedback and prompts to guide their performance of CPR, or to the control group with no practice. In the control group, ventilation skills deteriorated at 3 months and compression skills at 9 months after students’ initial training and certification in Basic Life Support, documenting the rapid loss of motor skills if not used or practiced.

Given the evidence on motor skill learning, nurse educators should identify psychomotor skills that are used frequently in clinical practice and are critical for students to develop, such as managing various intravenous lines and conducting an assessment; focus instruction on those high use and relevant skills; and ensure that students have opportunities for repetitive practice as they progress through the curriculum. Those skills need to be practiced beyond the course in which they are first taught. Practice can be in the learning laboratory, integrated in simulations, or in clinical settings, but it needs to be planned to avoid skill decay and for students to refine performance, become more consistent in their movements, and perform the skill automatically. Only with practice can students develop their expertise.

In the study by Oermann et al. (in press) on CPR skill performance, students practiced only 6 minutes per month, but that brief practice was sufficient to avoid the loss of skills. Once students can perform skills accurately, practice can be self directed. The concept of high use not only guides faculty in deciding what skills to teach and practice repetitively, but also in determining skills no longer relevant to include in their programs. There is no time in a nursing program for instruction of skills that students will rarely use or have limited opportunities to practice.
Practice is needed not only for the motor components of a skill, but also for the cognitive components. Students need to understand the skill and be able to make decisions about it in clinical practice. Which skills are appropriate to use with a particular patient? When should a skill not be performed—for example, when should a urinary catheter not be inserted? How can skills be safely adapted for patients, depending on the conditions or setting? These cognitive aspects cannot be taught and evaluated once—students need to practice the decision making that should accompany a motor skill as they progress through the curriculum.

Turning our attention to how best to teach motor skills in nursing is not turning back the clocks to an earlier time in our history when the focus was on technical skills. Instead, it is paying attention to the current evidence on deliberate practice and skill retention and using that evidence to improve instruction of motor skills in nursing education.

References


Marilyn H. Oermann, PhD, RN, FAAN, ANEF
Professor and Chair
Adult and Geriatric Health
School of Nursing
University of North Carolina at Chapel Hill
The author has no financial or proprietary interest in the materials presented herein.
doi:10.3928/01484834-20110120-01