DEVELOPING SKILLED PERFORMANCE OF LUMBAR SPINE MANIPULATION

To the Editor:

I read with interest the recent study by Triano et al. comparing manipulative performance in 2 groups of chiropractic students. I am curious, however, as to how much of the learning effect observed in the experimental group to attribute to the use of the simulator. The experimental group practiced 3 procedures daily (1 cervical, 1 thoracic, 1 lumbar) with 10 repetitions, while the practice history of the control group was described as “ad lib.” Are the authors able to elaborate on the practice history of the control group, since the observed differences between groups may have been the result of the experimental group practicing more, regardless of simulator use? Second, motor skill performance often increases with increased variability of practice. Is it possible to attribute differences between groups to increased practice variability in the experimental group?

Brian A. Enebo, DC
8015 Sundown Trail
Parker, CO 80134

REFERENCES

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In Response:

We appreciate the interest of Dr Enebo in our manuscript on the development of skilled performance of spinal manipulation. He asks 2 relevant questions that deserve considered answers.

The first issue he raises is the question of whether or not the simple provision of rehearsal, regardless of the use of the simulator, could explain the results we observed. It is certainly true, and the literature will support, that rehearsal does ingrain performance by memorization and rote reproduction of movement patterns where the movement patterns are not required to be substantially different. In the circumstances of this experiment, we are talking about students within a chiropractic college who are under the rules and regulations of the educational program. Under such circumstances, the students would be required to rehearse without a simulator by use of another student or person as the subject on whom they performed the rehearsal. Since class time occupies the majority of the day, there is little opportunity for rehearsal time. After hours, extracurricular rehearsal using volunteer subjects is generally discouraged, as it falls outside the purview of institutional authority or supervision. Moreover, exit interview suggests that there was not significant effort to perform rehearsal outside of class time in the control group.

In addition, the issue of rehearsal naturally leads to the question, “What are you rehearsing?” The use of the feedback provides guidance as to what is being rehearsed, and it is known from the literature that directed feedback is necessary to reach a specified end goal.

Finally, additional data that we have collected and will be the subject of a future publication is very strongly suggestive that feedback creates nearly instantaneous change in performance and can be directed to specific end goals rather than being a random response.

The second question he raises is with respect to the issue of practice variability. It is known that variation in practice and variation in circumstance of practice actually enhance learning skills. In fact, the ultimate definition of skillful performance is the ability to take learned procedures and apply them in an unfamiliar context, resulting in successful outcome. By nature of the rehearsal requiring manipulative efforts using the simulator across multiple procedures in the same sessions, one can argue that there is some sense of variation that exists. At this stage of our investigation, whether it is variation that results in a change in performance levels, regardless of the nature of the device that permits rehearsal to occur, is really beyond the scope of this particular study. The purpose of this study was to determine if we can measure change by any particular form or process designed to obtain improvements in skill. What is clear from our data is that skill changes do evolve. It is now the task of the members of this profession to determine what the targets for skill development are and to determine the best means to obtain them.

The issue of skill is not a moot question nor is it a natural expectation of graduation and licensure. However, within the current expectations of professional performance, legitimacy, and sovereignty, the ability to assert and certify greater skills in performance can be expected to take greater precedence in future health policy decisions.

John J. Triano, DC, PhD
Texas Back Institute
6300 W Parker Rd
Plano, TX 75093