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Riding a bicycle, playing a violin, and returning to work following a COVID break

Benjamin A. Alman

Other Contributors:

Jocelyn R. Wittstein

Michael P. Bolognesi

A recent article in JBJS queried if additional training might be required before resuming surgery following downtime from the COVID pandemic (1). We were surprised about the author's supposition that additional training is needed following downtime of a month or two. Many orthopaedic surgeons take time off for vacations, traveling fellowships, medical problems, or family issues. We are not aware of evidence that these physicians exhibited a decay in surgical skill when returning.

There are different types of memory and neural control of motor skills. Motor skills are regulated by procedural memory which is more resilient to decay than many other neural functions (2). Specific neuronal synapses are responsible for this memory type (3). It is this memory type that allows us to ride a bicycle after not riding for many years once the skill is mastered. Surgery is sometimes compared to a virtuoso musician, and their need for constant practice for them to maintain their level of skill. However, functional MRI studies show that profession musicians have increased primary auditory cortex activity (4), something that is not seen in surgeons. As such, observations from virtuoso violinists probably does not pertain to most surgeons.

Data from surgical skills studies suggests that the technical ability to do surgery is similar to riding a bicycle, with long term retention of skills (5,6,7) . Indeed, studies show that spacing out skills training provides better long term skill recall (8,9). The nature of most surgical schedules involves repeated bouts of performing surgery a limited number of days of the week for many months at a time, such that our own practices are really a pragmatic form of spacing out surgical skills training. This routine exposure to spaced surgical skills training makes surgeons particularly resilient to skill decay when faced with a longer period of time away from operating. Typical orthopaedic practice patterns are therefore likely to reinforce

skill retention during an absence from surgery. Thus, the evidence suggests that orthopedic surgery is like riding a bicycle and a few months of absence is unlikely to be associated with any decrement of skills.

This is in contrast to someone who has a major medical problem or who has been out of practice for durations of close to a year. In these instances, a return to work retraining program is warranted (see <https://www.ama-assn.org/practice-management/career-development/resources-physicians-returning-clinical-practice>).

Taken together, the bulk of evidence for surgical skills studies and from neuroscience studies of motor function, suggests that one or two months out of work for COVID, a family issue, medical leave, traveling fellowship, or a vacation, does not need to be followed by retraining. At Duke we have continually monitored our surgical cases as we started operating again coming out of COVID. We have not observed any obvious issues suggesting that outcomes have been negatively affected after our whole Department had time off from surgery. Orthopedic surgery seems to be more like riding a bicycle than like playing a violin, and this is important to ensure we are providing safe and effective care to our patients as a specialty.

Disclaimer: e-Letters represent the opinions of the individual authors and are not copy-edited or verified by JBJS.

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Article Author Response

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Article Author(s) to Letter Writer(s)

We greatly appreciate the thoughtful and well-researched comments from Dr Alman and his co-contributors about our recent opinion piece, in which we mused about what possible challenges a two to three month "layoff" from routine surgery might pose for an orthopaedic surgeon. However, we think that some readers might have misunderstood or overlooked the simple message we were trying to convey.

We are both major league baseball fans and thus picked the analogy of "spring training" in the title of our essay. Major leaguers do not forget how to catch or hit a ball after the "off-season", but, nevertheless, use "spring training" to restore rhythm to their skills. Orthopaedic surgeons do not forget gross anatomy or routine surgical approaches, but discussion about rustiness of finely tuned surgical skills after months away from the O.R. is what we hoped to (and did) achieve. Keep in mind, there was talk of "ramping up" surgery to meet upcoming demands from the long lockdown of elective cases. In light of personal experiences with layoffs, a word of caution about "jumping out of the blocks" too quickly was offered.

Never did we suggest that orthopaedic surgeons require any sort of mandatory "retraining" after an eight to twelve week absence from elective procedures. Our message was simple: think about what this layoff might mean for you and your surgical team and consider a gradual (and measured) re-start of elective surgery. We have privately heard from two surgeons that they (and their OR teams) were "shaky" and not efficient during their first few sessions of elective surgery. It will be interesting for both academic and private practice surgeons to evaluate their results and complications over the next three to four months to see if anything has changed.

Orthopaedic surgeons and ballplayers are humans, not robots. Attention to an enforced and prolonged hiatus in routine is worth this respectful conversation. Maternity leave was not part of our thought process when writing this opinion article. We certainly admire those surgeons who have experienced maternity leave without issue.

Robert Schultz and Paul Lachiewicz