

Editorial Commentary: The Grapefruit: So Much More Than an Annoying Breakfast Item—A Valuable Tool for Arthroscopic Simulation Training



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Abstract: As our industry is continually developing more technologically advanced and expensive virtual training equipment, the grapefruit may represent an economic and accessible approach to arthroscopic simulation. This won't replace simulators, but it could become an important tool in the armamentarium of arthroscopic educators as it provides inexpensive haptic feedback necessary to create the muscle memory pathways for the improvement of arthroscopic skills.

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I have never been much of a grapefruit fan. I do not like it as a juice for breakfast, cut up for a snack, or (worst of all) mixed into any type of cocktail. However, after reading “The Grapefruit: An Alternative Arthroscopic Tool Skill Platform,”¹ I have a newfound respect for this fruit. Molho, Sylvia, Schwartz, Merwin, and Levy have demonstrated that something as simple as a piece of fruit can serve as a valuable training tool for arthroscopy when used appropriately.

In a time where virtual reality and virtual simulators, which are not without their own issues, get top billing for their “coolness” factor, it is refreshing to know we are still exploring economic alternatives to train tomorrow's surgeons. From experience managing our own virtual arthroscopy tower, I am amazed at how many times we have encountered technical difficulties leading to trainee frustration. Having written a lot about simulation training,²⁻⁴ I think we have made tremendous strides in using this technology to help train our residents. However, there is still a long way to go. I believe that in order to be a truly effective simulation tool, it needs to be, and this may be shocking to some, as close to the real experience as possible. No matter how good the animation is, if moving the instruments do not replicate how it feels

while in the knee or shoulder or other joint, then its utility will be diminished. Yes, I said diminished, not useless. Indeed, all these hand-eye coordination drills, which virtual simulators are very good at, have been proven in some way to assist in improving arthroscopic skills.^{3,5-10} However, at the current time, these simulators are costly, with prices over \$100,000 after all the “bell and whistles” have been added. In an era of cost containment strategies, the argument of a simulator saving money in the long term has been used against the high cost of cadaver training—the ultimate in reality training. Cadaver training will never be replaced but it can be augmented with simulator training, box training, and, I would contend, “grapefruit training.” It provides the ability to experience triangulation training with appropriate haptic feedback lacking in traditional box trainers, which is critical as this creates the muscle memory pathways required for continued improvement of arthroscopic skills.

Will the grapefruit replace virtual simulators? No. Some simulators do give the benefit of allowing one to move the leg to gain access to the compartments of the knee, which is what occurs in a typical arthroscopic knee procedure. How this will work into traditional training programs remains to be seen. Some combination of all these technologies in various amounts would seem to be the ideal. Box trainers, virtual simulators, cadaveric labs, and now grapefruits. This article presents a very effective way to teach arthroscopic triangulation. So, think again before you throw out that

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grapefruit—it may become a vital teaching tool for tomorrow's arthroscopists.

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