As forecast by Editor-in-Chief Thomas Kaminski in the previous issue,1 this special issue of Athletic Training & Sports Health Care specifically involves the emergency management of suspected cervical spine injuries in sport. In particular, the studies included in this issue all involve investigations in managing a suspected spine injury in the equipped athlete in the sports of football and lacrosse.

Research investigating the techniques and tools for efficiently removing helmets and shoulder pads from athlete-patients with a suspected spine injury is not a “new” area of inquiry.2 What is new, however, is an evolving paradigm shift surrounding when this equipment ought to be removed. For almost as long as the research in this area has been conducted, the recognized procedure for managing a suspected cervical spine injury in sports has been to transport these athletes with their equipment in place, except for removing the facemask to allow access to the airway. This was formalized by The Inter-Association Task Force for the Care of the Spine Injured Athlete in 2001,3 while also popularizing an “all-or-none principle” approach to managing the equipped athlete with a potential cervical spine injury. The 2009 NATA Position Statement4 on this topic also recommended that football athletes be transported with equipment in place and facemask removed, but allowed for circumstances in which the equipment should be removed prior to transport and acknowledged that research was lacking in other sports such as lacrosse and ice hockey.

Now we find ourselves in 2015 with an impending revision to the Inter-Association Task Force for the Care of the Spine Injured Athlete document that, among other things, states that, when deemed necessary and appropriate by lead medical personnel, protective athletic equipment may be removed prior to transport to a primary emergency facility by medical personnel familiar with equipment removal.5 Understandably, there is some angst and apprehension about what is perceived as such a radical shift in our health care approach for this population of patients. Why the apparent change? To answer this question, it might be worth exploring what led to the concept of keeping the equipment on in the first place.

The recommendation to keep the equipment in place for suspected spine injuries and to consider an all-or-none concept approach has been around since at least the late 1980s.6,7 The primary reason given for not removing the football helmet until arrival at the emergency
facility was that it violated a neutral spine position if removed without also removing the shoulder pads. This was later supported by radiographic studies\(^8\)\(^-\)\(^10\) that compared static images of varying equipment conditions and found that compared to wearing no equipment or full equipment the neck experienced a significant increase in lordosis when only removing the helmet.

Clearly, allowing the head to “fall” into hyperextension after removing a helmet is not ideal for preserving spinal cord health, but why allow the head to even go into hyperextension in the first place? What if those early radiographic studies had included a condition where after the helmet was removed the space underneath the head was filled to maintain neutral alignment, as was done by Decoster et al.\(^11\) in 2012 and Jacobson et al. in 2014\(^12\)? Would there have even been a recommendation to leave the helmet in place and transport with the facemask removed? Perhaps. However, I am not so sure a blanket recommendation and an all-or-none principle would have been conceived and since become ingrained in our practice.

Related to this, during all this time did we actually know that removing the facemask was safer than removing the helmet? Although it seems logical to assume facemask removal causes less motion, no research directly compared removing the facemask to removing the helmet to support this recommendation until 2013!!\(^13\) Interestingly, a later study\(^14\) found that removing the helmet might actually be faster than removing the facemask, depending on the equipment. More importantly, let’s also consider that the justification for removing the facemask as opposed to the helmet was that the airway was exposed for the potential need for ventilation. Again, although it’s logical to assume that the airway can be supported because the facemask is not there, during all this time did we actually know this was the case?

Although some research has established that certain airway adjuncts can adequately ventilate a simulation mannequin with a helmet in place,\(^15\) in 2011 Delaney et al.\(^16\) reported interference from football and hockey helmets as the primary cause for perceived inability to ventilate athletes using one and two bag-valve masks airway maneuvers. Recent unpublished data with simulation mannequins from Mihalik et al. found the chinstrap interferes with pocket and bag-valve masks’ ability to establish a seal for adequate ventilations. What if these studies had been conducted prior to 2001? Would there have been a recommendation to leave the helmet in place and transport with the facemask removed? Even Denegar and Saliba\(^1\) in 1989 and Feld\(^17\) in 1993 recognized that there was a possibility that the chinstrap may interfere with supporting the airway and that any circumstance of an inability to ventilate was just cause for removing the helmet.

Furthermore, what about access to the chest for performing compressions should it become necessary? Research conducted by Del Rossi et al.\(^18\) and Waninger et al.\(^19\) found that the quality of compressions was compromised with the shoulder pads left in place. Again, in 1993 Feld\(^17\) proposed that in a case of cardiac arrest, or increased chances of cardiac arrest, the helmet and shoulder pads should be removed while keeping the spine in neutral alignment. In recent years chest compressions have become prioritized over the airway by the American Heart Association and American Red Cross. Why have we accepted a protocol that essentially prevents access to the chest all this time? Imagine a football player strapped into a spineboard with helmet and shoulder pads in place who suddenly stops breathing and loses circulation in transport. Is this really the best time and place to remove the shoulder pads to perform adequate compressions and properly place automated external defibrillator pads?

Perhaps the recommendation for leaving the equipment in place was fated to be based on the historical culture of our profession to “do no harm” combined with the litigious culture of our society. Indeed, in 1989 Denegar and Saliba\(^1\) offered that a reason to leave the helmet in place was that by “deferring the decision regarding patient management to the team physician, the exposure of those in the field to medical-legal risk” was diminished.

Certainly passing on the movement that eventually will occur when removing the equipment to someone else seems like a safer way to go for the athletic trainer from a legal standpoint, but considering the three components of evidence-based medicine, is this really taking the patient’s values into consideration? Is leaving the equipment in place holding true to the “do no harm” mantra? After all, who is most familiar with the athletic equipment our athletes are wearing, and therefore most familiar and trained in how to remove it? It’s the health care provider who is most directly involved with this population: the athletic trainer/athletic therapist.

Even after having reviewed current evidence that does not support leaving the helmet in place, and resur-
recting earlier comments that removing equipment in the pre-hospital setting may be appropriate, the last thing we should do as a profession is go from one blanket recommendation (always leave the equipment in place) to another (always take all equipment off). This is why the current Task Force recommendation was amended to state: “protective athletic equipment may be removed prior to transport,” rather than stating that it should be removed. The message for all athletic trainers here is that it is fine to remove the equipment if felt necessary, but that ultimately it is up to the medical personnel on site in their specific situation who best know the patient, available resources, and capabilities of the emergency facility to make that decision.

Therefore, because athletic trainers need to become more comfortable with the reality that there might be a situation where removing the helmet and shoulder pads in a suspected spine injury is the appropriate clinical action, this issue of Athletic Training & Sports Health Care is dedicated to current evidence specific to research pertaining to equipment removal in football and lacrosse. Although not all potential equipment considerations are addressed in the following articles, a wealth of new information for the practicing athletic trainer and other health care providers is available, and hopefully will also serve as a catalyst to generate more evidence on this important topic. Finally, to maximize outcomes for our athlete-patients, the intricacies as to whether protective equipment should be removed in the case of a suspected spine injury should be formally discussed prior to an athletic event whenever possible. This is especially important when multiple health care providers are already on the scene before the start of a competition. Taking the time to come together before an event to discuss treatment approaches has been referred to as taking a “time-out.” This is modelled after a medical time out, common in medicine for decades prior to performing surgery, and is discussed further for our context by James Vailas, MD, in the Professional Practice column. So please enjoy this special issue, because if it comes to removing the athletic equipment from an injured athlete-patient...you got this!

REFERENCES