

# It Is Time for Athletic Regulatory Agencies to Protect Athletes from Commotio Cordis

By Joseph Murphy, Senior Attorney

We have all heard the tragedy of the young star athlete who dies on the field from an unknown or undiagnosed heart condition. In many cases, this reflects a lack of understanding, or reluctance to admit, that many of these deaths are the product of *commotio cordis*, an often lethal disruption of heart rhythm that occurs as a blow to the area directly over the heart, leading to cardiac arrest.<sup>1</sup> Even where this was understood, efforts to protect individual athletes with uniform modifications such as simple chest protectors have met little success.<sup>2</sup> Recent technological advances in athletic safety equipment and apparel appear able to eliminate or significantly reduce the *commotio cordis* risk. Regulatory bodies and sports teams that do not adopt and promote

these new technologies face significant liability risk they may not even be aware of.

## What is *Commotio Cordis*?

*Commotio cordis* is Latin for “Agitation of the Heart.”<sup>3</sup> As noted above, *commotio cordis* is an often-lethal disruption of heart rhythm that occurs as a blow to the area directly over the heart, leading to cardiac arrest.

Sports that involve anticipated or intended blows to the chest area, even slight blows, should anticipate and minimize the risk of *commotio cordis*. The mortality risk for lacrosse players as a result of *commotio cordis* (.63 deaths per 100,000 person-years) was significantly greater than any other sport except hockey (.53 deaths per 100,000 person-years) and baseball (.24 deaths per 100,000 person-years), even though those sports also employ hard and solid projectiles (e.g., pucks and baseballs).<sup>4</sup> It is the single most common cause of traumatic death in youth baseball.<sup>5</sup> It occurs mostly in boys, with an average age of 15, and only 1 in 5 survive.<sup>6</sup>

The blow that causes *commotio cordis* need not be particularly robust; rather, it is a matter of timing. The athlete is vulnerable during the ascending phase of the “T wave” part of heart rhythm, which occurs roughly 1-3% of the time<sup>7</sup>. This small window of vulnerability may have

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<sup>1</sup> Barry J. Maron & N.A. Mark Estes, *Commotio Cordis*, 362 NEW ENGLAND JOURNAL OF MEDICINE 917-927 (2010).

<sup>2</sup> *Id.* at 923.

<sup>3</sup> *Id.* at 917.

<sup>4</sup> Lindsey Barton Straus, *Lacrosse Has Highest Death Rate From Ill-Timed Blows To Chest*, MOMSTEAM (Aug. 14, 2009), <http://momsteam.com/sports/risk-sudden-cardiac-death-from-ill-timed-blow-chest-commotio-cordis-highest-in-lacrosse-hockey#ixzz59kod2E1D>.

<sup>5</sup> Thomas J. Abrunzo, *Commotio cordis. The single, most common cause of traumatic death in youth baseball*, 145 AMERICAN JOURNAL OF DISEASES OF CHILDREN 1279-1282 (1991).

<sup>6</sup> *Position Statement on Commotio Cordis*, US LACROSSE (Jan. 2008), <https://www.uslacrosse.org/safety/sudden-cardiac-arrest-aeds-commotio-cordis/position-statement-on-commotio-cordis>.

<sup>7</sup> Maron & Estes, *supra* note 1 at 921.

contributed to historical lack of understanding as to why an otherwise healthy and able 15-year-old boy might have died from cardiac arrest while performing an activity that he had previously been able to perform many times, when, in fact, every child performing that activity was taking a small, mortal risk.<sup>8</sup> In many cases (and for many reasons), these cardiac deaths may have been misattributed to an unknown or undiagnosed heart condition, and, therefore, the actual rate of death from *commotio cordis* may be higher than we are presently aware.<sup>9</sup>

### **What is the Liability to Athletic Regulatory Agencies?**

One of the main functions of athletic regulatory agencies is to protect the athletes in the regulated sport from injury — indeed, to undertake research into the risks to athletes and to maintain continuing efforts to make the sport safer.<sup>10</sup> Having undertaken these functions (and funds<sup>11</sup> from the regulated sport), these athletic regulatory agencies have undertaken a legal duty in much the same way that a lifeguard undertakes a legal duty that others at the beach have not.

The duty is not to be perfect but, rather, to act and take reasonable precautions for the protection of those it has undertaken the duty to: the athletes. It does

not matter if those actions and precautions fail to protect any individual athlete, so long as reasonable actions and precautions were taken. “Reasonable” is a term of art, and it means reasonable in light of the circumstances. A failure to take reasonable actions or precautions that causes harm is negligence. In order to fully understand the rest of this article, a short primer on negligence follows.

### **What is Negligence?**

#### ***Violation of Law***

Perhaps the easiest example of negligent behavior is a violation of the law. A violation of a specific law that is designed to protect a specific class of people from specific types of harm, which results in that specific harm to one or more members of the protected class, is called negligence *per se*.<sup>12</sup> If you are speeding, you are violating the law. If, while speeding, you get into an automobile accident, the fact that you were speeding means that the accident was caused by your negligence, and you are liable to the owner and occupants of the other car.

#### ***Following the Law in an Unreasonable Way***

While breaking the law is negligence *per se*, simply staying within it is not an automatic shield from a lawsuit claiming

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<sup>8</sup> See, e.g., Nick Canelas, *An Unsolved Crisis Heart-Related Deaths in High School Athletes Still A Mystery*, SPORTSWIRE (Oct. 22, 2015), <http://www.sportingnews.com/ncaa-football/news/high-school-football-deaths-heart-attacks-disease-athletes-rod-williams-doctors-studies/8o91716x41op1dc5zqzm1zb60>.

<sup>9</sup> Maron & Estes, *supra* note 1, at 917-927.

<sup>10</sup> See, e.g., *Statement of founding purpose*, THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, <http://www.ncaa.org/opportunity> (last visited Mar. 14, 2018) (“In 1906, the NCAA was founded to keep college athletes safe.”). See also Mikka MacDonald,

*Being a college athlete requires sacrifices. Safety and equal access shouldn't be among them*, THE ASPEN INSTITUTE (Sept. 9, 2016), <https://www.aspeninstitute.org/videos/health-safety-college-athletes-ncaa/>.

<sup>11</sup> See, e.g., *Membership Prices*, THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION (Jan. 2008), <https://www.uslacrosse.org/program-leaders/new-programs-or-leaders>.

<sup>12</sup> RESTATEMENT (SECOND) OF TORTS § 286 (Am. Law Inst. 1965).

negligence.<sup>13</sup> For example, if the posted speed limit is 55 mph, it may very well be unreasonable to drive that fast if the road is covered in wet ice. In this case, while not illegal, driving 55 mph was nonetheless unreasonable and, therefore, negligent. If a child walks into the street and you skid into him, it would be no defense that you were obeying the speed limit.

### ***Violation of Industry Customs or Observing Industry Customs in an Unreasonable Way***

Industry customs are viewed by negligence law in much the same way as the law and violations of the law. While violating an industry custom would be negligent, the mere fact that industry customs were observed is no shield against a claim of negligence where the activity was unreasonable under the circumstances.<sup>14</sup>

### ***Unreasonable Failure to Act When Under a Duty***

Negligence can be an unreasonable *action*, such as in the above examples where the driver was speeding or driving at a legal but unreasonable speed. Negligence can also be an unreasonable *failure to act*. In most situations, there is no affirmative duty to act. People have a responsibility to avoid doing things that might cause harm to others, but they usually do not have a duty to jump in and prevent harm when it is occurring.<sup>15</sup> Because of this, failure-to-act negligence is unfamiliar terrain for most people.

Failure-to-act negligence usually arises out of someone assuming a duty to act that they did not otherwise have.<sup>16</sup> As noted

above, the lifeguard has a duty to act when seeing a drowning swimmer that the other beachgoers do not have. But even the lifeguard's duty to act is not absolute — for example, if there is one lifeguard and multiple drowning swimmers who cannot all be saved, or where an attentive lifeguard simply fails to notice a drowning swimmer until it is too late. So long as the lifeguard acted reasonably and non-negligently given the circumstances he or she was faced with, he or she cannot be held liable for negligence.

### ***Reasonable Under the Circumstances***

It should come as no surprise that the reasonableness of any particular action or failure to act can only be judged in light of the surrounding circumstances. I included several examples above where the circumstances change normally non-negligent behavior (obeying the speed limit) into negligent behavior (when the road is iced up), as well as where circumstances change negligent behavior (a lifeguard's failure to prevent a drowning) into non-negligent behavior (there are too many swimmers to save them all in the time he has to do so).

### ***Effect of Technological Change on Duty of Care.***

As noted, what may be reasonable under one set of circumstances may not be under another, and vice versa. Technological changes, particularly safety-related technological changes, do indeed change the “backdrop” against which the reasonableness of an actor's conduct is judged.

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<sup>13</sup> See *id.* § 288C.

<sup>14</sup> See James A. Henderson, Jr., *Learned Hand's Paradox: An Essay on Custom in Negligence Law*, 105 CALIF. L. REV. 165 (2017).

<sup>15</sup> THANE ROSENBAUM, *THE MYTH OF MORAL JUSTICE* 247–248 (2004).

<sup>16</sup> RESTATEMENT (SECOND) OF TORTS § 284(b).

That landowners have some level of duty to provide medical aid to invitees is made clear in the Restatement (Second) of Torts § 314A (1964). Federal facilities have been *required* to have a public access defibrillator since 2001.<sup>17</sup> In many jurisdictions, building codes mandate installation of automated external defibrillators (AEDs), and the brokerage industry may require AEDs as part of certifying that a building has the “state of the art systems” necessary to be rated as a class “A” office building.<sup>18</sup>

There was, however, a period not so long ago where, in spite of the fact that AEDs were readily available, no industry custom or regulatory authority mandated their installation.<sup>19</sup> It is important to note here that the fact that AEDs were not required by regulation or custom is not the same thing as a custom or regulation *prohibiting* them.

How and why did the installation of AEDs in office buildings become customary, even mandatory? Did the industry suddenly decide to burden itself with more costs? I think not. I suggest that

the industry, in one way or another,<sup>20</sup> came to realize that it was unreasonable not to have one or more of these devices in office buildings, which are commonly full of middle-aged people with sedentary lifestyles.

The unreasonableness of neglecting to install AEDs becomes more obvious when you consider that a possessor of land who holds it open to the public has a legal duty to give “First Aid” to those who enter its premises by invitation and become ill or injured.<sup>21</sup> The American Red Cross, when defining “First Aid,” presently indicates “Heart Attack” as one of the conditions that “First Aid” can be applied to and further indicates that its courses in “First Aid” commonly include instruction in CPR *and the use of an AED*.<sup>22</sup>

Was the entire office building management industry negligent the instant AEDs became available? Of course not. But the office building management industry did have a duty to keep up with the latest technologies, investigate or study them, and adopt those which were reasonable<sup>23</sup> — particularly in light of the aforementioned duty to provide “First Aid,” which appears to be an evolving term.<sup>24</sup>

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<sup>17</sup> Guidelines for Public Access Defibrillation Programs in Federal Facilities, 74 Fed. Reg. 41133-02 (Aug. 14, 2009).

<sup>18</sup> *Building Class Definitions*, BUILDING OWNERS AND MANAGERS ASSOCIATION (Mar. 13, 2018), <http://www.boma.org/research/Pages/building-class-definitions.aspx>.

<sup>19</sup> See H. Woodruff Turner, *Owner Liability for Automated External Defibrillators in Pennsylvania*, K & L UPDATE (Sept. 2003), [http://www.klgates.com/files/Publication/69eaf3a3-1ae6-4bfb-a93a-f418fdf5ca26/Presentation/PublicationAttachment/6d5eac760-1d4a-4981-ba9b-18ec867fdb2a/Update\\_1002.pdf](http://www.klgates.com/files/Publication/69eaf3a3-1ae6-4bfb-a93a-f418fdf5ca26/Presentation/PublicationAttachment/6d5eac760-1d4a-4981-ba9b-18ec867fdb2a/Update_1002.pdf). See also Atcovitz v. Gulph Mills Tennis Club, 812 A.2d 1218 (2002)

(holding that a tennis club could not be held liable for failure to install an AED as recently as 1996).

<sup>20</sup> See *id.* for a discussion of the changing legal environment and adoption of AEDs.

<sup>21</sup> RESTATEMENT (SECOND) OF TORTS § 314A.

<sup>22</sup> *What is First Aid?* AMERICAN RED CROSS (Mar. 16, 2018, 2:54 PM EDT), <https://www.redcross.org/take-a-class/first-aid/performing-first-aid/what-is-first-aid> (emphasis added).

<sup>23</sup> See RESTATEMENT (SECOND) OF TORTS § 288C.

<sup>24</sup> It is evolving in the sense that the authors chose to use that term when imposing the duty. The American Red Cross’s definition of “First Aid” is far from controlling precedent, and the prototypical portable defibrillator was not invented until roughly five years after the Restatement (Second) of Torts was

This is one of the wonderful things about the law of negligence: It makes us look forward and seek out new ways to protect one another and does not allow us to stay static with what worked in the past. As Judge Learned Hand noted in the case of *The T.J. Hooper*,

Indeed, in most cases reasonable prudence is in fact common prudence; but strictly it is never its measure; a whole calling may have unduly lagged in the adoption of new and available devices. It never may set its own tests, however persuasive be its usages. Courts must in the end say what is required; there are precautions so imperative that even their universal disregard will not excuse their omission.<sup>25</sup>

### **What does this have to do with *Commotio Cordis*?**

Early efforts to protect athletes from *commotio cordis* using chest shields and the like did not produce a significant reduction in *commotio cordis* cases.<sup>26</sup> Chest shields having failed to prevent *commotio cordis*, coaches instead focused on coaching athletes, for example, to turn their bodies in

ways to minimize impact to the vulnerable area of the thorax.<sup>27</sup>

Industry efforts to produce effective protection against *commotio cordis* have been ongoing. New chest protector designs incorporating novel materials have been developed and tested.<sup>28</sup> A recent Tufts University peer-reviewed study of these new chest protector designs concluded, “Chest protector designs incorporating these novel materials will likely be effective in the prevention of *commotio cordis* on the playing field.”<sup>29</sup>

### ***Athletic Regulatory Agency Liability***

These new chest protector technologies represent a change in circumstances, which, in turn, represents a change in defining reasonable behavior and negligent behavior.

Past chest protector designs were designed to reduce the likelihood of trauma from blunt bodily injury but not to provide protection against *commotio cordis*<sup>30</sup>; therefore, it would have been unreasonable to rely on them for that purpose.

The Tufts University study found that there are presently chest protector designs incorporating new technologies which do, in fact, reduce *commotio cordis* risk.<sup>31</sup> At least one manufacturer, Unequal Technologies, submitted its chest protector

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published. Courts have the ultimate decision as to what the duty to provide first aid means, but one could anticipate that the Red Cross’s own definition would be quite persuasive in making that decision.

<sup>25</sup> *The T.J. Hooper*, 60 F.2d 737, 740 (1932).

<sup>26</sup> Maron & Estes, *supra* note 1, at 923. See also J.S. Hopkins, *Chest protectors do little to protect young athletes from cardiac death*, CHICAGO TRIBUNE (Apr. 11, 2016),

<http://www.chicagotribune.com/news/local/breaking/>

ct-chest-protector-commotio-cordis-graphic-photogallery.html.

<sup>27</sup> *Id.* at 923.

<sup>28</sup> Kirtik Kumar et al., *Development of a Chest Wall Protector Effective in Preventing Sudden Cardiac Death by Chest Wall Impact (Commotio Cordis)*, CLINICAL JOURNAL OF SPORTS MEDICINE 26-30 (2017).

<sup>29</sup> *Id.*

<sup>30</sup> Maron & Estes, *supra* note 1, at 923.

<sup>31</sup> *Id.* at 26-30.

design to the FDA, with the FDA allowing an indication-for-use (IFU) claim: “When incorporated into a suitable garment and worn in accordance to instruction, the HART CC (Commotio Cordis) Pad device has been shown to reduce the mechanical impact received by the chest that may facilitate the reduction in risk of Commotio Cordis.”<sup>32</sup> The National Federation of State High School Associations has mandated the use of *commotio cordis* protection in baseball starting Jan. 1, 2020.<sup>33</sup>

Simply put, the time for athletic regulatory agencies, sports teams, and even coaches to ignore these new chest protectors has passed. It is negligence to ignore these new technologies, in much the same way it would be negligent to ignore the availability of multi-layered composite football helmets and continue to issue leather ones.

In 2000, 21.47 million kids between 6 and 17 were involved in competitive sports. That is more than the population of *Texas* in 2000.<sup>34</sup> Even more kids are playing sports today: 2017 marked the 28th consecutive year of increased participation in high school sports.<sup>35</sup> Make no mistake, American children are going to be playing sports, including sports with a relatively high risk of *commotio cordis*.<sup>36</sup>

Athletic regulatory agencies, teams, and coaches who fail to at least warn

children and parents about *commotio cordis* and the availability of products to minimize it may find themselves liable in much the same way as the office building management will be found liable to the family of an executive who dies because there were no defibrillators in the building.

Regrettably, preventable *commotio cordis* deaths will likely continue. Increased awareness of how these were not just kids with “undiagnosed heart conditions” will lead to outrage, and outrage will lead to litigation. Millions may be paid out to bereaved parents until the costs of ignoring this preventable and lethal risk overcome the ignorance that has subjected children to it. I pray that time comes sooner, rather than later.

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<sup>32</sup> *FDA Issues Claim for Unequal HART Device*, PRNEWswire (Oct. 17, 2017), <https://www.prnewswire.com/news-releases/fda-issues-claim-for-unequal-hart-device-300537522.html>.

<sup>33</sup> National Federation of State High School Associations, *BASEBALL RULES CHANGES* (Dec. 14, 2017), <https://www.nfhs.org/sports-resource-content/baseball-rules-changes-2018> (Rules 1, 3, and 5).

<sup>34</sup> Bruce Kelley & Carl Carchia, “Hey, data data -- swing!”, ESPN (July 11, 2013),

[http://www.espn.com/espn/story/\\_/id/9469252/hidde-n-demographics-youth-sports-espn-magazine](http://www.espn.com/espn/story/_/id/9469252/hidde-n-demographics-youth-sports-espn-magazine).

<sup>35</sup> *High School Sports Participation Increases for 28th Straight Year, Nears 8 Million Mark*, NATIONAL FEDERATION OF STATE HIGH SCHOOL INSTITUTIONS (Sept. 6, 2017), <https://www.nfhs.org/articles/high-school-sports-participation-increases-for-28th-straight-year-nears-8-million-mark>.

<sup>36</sup> I listed a few of the standout sports and their associated *commotio cordis* incidence rates earlier in this paper.