Athlete concussion reporting hinges on a fraught and complex series of events, with multiple countervailing interests and influences coming into play. An injured athlete is responding as much to internal motivations as to peers, family, and coaches. Important decisions must be made within this complex web of motives and often in the context of incomplete information. The study by Milroy et al. in the current issue of the *Journal of Adolescent Health* uses a novel application of an existing theoretical frame to help advance our understanding of athlete concussion reporting [1].

The individual, familial, and societal impacts of brain injury from sport are active areas of biomedical, social scientific, and public health innovation. Science races ahead to more fully understand the pathophysiology of concussion, possible biomarkers of the injury, and the mechanisms underlying the relationship between acute brain trauma and later-life cognitive and behavioral challenges; however, while these advances are being made, those in public health and health policy are left with the task of remediating the problem with incomplete evidence. Indeed, the field of public health is well acquainted with instances of needing to act to prevent undue harms in the face of incomplete evidence. Born out of the public health response related to environmental concerns in the 1970s, the precautionary principle asserts that “lack of scientific certainty must not be used as a reason to ignore or postpone preventive or remedial action when there are other good reasons to do so” or, more colloquially, “better safe than sorry” [2]. Although state, institutional, and sports league policies in response to sports-related brain injury are an important first step, many existing policies focus on reducing the health burden of a concussion once it occurs rather than reducing the underlying risk of injury [3]. A central tension in creating public health policies is balancing individual liberties with collective responsibilities [4] for health promotion and harm prevention. The context of sports-related brain injury is no different. Some believe that individual choice to participate in these risky activities should be preserved [5], whereas others call for policies to restrict participation or reduce the risk of injury, particularly in the case of children [6]. Beyond this tension, the relative lack of public health policy innovation in this area may be explained by well-documented cognitive biases such as loss aversion and status quo bias [7]. Rather than risk an innovative rule change failing to achieve its intended goal, policymakers prefer to remain with the existing framework even if it has known health consequences.

Among the many challenges faced in addressing sport-induced brain trauma from a public health or health policy perspective is understanding the true scope of the problem. There are a range of national estimates for the number of brain injuries sustained from sports and recreational activity. However, an established threat to the validity of these measurements is the reality that many concussions are not disclosed by athletes to medical personnel, and thus, they remain undiagnosed. In college athletes, some estimates suggest that more than half of possible concussions are not reported by athletes or diagnosed by medical personnel [8]. In the absence of an agreed-upon, objective biological marker of concussion, the diagnosis of concussion remains largely reliant upon athlete disclosure of symptoms. A substantial literature has attempted to explain the rationales for athletes’ report or nonreport of concussion to clinicians [8–21]. What is consistent across nearly all existing studies is the important role of perceived behavioral outcomes/consequences on reporting behavior. These outcomes can range from athletes’ perceptions of their personal health consequences, impacts on their athletic performance or career, or the consequences of acting out of accordance with the social norms of athlete behavior.

In this issue, Milroy et al. report findings from a large survey of college athletes and college sports coaches. Drawing on the Integrated Behavioral Model, the authors evaluate the relationship between athlete norms, athlete attitudes, personal agency, coach communication, and athletes’ intention to report their own concussion and also that of a teammate. Behavioral intention is a predictor of health behaviors according to IBM and extant literature [22] in the concussion reporting space. In line with previous research, Milroy et al. find that concussion reporting intentions (both for self and with respect to others) are associated with multiple influences that are socially constructed, maintained, and enforced. Athletes’ perceptions of their coach’s communication about concussion, their self-efficacy to communicate about a concussion, their concussion reporting attitudes, their expectations about positive outcomes of concussion reporting, and their perceptions of the typical behavior of other athletes were associated with all concussion reporting intention outcomes. Although the quantitative and framing insights from Milroy et al. are important, perhaps, the biggest takeaway from the paper is its acknowledgment and description of the personal and social complexity of athlete concussion reporting behaviors. Improving interpersonal and structural features of the athletics environment may be more effective in broadly improving athletes’ health care seeking behaviors. Milroy et al. highlight the role of

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coach communication. Previous literature has substantiated the role of the coach in promoting concussion care-seeking behaviors [11,23,24]. But at a more universal level, continuing to focus on the athlete as the locus of responsibility in needing to report a concussion reduces the onus on institutions to prevent concussions in the first place. Arguably, approaches such as reducing the likelihood of concussion through policy change and ensuring appropriate access to independent medical care for college athletes pose a greater likelihood of improving athlete health outcomes. Policies aimed at reducing rates of concussion through decreases in overall exposure to contact or the reduction of high-risk plays have had moderate success when evaluated [25–27].

Thinking creatively about rules to reduce exposure and high-risk activities—moving beyond the policy status quo—may help reduce overall rates of concussion and thus rely less heavily on athletes to make choices to report their injury in the face of many social and environmental factors working against them. Ensuring that collegiate athletes have appropriate access to health care providers who are empowered to make medical decisions free from undue influence of coaches or other stakeholders in the athletics environment is another important consideration for improving athlete health in the face of concussion. Recent research highlights significant disparities in athletes’ access to care across colleges [28,29]. Furthermore, many college sports medicine clinicians, including a disproportionate number of those who are employed by the athletics department, report feeling pressured to prematurely return athletes to play [30,31]. Ensuring access to independent medical care is an essential feature of improving concussion recognition and care in college athletes [32].

Although understanding and improving concussion reporting by athletes are important, we should not forget the broader context in which this occurs, nor should we forget considering other more global solutions to improving athlete health and well-being. The policy and health care access solutions suggested here are supported by the theoretic framing used by Milroy et al. The IBM suggests that environmental constraints act alongside behavioral intentions in guiding individual health behaviors [33]. If athletes are faced with limited access to clinicians who face structural conflicts of interest, it is reasonable to suggest that this would decrease their willingness to disclose a concussion even in the case of a strong intention to do so. Shifting our perspective from the reasons why athletes do not report to the ways in which institutions and institutional actors can support athletes in seeking appropriate medical care may lead to improvements in athlete health and well-being including, but also beyond, the realm of concussion.

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References