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Autonomy, relationality, and brain-injured athletes: a critical examination of the Concussion in Sport Group's Consensus Statements between 2001 and 2023

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ABSTRACT

This article critically examines the development and consensus outputs of the Concussion in Sport Group. We examine the six Consensus Statements between 2001 and 2023 to explore the challenges that the presence of contextual forces pose to the development of effective and ethically justifiable medical guidelines to manage situations involving brain-injured athletes. First, we discuss the implicit and explicit ethical framework and goals underlining the statements. Secondly, drawing on a relational account of athlete choice, we expound on the limitations of the framework, concentrating on those resulting from a simplified understanding of athlete autonomy. Thirdly, we conclude by proposing a series of recommendations to improve concussion management protocols: (1) adopting a broader understanding of autonomy built upon relational accounts, beyond just the healthcare professional-athlete relationship; (2) further minimizing conflicts of interest that increase athletes' vulnerability and hinder decision-making ability; (3) enhancing healthcare professional training to allow better adjustment of treatment plans to athletes' contexts; and (4) promoting research on sociocultural elements affecting athletes' vulnerability and autonomy.

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Sport-related brain injuries¹ have been a concern for sport-interested scholars and practitioners since the inception of modern sport (Gillett 2018). Talk of *dementia pugilistica* in boxing, also known as 'punch-drunk syndrome' or 'boxer's dementia', dates back to the early 20th century. Attention to this issue over the last two decades has grown exponentially. This heightened interest can be attributed to the advancements in neuroscience and the increasing body of evidence about the detrimental effects, albeit increasingly contested, of brain trauma since the early 2000s. As a consequence, brain injuries have emerged as one of the most widely discussed topics in the sport world. Nowadays, commentators frequently refer to the 'brain injury epidemic' and its significant impact on the popularity and success of sports with high brain injury rates. Brain injuries commonly arise in other contact sports, such

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as ice hockey, rugby, and soccer, characterized by their physical nature and potential for intense collisions. Yet, they are not tied exclusively to these kinds of sports. Indeed, such injuries may arise within equestrian sports from falls, or crashes in automotive sports. Any activity, it seems, with rapid acceleration and deceleration can cause brain trauma.

Scientific findings concerning the connection between brain disease and whole-body tackling in football codes such as rugby and American football have prompted demands from the medical profession for substantial changes to the sports conducive to brain injury (e.g. banning collision-inducing elements in tackle football) or even their complete elimination.² For instance, neurology professor and Chronic Traumatic Encephalopathy (CTE) expert Robert Cantu recommended banning tackle football for children under the age of 14 ('NY Lawmaker Seeks To Ban Tackling In Youth Football' 2017). Similarly, lawmakers in several US states have proposed legislation to ban youth tackle football (De Caro and Kaplen n.d.). A similar approach is proffered by neurology and pathology professor Ann McKee, who urges organizations overseeing contact sports to 'change the rules and [their] thinking about these games, so that CTE isn't a consequence of playing [them]' (Ford 2023). She also advises young athletes experiencing neuropsychiatric symptoms to cease participating in such sports and seek medical care (Surendran and Fainaru-Wada 2024). Along these lines, other experts have sought to develop strategies to mitigate the effects of sport-related brain injuries, including concussion management protocols to help the key parties in sporting contexts (e.g. sport medicine professionals, coaches, athletes, parents) deal with post-concussive episodes.

The Concussion in Sport Group (CISG), established in 2001, is the most prominent among various organizations that have proposed (and updated on a quadrennial basis) medico-scientifically supported concussion management protocols (Bachynski and Goldberg 2018; Johnson 2012, 2015). In 2002, its inaugural Consensus Statement (CS) affirmed that the 'document is developed for use by doctors, therapists, health professionals, coaches, and other people involved in the care of injured athletes, whether at the recreational, elite, or professional level' (Aubry et al. 2002, 6). Subsequent revisions of the CS have focused on healthcare professionals dealing with athletes who experience sport-related concussions (SRCs) as their key audience. For instance, the recommendations in the 2017 Statement are directed at 'physicians and healthcare providers who are involved in athlete care, whether at a recreational, elite or professional level' (McCrory et al. 2017, 838). Likewise, the latest version of the document asserts that the 'Statement is developed for the healthcare professional (HCP) involved in the care of athletes at risk of SRC or who have sustained a suspected SRC at any level of sport (ie, recreational to professional)' (Patricios et al. 2023).³ Their consistent primary goal is to improve individual management of return-to-play decisions by providing a guide or recommendations 'of a general nature' to ensure that 'return-to-play decisions remain in the realm of clinical judgment' (McCrory et al. 2017, 838).⁴ More recently, this has been expanded to include ethical considerations, long-term effects, risk mitigations, and SRC-related retirement discussions.

In what follows, we critically examine the Concussion Statements (CSs) to articulate the challenges raised by contextual influences when crafting effective medical recommendations relating to the care and management of brain-injured athletes. First, we outline the implicit and explicit ethical commitments behind the Statements, which we describe as

resulting from a selective interpretation of the principlist framework in medical ethics (Beauchamp and Childress 2001; Clouser and Gert 1990). Subsequently, we draw on a more contextually sensitive, relational understanding of autonomy to articulate the ethical foundation and objectives underpinning the Statements. Then, we highlight limitations within this CSs ethical foundations, centering on those that arise from the documents' etiolated consideration of the contexts affecting athlete decision-making. To conclude, we propose a series of recommendations.

1. The ethical framework underpinning the Consensus Statements

In their rationale for developing general recommendations, the CiSG appeals to the objective of facilitating athletes' recovery from concussions, thereby mitigating the risks associated with playing while suffering from a brain injury (Johnson 2015). For instance, the 2001 Vienna Statement asserts that the rationale for providing brain-injury management recommendations is 'the improvement of safety and health of athletes who suffer concussive injuries in ice hockey, football (soccer), and other sports' (Aubry et al. 2002, 6). Notably, the most recent versions of the document do not include a justificatory statement like this but aim to promote and protect athletes' health post-brain trauma. Several secondary objectives have arisen from the work of the CiSG. In the 2017 Berlin Statement, they refer to the goal of 'help[ing] form the agenda for future research relevant to [sport-related brain injuries] by identifying knowledge gaps' (838). In its most recent iteration, the 2022 Amsterdam Statement, along with the promotion of further research, the CiSG refers to the need to 'evolve and strive to improve areas that integrate principles of modern ethics, process, methodology and healthcare practice' (Patricios et al. 2023, 706).⁵

1.1. Principles of medical ethics: beneficence and autonomy

Without explicit acknowledgment, the different iterations of the CS appear to be grounded in two ethical principles commonly applied in healthcare contexts: beneficence and autonomy. Concerning beneficence, the document provides medical guidelines to ensure that athletes are appropriately assessed and that the medical management post-concussion is evidence-based. These guidelines reflect considerations of beneficence and its particular medical variant of a duty of care in the doctor-patient relationship.⁶ Regarding autonomy, the recommendations empower athletes to advance their health-related interests through the promotion of respectful dialogue. In this regard, the CSs strongly operate under the assumption that healthcare professionals and athletes equally prioritize clinical criteria in their decision-making. Arising from such an assumption is a failure to consider the notion of athletes' compliance with evidence-based medical recommendations.

Non-medical scholars, by contrast, have for decades questioned whether and how athletes prioritize health in injury-related situations in general and concussion-related incidents in particular (Liston et al. 2018; Young 1993). Anecdotal testimony and empirical evidence suggest that certain athletes relegate prioritization of health in favor of non-medical objectives, such as achieving financial gain, adhering to sport-specific cultural norms, contributing to team success, fostering camaraderie, and displaying loyalty (Howe 2003; Johnson 2015; Malcolm 2020; Young 1993). Also, cognitive biases and heuristics

significantly affect athletes' health-related decision-making (McCann 2006). For example, despite being aware of and acknowledging the long-term risks of brain injuries, they tend to believe that they will not suffer from the detrimental effects resulting from a concussion (Oddo et al. 2019; Weber Rawlins et al. 2022).⁷ Regardless of the reasons or rationalizations, ignoring, downplaying, and denying the importance of head trauma seem to be common behaviors among high-contact sport athletes (Messner 1990). In their study on concussion reporting among elite rugby players in Ireland, Michael R. Fraas et al. (2014) explain that 46.6% of concussions go unreported because players consider the injury mild and insufficient to stop playing. In a similar investigation with Irish amateur rugby players, Liston et al. (2018) identified similar minimizing attitudes toward concussive injuries. Despite the number of concussions, the problem has continued unabated for over two decades (Malcolm 2020). If behaviors prioritizing sport-related concerns over health or downplaying the severity of long-term consequences are prevalent among athletes, irrespective of their level of play, delivering guidance without acknowledging the constraints imposed by these behavioral factors is likely to undermine the effectiveness of concussion management practices in promoting autonomy.⁸

1.2. Dyadic and triadic relationship frameworks in concussion management

It is important to note that the CS is only part of a collection of research that has been reviewed and marshaled toward better care. Moreover, the CS is supported by free-to-use protocols by healthcare professionals and sport physicians for the concussed athlete-patient.⁹ Thus, the CiSG typically regards post-brain injury interventions as interactions between two primary, self-sufficient agents: a brain-injured athlete and a medical professional with head trauma expertise (Baugh et al. 2020; Gary 2023). The development of brain-injury management protocols based on dyadic clinical ethics frameworks has provided athletes with significant levels of protection (Malcolm 2021). For instance, remove-from-play protocols protect athletes from feeling forced to continue playing after suffering from head trauma. Likewise, information and awareness programs help athletes and sport medicine professionals better understand the severity of head injuries (Kirschen et al. 2014). However, these frameworks are ill-equipped to deal with more complex ethical issues resulting from including third parties, which transforms the athlete-doctor interaction into a triadic relationship.

On several occasions, the CSs highlight the importance of involving a third party with fiduciary duties toward athletes.¹⁰ For example, the 2022 CS recommends involving caregivers in discussions between healthcare professionals and children or adolescents regarding retirement or discontinuation from sport. This third party is usually a coach, parent, administrator, employer, or referee with the power to affect the athlete's decision-making ability. They can directly influence the athlete by communicating a specific expectation or by giving an order. Alternatively, they may indirectly affect the athlete by swaying the healthcare professional's judgment. For example, driven by their own financial and egoistic interests, professional football agents often intervene in their clients' medical care, exerting a controlling influence to ensure visibility on the field (McNamee et al. 2018). They also sometimes hire their own medical services, external to clubs, to secure a degree of confidentiality regarding their clients' health. Similarly, at the amateur level, employers, mainly as a result of their policies on sickness absences, are

a key third party affecting the decisions of athletes who suffer from a concussion. In countries with limited labor protections (e.g. lacking trade unions) and sparse social security systems (e.g. no paid work leaves or universal healthcare coverage), this issue becomes especially significant.¹¹

In short, the CiSG's protocols, grounded in medical ethics principles of beneficence and autonomy, aim to facilitate athletes' recovery from concussions by mitigating the risks associated with brain injuries in sport and enhancing athletes' decision-making. Over time, the CSs' focus has shifted toward more comprehensive care, including recognizing the complexities of dyadic and triadic relationships among athletes, medical professionals, and third parties to provide better guidelines. This evolving understanding of concussion management and ethical concerns in sport medicine would benefit from discussions in sport philosophy and healthcare ethics about athlete autonomy and the ethical dimensions of healthcare decision-making in sport.

2. Ethical reflections on autonomy in sport and healthcare: an effort to complement the CiSG framework

Sport philosophers did not wait for the concussion 'epidemic' to apply principles from clinical ethics and legal frameworks to conceptualize athlete autonomy (Dixon 2001, 2008). Building on liberal philosophers like John Stuart Mill and Immanuel Kant to examine various sport-related harms (whether through doping or injuries), several authors conceive athlete autonomy in terms of the capacity to appreciate epistemic considerations that enable judgments pursuant to self-determination (Dixon 2016; Lopez Frias and McNamee 2017; McNamee 2009). This perspective implies that athletes' autonomy is hindered when they cannot base their decisions on an adequate understanding of their situation and the implications of their choices. Consequently, Millian-inspired ethicists regard the interference with people's choices as justified when the individuals' capacity for autonomous decision-making is compromised. Drawing on Joel Feinberg's work on autonomy, Dixon (2001) refers to this justification as 'soft paternalistic'. Following Gerald Dworkin, '[s]oft paternalism is the view that the only conditions under which state paternalism is justified is when it is necessary to determine whether the person being interfered with is acting voluntarily and knowledgeably' (2020 paras. 1–21). From a soft paternalistic perspective, preventing individuals from the harms of collision sport would be morally justified if they demonstrably lack voluntariness and/or adequate information to ground their choice.

Consider a scenario where a football player initially exhibits impaired cognitive capacities following a strong blow to the head without clearly exhibiting a loss of consciousness. The player insists that they are fit to return to play. In this case, soft paternalism requires an assessment of whether the player is genuinely capable of adequately understanding the situation and making a well-informed decision. If so, the player's request to continue playing must be accepted. If not, the request must be denied and the player removed from the field because their decision-making capacities are compromised. In contrast, a hard-paternalistic standpoint arises when another is 'interfering with people's fully autonomous choices in order to protect them from [brain-related] harm' (Dixon 2001, 331). Put differently, in hard paternalism, interference with an individual's well-being takes precedence over respect for their self-determination. For example, concussion

management protocols that require on-field medical teams to sideline athletes suspected of having suffered from a concussion can be hard paternalistic if the said players are forced to abandon the field of play despite demonstrating an adequate use of their cognitive capacities. More broadly, advocating for banning football or a similar high-contact sport to protect practitioners from brain injury, such as defended by Lynley Anderson (2007), even when participants choose to partake in the sport autonomously, represents a form of hard paternalism. We do not, in applying this simple conceptual request, in any way imply that the discussion or evaluation is a simple one. On the contrary, this is clinically very challenging when the attending physician or healthcare professional does not know the athlete-patient, their values, and preferences. Here, a precautionary approach is certainly to be considered a default position.

Western medicine has a long history of paternalistic care toward patients. However, over the past four decades, a more patient-centered approach has emerged, with the principlist approach most prominently capturing this shift and becoming the standard position in medical ethics. Some argue that healthcare professionals have a positive duty to assist the formation of patients' autonomous judgment (Seedhouse 1997), while others argue that the promotion of autonomy is the primary duty of healthcare professionals (Gillon 2003). Others have opted for a mixed approach. For example, Thomas Schramme (2023) introduces 'scaffolding' as a method for guiding decisions concerning athlete-patients. This mixed model, where coercion is unacceptable and hard paternalism is acceptable only at moments of incompetence through injury, is a reasonable way forward for the concussed athlete. This mostly applies to athletes who, due to a concussion during play or a chronic brain injury, are unable to exercise their cognitive capacities effectively. Aside from these cases, sport healthcare professionals, in alignment with soft paternalism, must deliver comprehensive and readily comprehensible information concerning the consequences of specific health-related choices to their athlete patients. Additionally, they must ensure that clinical criteria are prioritized over those that may favor non-health-related interests, potentially including the interests of third parties that conflict with those of the brain-injured athlete. The first of these roles involves guiding athletes to make informed choices, equipping them with the knowledge they need for well-informed decisions. The second role shields athletes from any undue pressure that might compel them into specific choices and is part of their fiduciary duty (Holm, McNamee, and Pigozzi 2011).

2.1. Relational autonomy vs. atomistic individualism

The competing conceptualizations of autonomy clearly present problems for the actualization of care in concussion and elsewhere. We tentatively propose, however, an alternative relational account of autonomy that moves away from the dichotomized paternalism-respect for autonomy debate. Implementing this view of autonomy in real-life practices and situations raises significant challenges (Christman 2004, 2014). We acknowledge that 'relational autonomy' is an umbrella term rather than a specific or unified theory (Mackenzie and Stoljar 2000). Mercer Gary (2023) explains that, in conceptualizing autonomy, different perspectives focus on relations with varying scopes (e.g. dyadic vs. triadic) and natures (e.g. interpersonal vs. structural). Thus, depending on its focus and character, a particular relational autonomy account would be better or worse

equipped to deal with situations and problems connected to a specific practical problem, such as developing and implementing concussion management protocols. Differences notwithstanding, relational accounts of autonomy all share a fundamental trait: the emphasis on the intersubjective and social dimensions of agency. After all, these accounts of autonomy emerged within feminist theory and, more broadly, philosophical reflections on vulnerable agents in oppressive contexts, highlighting that ‘the characteristics and capacities of the self cannot be adequately undertaken without attention to the rich and complex social and historical contexts in which agents are embedded’ (Mackenzie and Stoljar 2000, 21). Relational autonomy proponents share the conviction that autonomy cannot be understood as a property of atomistic, self-sufficient decision-makers. Instead, they see autonomy as a ‘socio-relational’ phenomenon that results from the interplay of individual decision-making capacities and agency-constituting elements of the social environment in which individuals are located (Oshana 2006). Following Seedhouse (1997) and Christman (2003), when devising strategies to both protect and promote autonomy, structural conditions ought to be developed that allow and assist patients in developing critical reflective abilities and ‘procedural independence’ (Christman 2003,150).

This relational approach stands in contrast to the atomistic individualism, typical of early liberal philosophers like Mill, that often works implicitly or explicitly in everyday understandings of autonomy, especially in health-allied disciplines (Goldberg 2012; Owens and Cribb 2019). Often, that assumption is well-intended and even benign. The final recommendation of the Makdissi et al. (2023) systematic review on the ‘Decision to Retire’ captures this beneficent motivation: ‘Input and counsel from healthcare professionals knowledgeable regarding brain injury can be helpful in making decisions about retirement. The ultimate choice is one of an informed decision made by the athlete and/or their guardian or parent’ (830). Yet, it can be understood as privileging the idea of athletes as sovereign decision-makers, failing to situate the decision in the nexus of embedded relations. Again, perhaps this is all that can be expected of such a document. Moreover, because of the explicit evidence-based approach, the above recommendation is evaluated as the lowest of three levels (C) in the Strength of Recommendations Taxonomy (SORT) (Ebell et al. 2004). The use of this scale is not without merit; any attempt to scale the strength of a recommendation is no small undertaking, and one based on ‘quality, quantity, and consistency of evidence’ is clearly of clinical utility. Nor is it ethically insignificant, being focused on the ‘use of patient-oriented outcomes that measure changes in morbidity or mortality’ (Ebell et al. 2004, 61). Yet, it is not so much additional evidence that is required, but a reframing of our interpretive framework, a wider casting of the net of relevant considerations such as the athletes’ short- and long-term preferences, their values, as well as the risks and benefits to their loved ones or public entities, such as the state.¹² More and better evidence need not be the decisive factor. Understanding the athlete-patient’s values and priorities *in situ* is at least as important, and this, in turn, hinges on a sufficiently rich (relational) understanding of autonomy.

What does it mean to focus on the relationality of autonomy in complex contexts such as those surrounding post-concussive episodes? First, we have to understand the networks of relationships, norms, and rules that provide the context for beliefs, values, and intentional actions more generally. These relationships, norms, and rules both enable and constrain the agents’ actions. An athlete’s ability to make choices is supported by

resources such as cognitive capacities, physical skills, wealth, and coaching support, as well as nurturing relationships with family, peers, institutions, and coaching staff. In contrast, peer pressure, internalized fears, technical orders, social expectations, and contractual obligations, as well as the lack of resources, constrain the athlete's ability to choose. The capacity for autonomy results from the interplay of enabling and constraining individual and contextual aspects. Better said, individual choices exhibit different degrees of autonomy depending on the agent's capacities and their exposure to different contextual elements.

2.2. Addressing sources of vulnerability

The relational character of autonomy is rooted in the inherent sociality and vulnerability of human life (Macintyre 1999; Rogers, Mackenzie, and Dodds 2012). The Aristotelian background is evident: humans are social beings whose intrinsic vulnerability means they must exist and cooperate in partnerships; they must live in societies to survive and thrive—only gods or beasts can live outside society (Aristotle 1999). Thus, society members depend on mutual care and support relationships and are vulnerable to one another. According to Wendy Rogers, Mackenzie, and Dodds (2012), a vulnerable individual is one 'susceptible to serious harms . . . with respect to the meeting of one's vital needs—harms that impair one's ability to lead a flourishing life' (22). From a relational perspective, autonomy exists in tension with vulnerability (Tronto 2020). They are typically inversely related (Macioce 2019; ten Have 2015). When one increases, the other decreases. Relational understandings of autonomy aim to minimize or remove elements that increase vulnerability and promote those that reduce vulnerability.

Multiple elements affect vulnerability. Individuals can easily perceive some of these elements, but not all. Take the example of a coach, peer, or athletic director expressing their expectation (or directly ordering) that an athlete must play through injury. In other cases, however, elements affecting vulnerability are more subtle and work at the sub-conscious or contextual levels. Consider ingrained beliefs about toughness, implicit biases affecting decision-making, institutional policies prioritizing performance over athlete welfare, unequal healthcare resources, or systemic inequalities in sport contexts. Daniel S. Goldberg (2008), for example, notes that most sports with a high prevalence of brain injuries nevertheless possess a culture of playing through pain and injury. David Howe (2003) discusses an example from rugby, where players are instilled into a warrior culture (he uses the concept of 'habitus' from Pierre Bourdieu) or a team that places high value on self-sacrificing attitudes (e.g. playing through pain) and condemns prudential behavior. Given these considerations, in contrast to the medical management model of the various CSs, Steven H. Miles and Shailey Prasad (2016) argue that effective prevention efforts must concentrate on 'environmental, social and behavioral conditions, cultural patterns known to increase the risk of [brain] disease' (8). Relational approaches to autonomy are more sensitive to contextual elements, allowing to 'unpack the complex biopsychosocial phenomena involved in producing, exacerbating, and relieving the traumatic consequences . . . ' of brain injuries (Gillett 2018, 715).

The following example illustrates the proposed understanding of relational autonomy and vulnerability. A college football star quarterback playing for a prestigious ranked team suffers from a concussion after being sacked in

a conference game. That is to say, the most important strategic player of the team has a head injury during the most crucial match of the season. He is removed from the game, and the team's medical crew, which includes a neurologist, uses the latest state-of-the-art equipment to evaluate him. During the evaluation, the quarterback—dazed and confused—attempts to evaluate the pros and cons of staying on the field. In his mind are the previous experiences of having played or trained through injury, the possibility of long-term brain damage; the teammates' and spectators' hopes—even expectations—that he returns to play; the teams' tradition of putting their bodies on the line for the team; the fear of earning the reputation of being weak; the presence of National Football League (NFL) scouts in the stands and an impending professional draft and contract; the life-long dream to win a major trophy; the awareness that thousands of people are watching the match live; and more.

Contrast this with this other imaginary case. An amateur female rugby player competes at a community-organized tournament on any given Sunday in rural Spain, where there is hardly a strong rugby tradition. She suffers from a concussion after tackling an opponent with poor technique. No one at the match has any expertise in identifying, let alone treating, brain injuries. Nevertheless, both the coach and referee completed a short mandatory concussion training to obtain their respective licenses. They recall that a player suspected of having suffered a concussion must be removed from play and sent to a healthcare professional with brain injury expertise. Yet, the town lacks a person with such expertise. To be evaluated by such an expert, the player would have to visit her primary care doctor the following day and get a referral to a neurologist in the closest hospital to her town. Before the players get to see the specialist, she feels better and, drawing on experiences with previous injuries, rejoins the team at the next practice session to play the next tournament match.

The aforementioned two cases present two brain-injured athletes in profoundly different contexts. They help to understand the stark differences among the enabling and constraining elements that each athlete experiences. Because autonomy is heavily contextual, concussion recommendations, if aimed at empowering athletes' decision-making, must be more attentive to the context in which athletes at risk of suffering from brain injuries make decisions. This, however, raises a significant challenge: the more global one's reach, the less attentive one can be to context. The CS authors face this dilemma but end up squarely on the side of de-contextualized medico-scientific evidence and knowledge. Thus, the CSs would benefit from greater attentiveness to contextual aspects. The documents do recognize that 'treatment should be individualized and target specific medical, physical and psychosocial factors' (843). For example, sociocultural elements are mentioned once, at the end of the 'Prevention' section in the 2017 version. Yet this CS fails to elaborate on the relevance of these factors or an explanation of their significance—other than specifying that they 'play a significant role in the uptake of any injury-prevention strategy' (845). The same applies to the 2022 Statement. In this case, nonetheless, references to sociocultural elements are solely included in the 'Retirement' section, as stated earlier. Nevertheless, like our other examples, these have the flavor of a minor impediment to the unswerving commitment to evidence-based medicine. Despite remarking on the importance of approaching brain injury incidents from multidisciplinary lenses, little emphasis is actually placed on it (McNamee et al. 2023).

3. Limitations of the consensus statements' ethical framework

Healthcare ethicists, drawing on nuanced conceptions of autonomy like the relational model, have criticized the limitations of dyadic frameworks, particularly their reductionistic, idealistic, and individualistic character (Sherwin 2007). Even in cases of competent adults, health-related decisions cannot always be understood as involving interactions merely between two independent subjects: a patient and a healthcare professional. They also result from a plethora of contextual elements, some of which are easily attributable to a third party or agent (e.g. coaches, trainers, parents) whose influences are often captured in the triadic frameworks described previously. Nevertheless, these frameworks sometimes insufficiently grasp the complexity of athletes' health-related choices.

3.1. Complexity and reductionism

Brain injury incidents are complex cumulative processes originating from myriad agents and factors. As Dominic Malcolm (2021) observes, brain injury incidents cannot always be reduced to discrete events involving a fixed and precise number of agents. The CSs overemphasize *post facto* protocols by *medical professionals* for *brain-injured sport practitioners* to follow and ignore contextual elements affecting athletes' decisions. Blending the decision-making process with such personnel may overlook crucial distinctions. The CSs would benefit from more clearly separating these elements and paying close attention to the different power dynamics and interactions between healthcare professionals and non-medical agents, like agents, parents, and other family members who may also provide (more or less informed) input, or factors, such as economic pressure, cultural biases, and power structures. Consider, for example, how the 'Return-to-sport recommendations' section exclusively focuses on steps to be dictated and controlled by clinicians and followed by athletes. On the one hand, this is commonsensical. Healthcare professionals stand in an epistemically privileged position to their athlete patients. Yet, decisions to return to play or even to study, though medically informed, are not merely medical decisions. They are decisions about one's identity, one's future. The CS, in its most recent iteration, does mention 'social factors' as a post-injury contextual element to be considered (Patricios et al. 2023, 703). It also asserts that '[t]he decision-making process should include a comprehensive clinical evaluation that considers important patient-, injury-, sport-specific and other sociocultural factors' (Patricios et al. 2023, 704–705). However, this framing of the process is somewhat reductionist: the decision is predominantly shaped by the healthcare professional's access to knowledge and their understanding of science. Michael Makdissi et al.'s (2023) systematic review is more forthcoming:

The assessment should include consideration of psychosocial factors (eg, values, identity, risk tolerance, psychological readiness), injury-specific factors (eg, history of prior concussions including number, worsening postconcussive symptoms with subsequent concussions, lower threshold for concussions), sport-specific factors (eg, type of sport, level played), and any persisting symptoms and/or neurocognitive concerns. (829)

Makdissi and colleagues better integrate relevant contextual dimensions and aspects, such as the athlete's values and identity or the sport's nature and competitive level, to guide concussion-related decision-making in sport.

3.2. Idealization and application

One of the key points arising from the various protocols is the potential scope for application. The recommendations have a strong tendency to be idealized. They take for granted a high level of access to healthcare specialists as well as well-resourced and functioning healthcare systems, privileging specific contexts: elite-level professional, club, or collegiate competitions (Casper et al. 2021). For instance, the 2017 protocols stipulate: ‘the player *should be safely removed* from practice or play and urgent referral to a physician arranged [adding that] the player *should not be left alone* after the injury’ (McCrorry et al. 2017, 840, emphasis added). However, in many parts of the globe, it is quite plausible that no healthcare provider with the necessary expertise might be available when a brain injury occurs. Thus, several questions emerge: Who is responsible for safely removing the athlete from the field? What specific knowledge and training in symptom identification are required? Should coaches and parents undergo mandatory training in sport-related first aid, and who will provide this training if so? What responsibilities and liabilities will these individuals face if they are not healthcare professionals?

With good reason, given these challenges, the 2022 authors are more circumspect ‘[t]he recognition of concussion is the first step to initiating the management of SRC. Removal of a player from the field of play *should be done* if *there is* suspicion of a possible concussion to avoid further potential injury’ (Patricios et al. 2023, 699). The Statement’s use of the passive voice is reasonable, but it fails to specify *who*, in the absence of a healthcare professional, has responsibility over a brain-injured athlete’s health, centering the recommendations on healthcare professionals. The latest version of the protocols does state that the suspicion that a player has experienced a brain injury ‘may be based on a player’s symptoms or signs observed by other players, medical staff or officials (on the field or video)’ (Patricios et al. 2023, 699). Even so, the document fails to specify who should have the authority to ask the player to leave the playing field. In these cases, nobody would protect the athletes’ autonomy, let alone promote their best interests. Although this may well be beyond the scope of the CSs, it points to a genuine lacuna for each sport where concussive episodes are reasonably foreseeable to address. This brings to the fore a well-documented ethical issue in sport medicine: conflicts of interest (Goldberg 2008; Partridge 2014).

3.3. Conflicts of interest

The CiSG has been attentive to conflicts of interest in managing concussions, but mainly to those affecting the drafters of the protocols. The document ‘Implementation of the 2017 Consensus Statement’ acknowledged the existence of these conflicts, emphasizing the importance of minimizing them through the employment of independent concussion consultants and peer-review doctor decisions. To further address these problems, the IOC appointed an ethicist, Mike McNamee, to the leadership group toward the end of the 2022 CS process. Thus, in the 2022 Amsterdam CS, when pondering directives for discussing retirement or discontinuation from collision sport, the CS declares that healthcare professionals ‘should make the athlete aware of the role(s) they are playing in the athlete’s care, stating clearly if they have any potential or actual conflicts of interest’

(Patricios et al. 2023, 705).¹³ Other processes to acknowledge conflicts of interest were made as part of the Amsterdam CS process, which comprised a series of 10 systematic reviews, the CS, and a methodology statement. At the congress, all lead authors of the research presentations were required to both store a copy of their funded research as well as consultancies in a publicly accessible digital repository and to declare them on the first slide of their presentations. Moreover, every systematic review presented at the conference was followed by questions from the floor, requiring that no question be put to the congress without the questioner first declaring their interests (Schneider et al. 2023).

These modifications to the CS process are clearly ethical gains, especially in the face of the public's considerable disquiet over athlete welfare and a growing distrust in science—for instance, as a result of efforts at manufacturing doubts concerning the harms of brain injury in sport (Surendran and Fainaru-Wada 2024). Some of the CSs' authors are employed by professional sport franchises or clubs, while others serve as team doctors or sport governing bodies/competition chief medical officers; many also provide expert testimony in legal cases. It seems now that the pressing question for the future is not merely what (potential) conflicts of interest a contributor to the CS research might have but which ought to disqualify them from such research, protocols, and recommendations. The challenge lies in that the contributors to the CSs are universally acknowledged experts in their fields (e.g. clinical sport medicine, epidemiology, neurology, neurosurgery). So, the very people one may wish to appoint to such important roles as gathering up-to-date research and applying it are the same people with vested interests in various entities that threaten to undermine their objectivity (see Partridge 2024). Therefore, excluding these contributors due to conflicts of interest would deprive the CS processes of the highest expertise available concerning head trauma in sports. However, this is not the sole consideration. While important, the conflicts of interest affecting the researchers producing concussion statements or associated publications and protocols are only one potential ethical issue stemming from the involvement of third parties in the relationship between athletes and healthcare professionals.

3.4. Individualism: conceptual considerations, clinical consequences

Viewing autonomous individuals as self-sufficient, rational decision-makers free from coercion and possessing a substantial understanding of their situation obscures a critical element of humans' ability to make choices: the contextual character of existence. As Richard Robeson and Nancy King (2014) note, 'autonomy is an abstraction ... unless examined in context' (338). In the athletes' case, the contexts in which they make choices comprise specific individuals, teams, governing bodies, and policies, all of which have rich histories and traditions. Approaches to athlete autonomy must account for as many elements as possible, especially when conceptualizing autonomy-constraining aspects. One clear problem regarding the authority of an (as yet to be specified) individual to remove a player with a suspected concussion from the field of play is the legitimate warrant for their paternalism. What is the autonomy of the athlete? As stated above, if an athlete's cognitive capacities are compromised during play, their removal is a case of justifiable soft paternalism. How might this inform return-to-learn, return-to-train, or return-to-play scenarios?

Given the highly competitive nature of sport, some ethicists refer to these sporting environments as 'coercive' (Dixon 2001; Murray 1983). Put simply, coercion involves using force or threats to influence someone's actions or decisions. In these contexts, coercive forces emerge from the complex interplay between multiple agents—such as sport teams, governing bodies, and spectators—and contextual factors like economic pressures, cultural biases, and existing power structures. These elements heavily affect athletes' decision-making. The aptness of the term 'coercion' is open to debate (for a critique, see Veber 2014).¹⁴ Nevertheless, one may at least justifiably perceive these dynamics as cases of 'external controlling factors or forces', which is all that is required for our point to apply here.

Challenging the use of the label 'coercion' to situations that require making choices under controlling influences and pressures, Catherine K. McKeever (2017) differentiates hard choices from bad choices. The former are commonplace in sport. Many lament the latter years of the career of the great Muhammad Ali and directly attribute his Parkinsonian infirmity to it. In March 2024, former world champion Mike Tyson confirmed his comeback 20 years after retirement, presumably in search of one last payday (Rozen 2024). Can we say with reasonable certainty that these were anything other than autonomous decisions weighing up the meaningful risks and benefits to both athletes? To increase their chances of succeeding, athletes must make painful trade-offs such as completing physically demanding training exercises, controlling their food habits, and reducing their family time. Bad choices, on the other hand, require the presence of moral wrongdoing. Thus, they are morally unacceptable and must be minimized or eliminated. Only pressures or controlling influences involving moral wrongdoing (i.e. violating a moral principle) properly qualify as coercive (Arnold 2001).

Regardless of conceptual nuance, it is important to recognize the myriad of potential contextual elements affecting athletes' decisions, some of which, as Gary (2023) emphasizes, are not easily attributable directly to specific agents and, thereby, more difficult to pin down (which places these discussions well beyond the realm of conflict of interest). For instance, in examining boxing communities, which are perhaps most greatly affected by head trauma due to the sport's constitutive rules allowing direct blows to the head, Dixon (2001) notes that boxers face pressures and influences not only from promoters, managers, trainers, and institutions responsible for the sport but also from their socio-economic condition. These pressures are hardly confined to high-profile commercialized sports. In her analysis of student-athletes in US universities, Erin Hatton (2019) employs the term 'status coercion' to capture the complex nature of the relationships that control student-athletes. This type of controlling interaction results from multiple agents and factors, and it operates by threatening people with removing their 'rights, privileges, and future opportunities that such status confers' (13).

Even in the absence of external controlling forces, contextual aspects raise significant challenges to athlete autonomy. Given the historical character of initiation into sport, many athletes forge their identity around their role as athletes and belonging to an athletic community. Thus, the idea of a life detached from such a role and community, for instance, as a result of (early) retirement, compounds the sense of death of vital parts of personality and lifestyle. It also may represent the demise of other key aspects, such as economic security, sense of belonging, and status within an athletic milieu. This has as many links vertically as horizontally—the loss of brother- or sisterhood is palpable, but

coaches are often the most important hierarchical figure in the lives of athletes, often far more so than parental influence (Kalman-Lamb and Silva 2024). The fear of losing essential aspects of their identity explains the litany of nightmares starred by athletes making a comeback against all medical advice.

The question, then, arises as to the scope of the CSs. Should their authors make more specific contextual recommendations to limit the influence of poorly informed or malign third parties or those so deeply vested that their contributions are inherently conflicted? Further, should they address the control exerted by contextual forces hardly traced to particular agents? This would lead to recognizing broader and more pervasive contextual issues in sport. While attending to all of these contextual aspects is well beyond the scope of the CSs, perhaps they could be accounted for by giving greater thought and paying more attention to athletes or situations that render athletes more vulnerable to contextual forces. For instance, they could center on athletes undergoing significant life changes, such as those in transition as a result of career-ending brain trauma or those facing a career-defining choice.

4. Recommendations

In sum, as we explore the complex and often subtle pressures influencing athlete decision-making, such as those highlighted above by Dixon in boxing and Hatton in US university sport, one must question whether the CSs sufficiently address the broader scope of contextual influences. These include the direct pressures from within the sport community and also the wider, more diffuse contextual factors affecting athletes' autonomy. These factors extend well beyond conflicts of interest and encompass a range of socioeconomic determinants that shape athletes' experiences (Malcolm *forthcoming*). Such an extensive range of influences calls for a more nuanced approach to protect and empower athletes, especially those in vulnerable transitions, such as dealing with career-ending injuries or facing crucial career decisions. The six CSs to date have significantly helped healthcare professionals promote and protect athletes' health and have the ability to empower athletes to make sound health-related decisions. Despite offering clear progress compared to its predecessors, the ethical framework underlying the most recent consensus statement should be revised to add greater sophistication in guiding athletes and relevant parties to informed and holistic judgments. What follows is a series of recommendations resulting from these considerations.

4.1. Recommendation 1: adopt a broader understanding of autonomy

In addition to building upon a dyadic, or at most triadic, understanding of the relationship between healthcare professionals and athletes, the CS authors should embrace a broader interpretation of this relationship, one built upon relational accounts of autonomy. This has the corollary of requiring greater evidence and information concerning non-medical data. While it is true that athletes are the final decision-makers in most cases, enabling a fuller scope of reasons to inform judgments and, if possible, addressing contextual aspects that affect their decision-making can only be good for athletes. Of course, there will be times when soft paternalistic interventions are obligated to make the removal from the field of play and non-return to play mandatory. It is clear that the latest CS has gone further than any previous versions, and this is undoubtedly an ethical gain, reducing the

vulnerability experienced by athletes in sporting contexts with a high brain injury incidence. Future CSs must emphasize the importance of accounting for relationships that enable or constrain people's ability to make wise choices.

4.2. Recommendation 2: further minimize conflicts of interest

Conflicts of interest resulting from third-party involvement, including those who draft the CSs, significantly increase athletes' vulnerability, hindering their decision-making ability. The transparency measures identified above could be complemented by some of the following proposals. First, it should include clear guidelines that define unacceptable conflicts and set strict limits on the participation of individuals with significant conflicts. Secondly, it should implement training tools for involved parties on the importance of integrity and the impact of conflicts of interest, ensuring everyone understands the standards expected in their roles.

4.3. Recommendation 3: enhance healthcare professional training

Familiarity with different contextual conditions would allow healthcare professionals to devise treatment plans that better adjust to athletes' contexts. For instance, the 2017 Consensus Statement identifies several challenges when discussing the special character of children and adolescents, and one challenge arises when treating adult athletes (i.e. athletes are eager to play and fail to prioritize prudential reasons). Still, it fails to capture the wide variety of challenges healthcare professionals face. The CS does identify some athletes as 'special' due to their vulnerability, namely children and adolescents. However, all other participants are conflated in the same category: 'All athletes, regardless of level of participation, should be managed using the same management principles noted above' (McCrary et al. 2017, 844). Nevertheless, as explained, different contexts render athletes vulnerable in different ways. An adult athlete playing football in a prestigious US university and a female amateur rugby player competing in a community-based tournament in a rural area find themselves in radically different situations. Although the CiSG intends their guidance to be general, they could account for significant differences among the athletes whose health the guidelines try to protect and promote. While many steps that could be taken in this direction might fall beyond the scope of the protocols, emphasis could be placed on individuals who encounter high degrees of vulnerability due to the significance of their health-related choices (e.g. early retirement) or the situation in which they find themselves (e.g. a career-defining moment).

4.4. Recommendation 4: promote research on sociocultural elements affecting athletes' vulnerability/autonomy

Sociocultural studies play a crucial role in helping understand the contexts in which people make decisions, as well as some of the elements that enable and constrain their health-related choices. A typology of brain-injured patients can hardly be developed without contributions from humanistic and social scientific studies on athlete decision-making experiences and contexts. This type of research should inform the

development of concussion management protocols responsive to athletes' diverse contexts and backgrounds, ensuring that interventions are more culturally sensitive and ethically sound. Although the protocols must preserve some of their generality, a way to include these perspectives would be a panel featuring ethicists, social scientists, and athlete representatives. These reviews should assess the effectiveness of current protocols in protecting athlete welfare and suggest improvements based on athletes' lived experiences.

5. Conclusion

In this paper, we have provided a critical analysis of the Concussion in Sport Group's Consensus Statements from 2001 to 2023, highlighting significant ethical challenges in the documents. By drawing on medical ethics concepts and a relational view of autonomy, we have identified key areas where these protocols fall short, particularly the evaluation of athlete autonomy, the influence of conflicting interests, and the sensitivity to contextual aspects. Our recommendations aim to strengthen these protocols by introducing measures to minimize conflicts of interest, enhance the specificity and applicability of athlete categorizations based on individual vulnerabilities, improve training for healthcare professionals, and expand research into the sociocultural dynamics influencing athlete decision-making. These steps are crucial not only for increasing the effectiveness of concussion management but also for aligning these practices with principles of medical ethics and nuanced views of (relational) autonomy.

Notes

1. The notion 'brain injury' is an umbrella term encompassing uncertain diagnoses of a wide range of conditions. Within this spectrum, we find mild traumatic brain injuries (mTBIs), concussions, and more severe traumatic brain injuries (TBIs), making the issue multifaceted.
2. Similar concerns have been raised regarding ball heading in soccer (see Reynolds 2023; Siva 2020)
3. Interestingly, the earlier versions of the document included 'coaches and others involved in the care of injured athletes' as part of the intended audience, a reference that is notably missing in the latest versions of the document.
4. It is important to note that the documents intentionally differentiate this guidance from clinical practice guidelines and legal standards of care. Here, it seems that the CiSG is acting prudently so as to defend against legal claims against their findings and summary positions.
5. A declaration of interest is required here in terms of transparency. One of the co-authors of this piece (McNamee) was invited by the International Olympic Committee (who led the funding of the Amsterdam congress and consensus process) to join the leadership group that produced the CS in the early summer of 2022. To some extent, then, he acknowledges a sense of shared responsibility with co-authors for failings or weaknesses identified here. For the record, his contribution was around ethical dimensions of research design and recommendations for good clinical practice. He did not contribute to the development of specific protocol tools.
6. Non-maleficence, another fundamental principle in the principlist framework, is reflected in those guidelines that are directed at the reduction of risk in collision sport. However, in this case, the agents responsible for risk reduction are often not medical professionals but sport organizations.

7. In this regard, they resemble patients who exhibit the ‘therapeutic misconception’. There is ample research of patients being told that they are on a medical research trial for which no benefits will necessarily accrue, yet they still firmly believe their participation will have therapeutic effects (Lidz and Appelbaum 2002). Others have suggested that this misconception needs to be nuanced according to the precise form of positive belief that is held (Hornig and Grady 2003). This more considered psychological evaluation appears apt to explain the apparently irrational beliefs held by some players.
8. Take the case of the Miami Dolphin’s quarterback Tua Tagovailoa in the National Football League (NFL). Tagovailoa suffered an initial brain injury during a game on Sunday, September 25, 2022. Notwithstanding this, he returned to play on the same day and was fielded for his team’s next game just five days later, where he sustained another head injury. On the latter occasion, the football player needed medical assistance to be removed from the field and taken to the hospital (Belson 2022). A few days later, the NFL vice president, Jeff Miller, assured a press conference that team doctors and league-affiliated neurologists had followed the concussion protocols. Many, including the NFL players’ union, questioned if this was the case (Diamond 2020). Making the reasonable assumption that he was not forced to play, the incident underscores the injured player’s determination to return to play despite having endured neurological trauma.
9. Importantly, one must be mindful that athletes seek advice and help from a wide variety of healthcare professionals (e.g. sport medicine doctors, physical therapists, sport psychologists, strength and conditioning trainers), each of whom has different obligations or responsibilities depending on their influence over the athletes’ decisions (Brown et al. 2023; Drew et al. 2023).
10. Indeed, in cases where healthcare professionals trained in concussion management are not present, one of these figures may be required to step in to provide guidance.
11. Thanks to Søren Holm for bringing this point to our attention.
12. The sort of thing we have in mind here is undertaken, in relation to BASEjumping, by Gunnar (Breivik 2007).
13. This is drawn from a systematic review on the ‘Decision to Retire’ (Makdissi et al. 2023), another welcome addition to the CS activity. In that paper, it was recommended that healthcare professionals, ‘Make the athlete aware of the role(s) they play in the athlete’s care, stating clearly if they have or foresee any potential or actual conflicts of interest affecting the decision that might compound informed decision-making by the athlete’ (827). The same wording appears later in the key recommendations.
14. Drawing on Robert Nozick’s understanding of coercion, he opposes the notion of contextual coercion. In his view, leaving athletes with a set of non-optimal options to make them more likely to make a specific choice does not always count as coercion. Similarly, Dixon (2008) posits that, if anything people do to gain a competitive advantage counts as coercion, then that understanding of ‘coercion’ is vacuous. From this narrower viewpoint, coercion can only result from threats or offers that violate a moral principle.

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