Concussion Protocols in Elite Sports: Gaps Between Research and Clinical Practice

Riaz Ahmed

ABSTRACT

Concussion protocols in elite sports have advanced in response to expanding research, but their real-world implementation remains inconsistent and ethically problematic. The provided critical review and policy analysis are unique because they examine ethical, institutional, and cultural barriers that inhibit the process of directing concussion science to effective clinical practice. The article emphasizes that systemic pressures, such as commercial interests or cultural norms and values, and the structural conflict of interests play a role in undermining the uniform implementation of the protocols for returning to sports and, consequently, continue to threaten athletes' brain health. Drawing on case studies, available literature, and policy reviews, the article recommends the implementation of enforceable regulations, external control, and a change of priorities in elite sports, which should focus more on long-term success rather than on achieving immediate and temporary success of the athletes. Since there is more research on sports-related concussions now, the protocols for concussions in elite sports are not always up to clinical or ethical standards. It looks closely at the persistent gap between research evidence and clinical practice in the care of concussions among athletes. Systemic challenges often hinder the implementation of best practices, highlighting gaps between guidelines and their practical application. The study highlights that return-to-play protocols are inconsistently implemented, athletes continue to underreport symptoms, and not having the same medical support across all teams can put athletes at risk. High-profile cases show that many are not following the recommended evidence-based guidelines. It became clear that several elite sports organizations fail to follow protocols, monitor events, and hold everyone accountable properly. The research concludes that the gap between scientific methods and clinical approaches in sports cannot be filled with technical solutions alone; it requires significant changes, regulation, and the everyday adoption of new principles by sports experts. Mounting ethical and professional concerns should center on preserving athlete brain health rather than focusing solely on short-term athletic success in every area of elite sports.

Keywords: Concussion protocols, Elite sports, Return-to-play, Systemic challenges, Ethical concerns

Department of Medical Sciences, Military College of Signals, Rawalpindi, Pakistan

Correspondence to: Riaz Ahmed, riazkhattak450@gmail.com

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Introduction

Definition and Nature of Concussion

A mild traumatic brain injury (mTBI) or concussion comes about as a result of any external or internal force that interferes with the normal functioning of the brain. Although concussions are generally seen as temporary, they are cumulative, long-lasting, and even disabling in some cases.

Concussions in Elite Sports

Elite sports have a particular focus on speed, contact, and spectacle, and the latter increases the risk of concussion incidents, which often go unreported, pressured by cultural and competitive factors. Scientific research and guidelines about cautious return-to-play (RTP) routines have been developed, yet evidence has revealed inconsistencies and ineffective practice across nations.

Purpose and Focus of This Review

The present paper aims to review critically and provide a policy analysis of the gap between concussion science and clinical practice in high-level sports. In contrast to other medical reviews, this work is devoted to the barriers to the meaningful introduction of the best practice in the form of ethical, institutional, and cultural obstacles. However, after analyzing relevant literature, high-profile cases, and existing policy frameworks, the paper shows how institutional problems (conflicting interests, commercial goals, and poor regulation, among others) engage with a continuous management failure of concussions. The goal is to identify these obstacles and propose concrete reforms to ensure that athlete health takes precedence in elite sporting contexts.

A concussion develops when forces from outside or inside the body cause the brain to function abnormally, which is called a mTBI. Most of the time, concussions are considered short-term, but the effects can keep accumulating, last a long time, and sometimes leave people disabled. Because speed, contact, and intense action are the prominent features in elite sports, concussions are common among athletes, but some are not always reported.[1] American football, rugby, ice hockey, boxing, and soccer have seen a rise in players getting concussions, which has led to more concerns from doctors, journalists, and the legal system. Elite sports require the highest possible attention to strict concussion protocols. Research in scientific literature shows that athletes suffering from concussions should be evacuated from the game, carefully checked by a medical expert, and return to playing very slowly.[2] Despite guidelines being provided to doctors, they have not consistently been successfully implemented in practice. Most protocols represent aspirations rather than enforceable standards, and their use can vary significantly between organizations, teams, and clinicians.

Objectives of the Study

This evaluation aims to identify areas where the science of concussion care does not align with its application in sports. The analysis examines the issues

related to patterns, traditions, and values within this gap to understand why practices based on research often fail in strict, competitive settings.[3] By examining current laws, the challenges in implementing them, and well-publicized failures, this study underscores the need for urgent reform. The purpose is to highlight current issues and stimulate conversations about ensuring that elite sports prioritize athlete health, even as it generates revenue.

This article employs a critical review and policy analysis methodology, drawing from a targeted synthesis of peer-reviewed literature, consensus statements, high-profile case studies, and organizational protocols related to concussion management in elite sports. The sources were chosen for their topic correspondence to such themes as the gap in clinical practice, ethical considerations, organizational obstacles, and policy efficiency. It aims to bridge the gap between scientific data and structural, cultural, and commercial factors that determine how concussions are treated globally so that reform can be implemented in practice.

Methods

The methodology employed in this article is the critical review and policy analysis approach, which uses a narrative format to study the disparity between the research on concussion and clinical practice in elite sports. The strategy combines the study of literature with the critique of a case study community, analyzing the policy and considering the ethical implications.

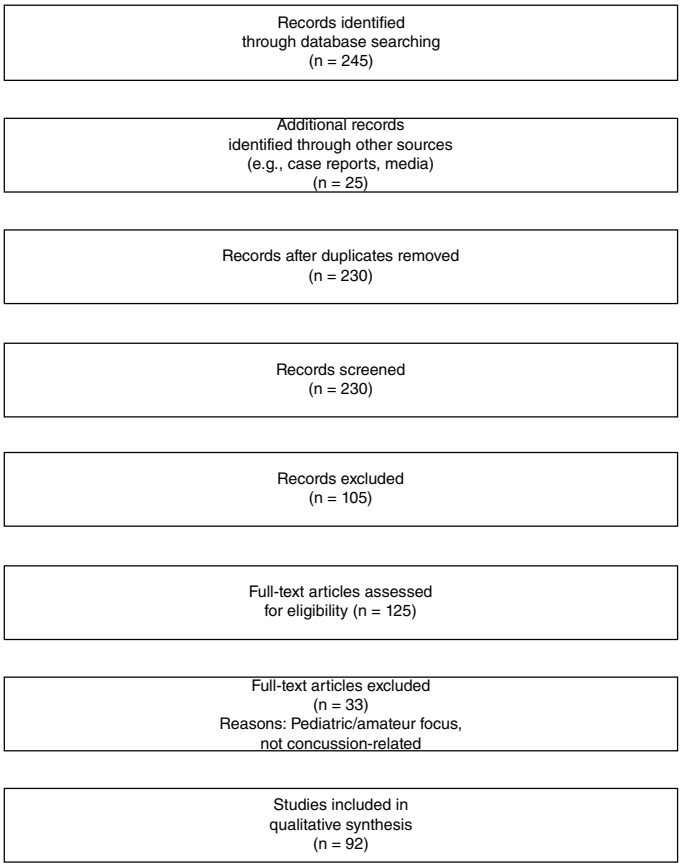

Fig 1 | PRISMA flowchart—the review's source selection process

The tools seek to identify systemic, cultural, and institutional evidence-based concussion care obstructions.

A targeted literature search was conducted between January 2000 and April 2025. We used five major databases: PubMed, Scopus, Web of Science, SPORTDiscus, and Google Scholar. The search was limited to peer-reviewed articles, consensus statements, organizational guidelines, and high-profile media-reported cases.

Search Terms

Combinations: Sports-related concussion, elite athletes, RTP protocol, concussion policy, SCAT5, Head Injury Assessment, neurocognitive assessment, concussion underreporting, concussion ethics, and conflict of interest. Boolean operators and MeSH terms were applicable.

The Inclusion Criteria

English-language studies about elite or professional sports, concussion management relevance, and addressing clinical, ethical, and policy problems. We added consensus statements, systematic reviews, and policy documents that directly focused on the topic. Excluded studies comprised research focused on nonprofessional or children-only athletes and articles or research unrelated to sports concussion or its management components.

Ninety-two sources were examined. These were clinical guidelines (e.g., SCAT5, Amsterdam Consensus), systematic reviews, national concussion policies, and case reporting, such as the National Football League (NFL) situation involving Tua Tagovailoa, as well as Head Injury Assessment (HIA) in Rugby Union. Sourcing followed thematic focuses and was restricted to four subjects: (1) scientific development, (2) implementation gaps, (3) systemic and cultural barriers, and (4) policy and accountability.

As this was a narrative review, no meta-analysis was conducted, and no formal quality assessment methods (PRISMA or AMSTAR) were applied. However, priority was given to peer-reviewed sources and sources made at the policy level. Triangulation, highlighting the correlation between case data, consensus guidelines, and empirical research studies, was important to us in ascertaining trends or patterns of practice deficiency and ethical conflict.

Although it was not a comprehensive approach, it allowed a critical literature synthesis that was context-rich. The review is analytical in nature and focused in-depth rather than on a technical audit of concussion research. It is intended to guide ethical and regulatory changes (Figure 1).

This flowchart illustrates the review's source selection process:

- 245 records were identified through database searching
- 25 additional sources were included (e.g., case studies, media, policy documents)
- After removing duplicates, 230 records remained
- 105 were excluded during screening

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- 125 full-text articles were assessed
- 33 were excluded for not meeting the inclusion criteria
- 92 studies were ultimately included in the qualitative synthesis

Evolution of Concussion Protocols in Elite Sports

From Tradition to Science: The Historical Shift

Before, the management of concussions in top sports was guided mainly by unproven cultural practices rather than research.[4] Until the late twentieth century, any athlete with a concussion was often reassured to play on without much attention paid to the consequences afterwards. This showed that sporting culture valued physical challenge more than health, a perspective supported by coaches, news reporting, and a generally comfortable attitude within sports organizations. In the early 2000s, the first international agreement on sports-related concussion was published, and similar meetings were held in Prague, Zurich, Berlin, and finally Amsterdam (2022). Experts from various fields developed them, introducing clear definitions, lists of symptoms, and rules for athletes' return to play.[5] The Sport Concussion Assessment Tool (SCAT) has been used in several versions (with the latest being SCAT5) to help standardize sideline assessment and management.

Ongoing Implementation Gaps and Pressures

Despite all these improvements, getting them into elite athletes has not been uniform. Because of outside pressure, the NFL's procedures for handling concussions have advanced, but some issues remain, mainly about getting independent medical evaluations. FIFA has implemented temporary concussion substitutions and informative campaigns, but not everyone adopts them, and the rules are not always applied faithfully.[6] Although the Rugby Union is recognized for its HIA, concerns persist about how players are monitored when injured and when they can return to the field. It is not just about the sports people play; the differences also stem from unequal care for their well-being, advantages for some teams and owners, and a lack of strong regulations. Some coaches and medical staff in elite contexts view concussion rules as guidelines, and team values and competitive needs influence their adherence to these guidelines.[7] Although we have learned a lot about treating concussions, they are still not managed well because of pressure from sports, companies, and culture. Instead of reaching a final best practice prioritizing health, the evolution of protocols has revealed that elite sports often prioritize spectacle over health (Figure 2).

State of the Science: Concussion Assessment and Management in Theory

Development of Clinical Guidelines and Diagnostic Tools

Over the past two decades, concussion science has also made concrete clinical guidelines and test-based diagnosis methods, including SCAT5, diffusion tensor imaging, and neurobiomarker studies, encompassing the best strategies for handling sports-related concussions (SRC). Consensus statements emphasize the immediate removal of players from the field, gradually returning to the field under the supervision of specialists, and the use of multidisciplinary care. Even with this substantial body of evidence, there is a lack of uniform implementation in elite sports. External forces, life forces, position timetable, and business motivation infringe upon the following guidelines. Although scientifically justified, applying advanced tools, such as enhanced diagnosis and independent assessment, is seldom used because of the logistical, financial, and institutional opposition. The research-practice divide

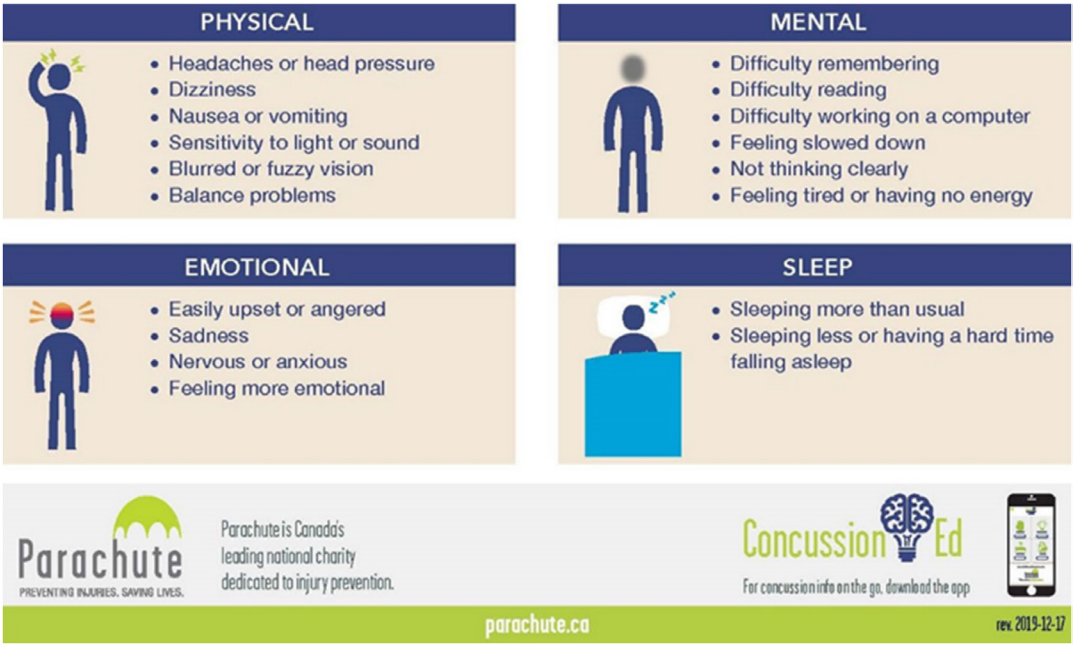

Fig 2 | Sports-related concussion and bodychecking in children and youth[16]

indicates systemic matters that prioritize the immediate performance potential of athletes over the existentially beneficial results of their long-term health.

Researchers have designed a detailed system to rate and handle SRC over the last twenty years.[8] Good clinical guidelines and consensus statements involving multiple specialties and diagnostic tools now establish best-practice standards. Their primary use has been theoretical, and seeing them used consistently in elite sports is less common.

Barriers to Implementation in Elite Sports Settings

When a concussion is suspected, the primary rule is for the player to be immediately removed from the game.[9] SCAT5 and similar tools provide medical professionals with a standardized method for assessing symptoms, mental skills, and balance at the time of injury. According to the Amsterdam Consensus Statement (2022), recovery from concussion should be personalized, and individuals should not be rushed back to play before they are fully recovered and ready. RTP is structured so that athletes increase their exercise as they improve from symptoms.[10] Often, pressure from external sources hinders the effectiveness of the graduated model in elite sports. Athletes are usually rushed through their recovery due to competition, so clearing them is typically a quick procedure and rarely based on medical reasons. Science is focusing more on assessments that go beyond just symptoms.

Systemic Conflicts and the Research-Practice Divide

Microstructural and functional abnormalities in the brain that last even after symptoms have gone away have been recorded using diffusion tensor imaging and functional MRI.[11] Studying markers such as S100B, GFAP, and neurofilament light chains could make diagnosing concussion-related injuries more precise and accurate. Nevertheless, these methods are seldom used in regular concussion care at the top level of sports. Mostly logistical, financial, and institutional resistance to new approaches keeps them from gaining recognition. Like AI, other promising inventions, including portable EEGs, eye-tracking systems, and digital cognitive platforms, are not broadly adopted. The amount of attention sports receive from the media and advertising often determines whether athletes prioritize them over their medical benefits.[12] Consequently, top athletes get the best possible care, but most are still assessed with inadequate or basic methods. A scientific consensus suggests that multiple professionals should be involved; however, a single physician typically makes all the decisions in elite sports. Performance pressures in sports medical settings make it challenging to adhere to the collaborative, independent, and athlete-focused model of care that the theory suggests.[13] There are still numerous problems with structural conflicts of interest. Although there is a wealth of scientific research on concussion management, its practical application varies and is inconsistent. The difference between what is proven and what is practiced demonstrates that hospitals often value hitting goals over doing what is right in medicine.[14] This gap in understanding forms the basis for stating that clinical care in top sports is imperfect and subject to institutional issues (Figure 3).

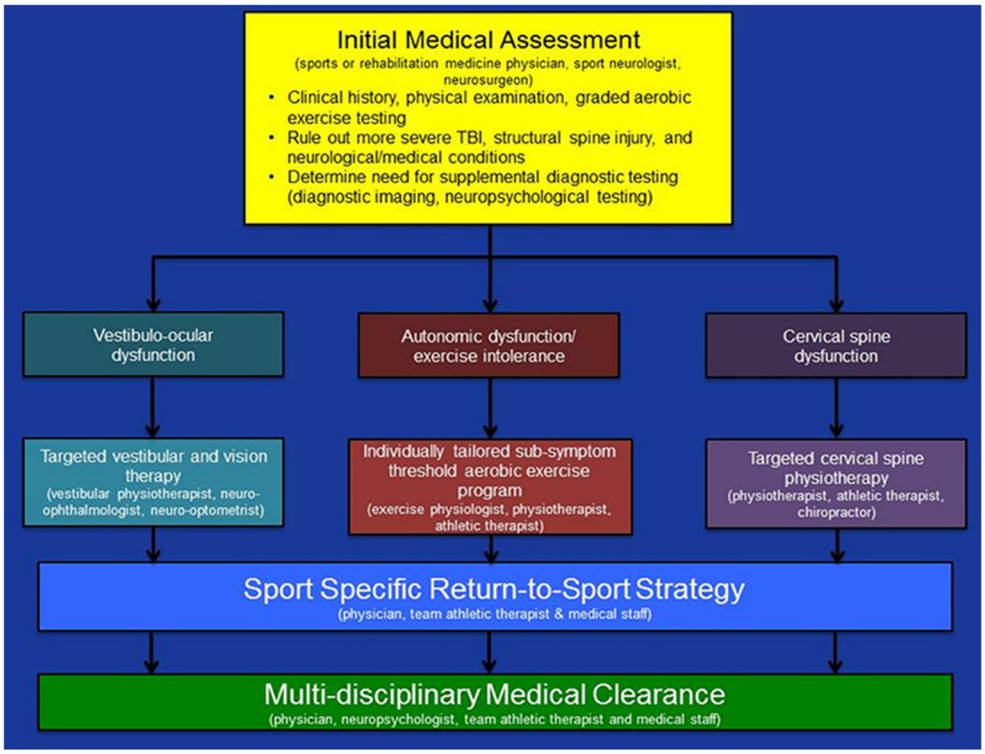

Fig 3 | Assessment and rehabilitation of acute concussion in athletes[24]

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Realities of Clinical Practice in Elite Sports Settings

Inconsistencies in Sideline Practice and Protocol Application

While concussion care in elite sports is theoretically guided by science and athlete welfare, real-world practice is shaped by systemic pressures, organizational flaws, and entrenched cultural beliefs. In medical decisions, it is common to see a trade-off between health needs, performance requirements, and management of the public image, and this brings about a divergence of best practice. Even though there are concrete remove-from-play instructions and standardized assessment instruments such as SCAT5, there is little consistency in decisions made at sidelines, and concussion procedures are shallowly applied at times.[15]

The outside pressure of coaches, management, sponsors, and athletes causes these failures. High stakes in professional sports add an incentive to cultivate a culture of valorization of resilience and discouragement of reporting symptoms, which form the backbone of an environment where athletes underreport injuries due to a potential risk of losing their position or contract. The medical personnel are regularly exposed to a conflict of interest because the team doctor can be tempted to serve the organizational interests and regard the player's health as a secondary priority, especially when his paycheck or promotion depends on the club's success.

Inequities in Resources and Follow-Up Care

The disparity in equal access to expertise and resources adds to the problem. Whereas specific teams may have access to neurologists and advanced diagnostic tools, others place themselves under the treatment of general practitioners or physiotherapists who have had little training on concussion. This unfairness is in sports and leagues where players are at more risk when receiving poor care. In addition, objective monitoring and follow-up are uncommon, often leading to rushed and unaccountable decisions when returning to play.[16] The most fundamental thing is that all these undermine concussion management in professional sports because of a system that values instantaneous outcomes more than lifelong neurological health. Unless these incidents of ethics and institutional shortcomings are curbed through structural reforms, including the establishment of independent medical supervision and follow-up plans, the athletes are at risk of unnecessary injuries.[17]

In theory, the care for concussions in top sports is based on science and what helps the athletes. A mix of different issues, system mistakes, and strong cultural beliefs tends to dominate medical decisions. Managing health, performance, and public image makes situations on the field significantly different from executing controlled medical protocols. No matter how much the rules are set on the field, some handling of concussions is poorly applied and occasionally perilous. Reports of injuries on the sidelines are sometimes unfinished or not done at all. "Remove-from-play" rules are only chosen in specific cases that depend on the match, the player, or what is shown in the media.[17] There is little consistency in using standard tools like SCAT5—these are seldom used to guide major decisions in the clinic. Often, concussion protocols are more about appearing to follow the rules than really protecting the players.

Cultural Pressures, Ethical Conflicts, and Lack of Oversight

External pressures have a significant impact and are often overlooked. Regularly, coaches, management, and even athletes try to convince injured players to ignore their symptoms or return to action faster.[18] Due to the significant financial rewards and sponsorships in elite sports, aspects such as injury recovery and healthy lifestyles are sometimes compromised. People who value resilience, such as athletes, may not discuss their problems because they do not wish to appear helpless. Still, employees in health settings, known as medical staff, are positioned in the organization's hierarchy to receive rewards for following orders rather than questioning them.[19] The lack of adequate and skilled people in health care contributes to the problem even more. While a few top teams receive support from neurologists and high-tech equipment, not all teams have this level of care—some depend on physiotherapists or doctors with limited concussion training. Not only is there a difference between sports, but sometimes between teams in a league, indicating a gap in resources and weak enforcement of minimum health rules. Ethical issues commonly arise when a doctor's judgment conflicts with the team's goals. The independence of team doctors is sometimes reduced by having them tied to the pay of the clubs that employ them.[17] When working in these settings, the doctor's primary duty is to the team or organization rather than the athlete. Since no medical authority exists, decisions about returning to play can be made quickly, without much responsibility. Due to these weaknesses, many organizations often prioritize short-term results over the long-term care of their employees' mental health. Also, the system relies on the person with a concussion to report it, which is difficult since they may not remember and feel pressured to play.[20] To hope for complete and sincere reporting in such a situation is thoughtless and morally wrong. Objective monitoring or follow-up after an injury is not fully implemented anywhere, putting athletes at risk of another injury. Instead, dealing with concussions in professional or elite sports relies on considering many factors. There is a lack of consistency in following protocols, as much is driven by the competitive nature of the field rather than by clinical science.[21] The absence of independent doctors and similar rules leads to inadequate concussion protocols, which fail to keep athletes safe from dangers they could avoid.

Identified Gaps Between Research and Practice

Despite significant scientific advances in concussion assessment and management, elite sports consistently fail to apply these insights. This lack of connection is not out of ignorance, but a force that can be linked to the systemic, cultural, and even commercial forces opposing the change. The fundamental issue

is the nonadherence to RTP principles: athletes are usually hurled back into the game promptly to reach performance levels or fulfill commercial obligations, damaging the essence of a graduated recovery model characterized.[22]

The cultural values that condone toughness and shame vulnerability mean that medical personnel receive cultural rewards to adhere to team interests and punishments to report symptoms; the institutional frameworks encourage athletes not to report their symptoms. Cleared decisions often form part of the screening, a few objective evaluations, or continuous neurocognitive follow-up. After clearance, subsequent assessments are infrequent, and conditions, such as the postconcussion syndrome or even the second-impact syndrome, remain underdiagnosed until severe damage has taken place.[23]

In addition to these failures is the absence of independent control and standardization across different leagues and countries. Concussion care is highly variable, demonstrating poor access to resources and a regulatory setup that condones protocol shopping and low responsibilities. Medical consideration can be reduced as the business and public relations concerns can be the primary driver of health rules, but not the real protection of the real athletes. Filling these gaps involves not only technical remedies, but systemic: adopt binding norms, permit independent medical override, create an approach to sporting that makes the long-term neurological safety of the athlete, rather than the immediate measure of performance, the regulatory standard.[24]

Similarly, media presentation of athletes never giving up, no matter the pain they are going through, gives unhealthy assumptions to the athletes and the spectators. The process of cultural denial can be seen in combat and contact sports since discussing early warnings of mental health issues is still regarded as weakness. Consequently, individuals like coaches, team members, and medical teams might respond in a definite manner toward head injuries because of such attitudes. All these gaps are detrimental to the system in which doctors are more concerned with the processes than science.[12] Since rules, expert judgments, and cultural components do not sufficiently assess and check elite sports institutions, research and practice will be highly inconsistent, and athletes' health will be at significant risk. Although more is being understood about concussions, there is still a vast difference between what science says and how the sports world responds to such injuries in elite athletes. This disconnection is not accidental; it occurs because of the slow nature of institutions, business motives, and cultural attitudes that are difficult to change. Various key issues make it clear that the present way of handling concussions is precarious.[25] A significant problem is that many athletes return to sports without adhering to proper RTP guidelines. Although it is emphasized in published research to start rehabilitation areas carefully under specialist watch, in practice, these steps are often taken early to achieve performance goals. Many athletes return to sports too soon, either because they fail to disclose all their symptoms or because the clearance process is expedited or influenced by external pressure.[26] In many situations, being "medically cleared" now serves as a routine formality rather than relying on specific data that documents safe progress. It harms what RTP frameworks seek to do and exposes athletes to repeated head trauma. Mistakes in reporting cases and incorrect diagnoses further change the situation in health care. Because of the risk of being dropped from the team or losing their contracts and cultural norms that promote toughness, athletes pretend they are okay and hide how they feel.[27] Officials on the sidelines—who generally have little time and are under much pressure—might fail to see signs that appear later or are very subtle. Many times, concussions that happen without noticeable loss of consciousness or neurological symptoms remain unaided or are dismissed as minor bumps. So, we often undercount how many concussions occur, and this makes people feel that concussions are not a cause for concern.[28] It is also a problem that there are no regular standards for observing someone following an injury. Although professional standards recommend that neurocognitive assessments continue after a player is cleared, this is rarely done in elite teams. As soon as an athlete is cleared to play, regular monitoring for neurological damage stops, which can hide the symptoms of postconcussion syndrome or second-impact syndrome until it is too late.[29] Failing to have a regular follow-up process is a significant failure of the duty of care. Pressures from society and the economy also complicate health care problems. Where commercial sports are major, such as in the NFL or throughout European football, decisions about concussions are primarily shaped by financial considerations and the organization's public image. To maintain their reputation, clubs and federations often adhere to rules primarily as a marketing strategy rather than genuinely prioritizing athlete well-being.[30]

In the same way, the way media promotes athletes always fighting through pain supports unhealthy presumptions in them and the fans. Cultural denial can be found in combat and contact sports, as it is still seen as weak to talk about early signs of mental health problems. As a result, coaches, team members, and medical staff may react a certain way to head injuries due to these attitudes. These gaps are inherent to the system, where doctors are more focused on procedures than science.[31] While institutions in elite sports are not adequately evaluated or monitored—either by rules, expert reviews, or culture—there will be a significant disparity between research and practice, putting athletes' health at considerable risk.

Case Studies and Controversies

Elite sports have been marred by high-profile incidents that reflect a widening chasm between the science behind concussions and their implementation, as outlined in this article. An example of such disconnection was a case of NFL quarterback Tua Tagovailoa in 2022. And even though Tagovailoa had some visible signs of

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a neurological impairment, he was still allowed to carry on, which was a clear violation of the set protocol. Potential damage control direction being that the interests of commercialism and competition enable them to take precedence over physician advice and compromise the safety of the athletes, as organizations cover damage control PR.[32]

This topic has been of similar concern in rugby union, where the concept of the HIA process is given praise, but has, in practice, been used atypically. Examples of athletes who have undergone rapid screening tests and experienced repeat concussions soon thereafter show that even with terms at face value, protocols are still not deeply rooted in practice, and cultural pressures to play while in pain persist.

These episodes emphasize a larger trend: concussion guidelines are often turned into mere procedural checklists instead of measures that safeguard athletes' well-being. They demonstrate that existing supervisory frameworks are underachieving and are unable to develop a cultural shift that entails long-term neurological health ahead of transient performance and profitability. Until there is autonomous medical power and legally binding measures regarding accountability, these controversies will keep on emerging, and they will conceal the cancers within the system using short-term or superficial remedies.[33]

Problematic events in elite sports underline the fact that research on concussions is not well used in clinical practice, and PR campaigns often hide this. In 2022, when NFL quarterback Tua Tagovailoa was seen by many as having a concussion, it highlighted a failure of sports organizations. Contrary to clear rules requiring quick removal and a careful evaluation, Tagovailoa was permitted to continue playing within a very short time, which worried people involved in concussion research and prevention.[34] The show highlighted that sports organizations may prioritize winning and financial gain over medical advice and guidance despite having formalized concussion policies and substantial funding. It revealed that, by focusing on entertainment, athlete health often falls by the wayside, and following health protocols is merely a formality. Concerns about how concussions are handled have repeatedly come up in rugby union. The introduction of the HIA protocol was praised, but it has also become clear that it has flaws.[35] Situations where athletes pass evaluations quickly but soon get additional concussions seem to indicate that the protocols are routinely ignored or enforced too loosely. The idea of playing hurt, which is part of the sports culture, creates a dangerous level of acceptance for concussions. The inconsistency in concussion procedures across different leagues and nations highlights the lack of established standards, which allows teams to focus more on victories than on prioritizing their athletes' well-being.[36] This type of scandal describes a problem that extends beyond these significant cases. They reveal how few elite athletes truly understand and use what concussion research has shown. Rather than pushing for fundamental changes, these incidents lead to minor fixes to save the organization's reputation. It is clear from these recurring controversies that the correct code of ethics for athletes has not been adhered to, indicating a lack of independent supervision and accountability.[37]

Future Directions and Recommendations

Evidence-Based Recommendations

Concussion Protocols Should be Binding

Evidence Base: The documentation of different sources states that the guidelines proposed by the recent studies (e.g., SCAT5, RTP models) are relatively poorly applied and mostly in an advisory manner

Research indicates that tolerance for following suit differs between leagues and teams without binding rules being observed and taken seriously by the leagues themselves and the teams playing under them directly and/or indirectly.

Recommendations: Sporting authorities worldwide should make existing concussion guidelines legally binding identical to all top-level sports.

Institute Independence Medical Control

Evidence Base: Literature cites the existence of a conflict of interest between team-employed physicians and the safety of athletes

Independent medical oversight is recurrently advised in consensus statements and research reviews.

Recommendation: A panel of independent medical professionals not employed by the team or sponsors should be the ones that carry out all assessments of concussions and whether the athlete may or may not deserve to be allowed to resume playing.

Standardization of Postclearance Monitoring

Evidence Base: There is wide variability of follow-up care after being cleared when delayed or ongoing symptoms and the risk of second-impact syndrome are documented.

Recommendation: Mandatory and structured postclearance neurocognitive assessment is recommended to detect complications related to postconcussion syndrome.

Level the Access to Concussion Skills and Resources

Evidence Base: The review determines disparities in equal access to clinical care between elite teams, where some have no neurologists or complex diagnostics.

Recommendation: Federations should offer minimal access to neurologists, neuroimaging, and validated tools to offer diagnosis among all elite teams, so that safety can be standardized.

Impose Exterior Control and Compliance Inspections

Evidence Base: The teams and leagues conduct self-monitoring, which, according to research, is not very transparent and accountable (Barrett, 2017).

Recommendation: Establish third-party concussion governance institutions where protocols can be audited

and cases of rule breakage punished with penal provisions for noncompliance.

Author-Critical Recommendations (Ethical and Systemic Reform)

These recommendations represent an unsystematic normative position, based on the ethical approach to system failures that have been noticed during the review but not covered by controlled empirical evidence.

Reorientation of Culture to Health in Athletes

Reasoning: Cultural standards in elite athletics are positive toward toughness and negative toward vulnerability, as evidenced throughout the paper

Author Opinion: The sporting culture needs to change and stop promoting endurance, but instead focus on the long-term neurological health of the athletes, which should be embedded in athlete training processes, team culture, and media discourses over time.

Concussion Education Requirement

Rationale: The effectiveness of concussion education is vast, although some evidence supports it, its implementation is still impaired, and its efficacy differs.

Author Recommendation: There should be annual education programs for players, coaches, and staff. Team certification and licensing should involve compliance.

Consider Athlete Voices in the Process of Policy Making

Reasoning: In literature, it has been stressed that players are believed to be disempowered and not included in the decision-making processes concerning their health

Author Opinion: Athlete unions and advocacy groups must be formally incorporated into developing concussion policy. This will give them more agency, reduce underreporting, and increase compliance.

Conclusion

The fact that medical research does not reach clinical practice in elite sports is a significant failure in health ethics and the broader health care system. Though there are proven ways to handle concussions in sports, these methods are often not followed, are applied inconsistently, and come second to the pressures of sports events and business. The review showed that because of cultural beliefs, money interests, and structural conflicts, concussion protocols are not strong enough, leaving athletes vulnerable to severe injuries that their brains cannot recover from. Using superficial rules, not utilizing diagnostic tools similarly, and not conducting independent checks suggest that performance is valued more than safety. Cases that have received significant attention demonstrate that current steps do not always ensure the safety of players, as they primarily focus on the teams' well-being. Closing the gap between research and practice requires clear steps, including policies that can be implemented, robust educational programs, transparent accountability measures, and enhanced participation by athletes. A key change in how serious sports value their athletes is that the only way concussion management can be implemented effectively. When such transformation is lacking, the ongoing lack of support for athletes with concussions will continue to leave a negative legacy for both athletes and sports.

Ethical Transparency

The cases referred to in this review are other well-known cases of professional athletes, including concussion cases in the NFL and the Rugby Union. All these cases were addressed with the help of publicly available data, such as news media, official statements of leagues, or peer-reviewed articles. This review did not collect, access, or use any identifiable or personal data. These sources are consulted only in an academic way to observe and criticize policy compliance and are properly referred to in the list of references.

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