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Sport technology, rules, and the internal goods of sport

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ABSTRACT

This paper explores the role of technology in sports development. Based on three examples – artificial surfaces in field hockey and football (including the Jabulani football); javelins and vault-poles; and running shoes and swimsuits – a criterion is proposed to help decide whether or not (and why) to welcome new technologies into sport. This criterion relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our identification and acknowledgement of the 'internal goods' of sport as a social practice. The idea is that the internal goods of sport (which are what we seek) are created by the constitutive rules; and so proposed new technologies, and associated rule changes, should be assessed according to their ability to promote the relevant internal goods.

KEYWORDS

sport; technology; constitutive rules; internal goods; values

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INTRODUCTION

It would be very strange if sports just stayed the same throughout history, whilst everything around it, in society and technology, were constantly evolving and developing. We do have 'traditionalists', who try to maintain their sports in an already-existing form. For example, as an extreme form of traditionalism, we might cite the continuing popularity of 'archaic' sports, such as 'Real Tennis' (Britannica, 2025) – an archaic form of tennis played in England (and in France, US and Australia), which uses

'old-fashioned' racquets, heavy balls, a slack net, and an irregular indoor court. We might think that adherents would want to 'improve' the equipment and the courts, but they do not – quite the reverse. They want to keep the game the way that it is, without the interference and intrusion of new technologies. Why would they need a 'better' ball, or a more 'rational' court? They enjoy the challenges that the old-fashioned technologies present, and they are happy to preserve their sport just as it is, and just as it has been for many centuries.

However, we also have 'modernisers', who welcome the development of new technologies as enhancements to their sports. Imagine the pole-vault without a carbon fibre pole, or field hockey without an artificial pitch surface, or high jump without a soft landing area. Well, there is no need to imagine, because we know what those sports were like only a few decades ago, and all of them have been massively transformed by new technologies, which have necessitated the development not only of new equipment but also of new techniques and tactics in the sport.

At present, modernists prevail, but questions arise regarding the ways in which sports might meaningfully be modernized. This paper examines the effects of the modernization of sport through technology, exploring how new technologies can improve (or corrupt, or damage) a particular sport. 'Technology' means: "interaction with artefacts in particular contexts of engagement" (Aunger, 2010, p. 764).

Related to this, of course, is the issue of how to amend the constitutive rules of a sport. While in sport we can talk about different kinds of technologies (e.g. Murray & Chuan, 2017), we are restricting our attention to the use of those technologies that can be used for the purpose of changing the constitutive rules of sport (which are those rules that define the sport – see later for more detail).

So, our question is not: 'Should there be technology in sport?' – because we already have it, and it is hard to see sport without it. For example, in football, the ball is a piece of technology, and so is the grass that forms the surface on which footballers play. So, we do already have technology as part of the pre-conditions of sport, and it often follows ordinary social and technological progress. The football of today is not what it was in the 19th or even in the middle of the 20th centuries, when the leather skin would soak up moisture throughout the game, until it became what we called a 'pudding'. It is quite obvious that footballers would appreciate such changes as a waterproofed outer skin for the ball, because, whilst footballers might have been able to play football with a ball *before* it became a pudding, as it got heavier, football became more difficult. The new technology made the performance of the ball more lasting and more consistent, and it enhanced the game of football. It is hard to imagine that someone would wish to return to the era of the soaking wet football.

However, new technologies are not always welcomed by sport federations. While artificial surfaces may be good for field hockey, they may be bad for football. If so, why? While better javelins were rejected, better vault-poles were welcome. Why? While improved running shoes are acceptable (even if regulated to a certain degree), improved swimsuits are not allowed. Why? Is it just a matter of personal preference, or is there more to it than that? Obviously, the answer partly lies in our wants – we have to decide what kind of sport we want (what we want sport to become) – but, since different people want different things, that cannot be the only determinant of change.

There must be more to be said. We have to start somewhere else; and we will adopt a 'sport-respecting' stance, which seeks a deeper understanding of the sport itself, and of its 'internal goods'.

This paper proposes a criterion to help decide whether or not (and why) to welcome new technologies into sport, which relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our identification and acknowledgement of the 'internal goods' of sports as social practices. So, we suggest to begin by considering the nature of sport and its values. We need to ask 'What is sport?' and 'What is good about sport?'

Sport and its constitutive rules

As to the first question, 'What is sport?', we draw on the definition of Parry (2023, p. 53) who defines serious competitive sport as "institutionalised, rule-governed contests of human physical skill", which is a definition based on an 'exhibition analysis' (Parry, 2019). For the purpose of this paper, we draw on only one logically necessary condition from this definition: rules. There is no sport without rules, and sport philosophy traditionally distinguishes different kinds of rules, such as constitutive, regulative, eligibility and other auxiliary rules (Gleaves, 2014; Martínková & Parry, 2024). Usually, people think in terms of the regulative rules of sport, which are used by the referee to regulate the game as it proceeds, and to prescribe penalties for offences.

However, for our purposes, it is the constitutive rules of sport that are more important (see Searle, 1969, p. 34). These are the rules that make the sport what it is – that constitute the very thing that (later) we regulate. The constitutive rules call into being all that is necessary for a game to take place. They define what the sporting tasks are and how athletes/teams are compared against each other; how (not) to achieve the tasks; the number of players; prescribed or prohibited actions; permitted equipment and its characterization; the dimensions of the playing area and its defining measures, and so on. The regulative rules then regulate this activity: if players perform a prohibited action, then they will receive the referee's penalty (see e.g. Gleaves, 2014; Martínková, 2023, p. 347).

The actual rulebooks of individual sports vary, though. Sports often call their 'constitutive rules' as simply 'Rules'. Football even calls them 'Laws of the Game'. Rulebooks may contain just the playing of the game and its competition rules, or they may also contain detailed technical specifications. For example, the International Tennis Federation (ITF, 2020) defines detailed specific measures (such as, for example, the size of the court, ball and racket) as well as rules about how to play the game within its ITF Rules of Tennis. Another example is the International Hockey Federation (FIH, 2023), which differentiates between 'Playing The Game' and 'Field and Equipment Specifications' and describes them in separate sections in its 'Rules of Hockey'. The 'Playing The Game' section contains basic specifications (e.g. '1.1. The field of play is rectangular, 91.40 metres long and 55.00 metres wide' – ITF, 2023, p. 12), whilst the section on 'Field and Equipment Specifications' contains more detailed specifications (e.g. '1.3 Lines and other marks: side-lines: 91.40 metres long perimeter lines' – ITF, 2023, p. 52).

It seems reasonable to distinguish between constitutive rules that describe the sport as such from the technical rules that are more detailed specifications of the field,

the equipment, the athlete's clothing, etc. If some technical aspect of the game needs to be specified in detail, such as running shoes in track and field, it may even require its own document, such as C2.1A Athletic Shoe Regulations. World Athletics oversees so many disciplines that its rules are very long and very specifically structured – see World Athletics' (2025) *Book of Rules*.

Historically, we can trace the constitutive rules of many sports as codified in the 19th century. For example, in 1863, Association Football was 'invented' – was 'called into being' – by the setting up of rules for a new game by a group that called itself 'The Football Association'. Their football was to be played in future according to the Association rules. Prior to 1863, different kinds of 'football' were being played in different schools, and there was not yet a sport that we would recognise as modern football (National Football Museum, 2024). Incidentally, the word 'soccer' did not exist, since it was later coined as a short-hand slang word for 'Association'.

Who decided these rules, and why? In fact, it was a group of people from different schools, clubs and traditions, who wanted to play against each other, but could not, because their various games, though similar, had differing rules. Differing schools and clubs were able only to have 'in-house' games (between teams with such made-up and temporary names as the Ugly and the Beautiful, or the Married and Unmarried), but they wanted to play against other schools and clubs, and not just against each other. Without common rules, this would be impossible, as we have seen in attempts to play games between Rugby League and Rugby Union teams. Disputes, and even fights, typically break out, since each code is used to playing to different rules and misunderstandings occur regarding the rules and their interpretation. It is impossible to play a 'hybrid' game – unless, of course, we invented a third game, Rugby UniLeague, with a third set of rules, that both teams would observe.

So, in the case of football, representatives from various clubs and schools got together in late 1863, and devised (invented, constituted) a new game, to be called Association Football, which was to be a different game from all of their various games (Green, 1949). They decided on rules such as, for example: no handling (so those who wanted to retain use of the hands went off to form Rugby Football); and no 'hacking' – which was kicking the shins of opponents (National Football Museum, 2024). So the rules they constructed constituted a new activity, which was the beginning of what we know today as football. And, of course, there has been continuing development of the rules, to reflect the direction in which the 'gamewrights' wanted the game to develop. Some examples would be: the introduction of the 'referee'; changes in pitch markings, to delineate a 'goal area'; the gradual development of the 'penalty box'; and frequent revisions to the 'offside' rule, continuing until today.

The internal goods of sport

So, sport is made up of constitutive rules, which create the activity that athletes compete in. Now to our second question: What is the value of sport? People often think first of external goods: that through e.g. football a player might gain a scholarship, eventually earn a lot of money, or entertain a lot of people (see more on extrinsic values of sport in Martínková, 2013). However, this is only at the elite level – maybe only the top 1% of football – whilst there are many more people playing football in clubs, with not many spectators and with no-one earning any money. Whilst of course

people might have various extrinsic reasons for playing, those reasons do not explain our commitments. We might ask, why else are all these people doing it, if they are not seeking those extrinsic goods? What is attractive about sport for those who just want to play for the sake of it? And the answer of course is that they do it because they love the sport for its intrinsic goods – they love all those things that only football can offer, because of the kind of activity it is. And the same is true of all other sports – golf, floorball or skiing. It is not entertainment, or business, or income-generation – it is just doing sport for its own sake.

This is even more understandable with sports that do not generate income – indeed even require subscriptions from players – but still have practitioners and followers. Imagine rounders – which is an amateur sport played only by a few people in England. It is a 'pure' sport – people in England play rounders only for the love of it. Football could be like that – but as it happens (for various reasons) it is not – it is a popular entertainment, a business, a plaything for billionaires, etc. But even though football generates external goods in many ways, it is important to notice that these are *external* goods just because they are not internal to what football *is*. Even elite football has its internal goods, i.e. its intrinsic values, and it is these internal goods that make it popular, or a source of income-generation, or something worth owning (e.g. Hyland, 1988; Kretchmar, 1994, 2005; Martínková, 2013).

For our purposes, a very important feature of the constitutive rules is that they define 'practices' that provide the context within which can flourish the *internal* goods of the practice, which are defined as those that can be pursued only by following the rules of that practice – in this case, a sport (see MacIntyre, 1985, p. 187; Parry & Haake, 2012). These values then manifest for the athletes in the sport (Martínková, 2013).

For example, what are the internal goods of football? (Those goods that you can get only by playing football.) Goal-scoring – there is nothing like it. Controlling a high ball on your body, easing a strong opponent off the ball by using balance and leverage, hitting a long diagonal ball, playing a sweet one-two – these are goods that are all internal to the activity. (And the same will be true of any sport.) Apart from these experiential values and aiming towards excellence, there are many other values, such as interpersonal values, ranging from deep friendships among the team members to at least a basic respect for opponents (Hyland, 1988; Martínková, 2013), etc.

Some 'externalist' theories claim that sport does not have its own values, and only takes its values from society – see, for example, the explanation of Simon: "On this view, the values sport promotes or expresses simply mirror, reflect, or reinforce the values found in the wider society" (2000, p. 1). However, most philosophers of sport hold some kind of 'internalist' theory, which acknowledges that sport is an activity that is value laden, and exhibits and generates its own values (e.g. Fraleigh, 1986; Kretchmar, 1994, 2005; Simon, 2000; Martínková, 2013; Morgan, 2012; Skerbic, 2020). Of course, these values may then also be modified by external values that are presented by the given society.

So the role of the constitutive rules is to define and preserve the internal goods – to preserve the values that we find in playing football. So, let us say that one of the internal values of football is 'ball control' – now, the rules of football should be written in such a way as to preserve this internal good – to encourage the exercise of good ball control by providing advantages for its exercise. The rules should be framed so as to

advise players: 'if you want to win at football, improve your ball control'. So, if the present rule gives a defender too much of an advantage over a player trying to exercise control, we outlaw it. No elbowing, no barging in the back, no tripping, no hacking, no tackling from behind – all these rules are there (in part) to preserve the development of skill and control as an advantage in playing the game.

Conversely, we can think of things that we *do not* like in the game, such as negative play (e.g. taking the ball to the corner flag towards the end of the game to waste time). Why do we dislike this? Because it is not really playing the game – it is rather a case of trying *not* to play the game, to waste time, so that the team can maintain their advantage. It is a kind of 'contest avoidance'.

Another example is the abuse of the provision for substitutions. We can see the point of the substitute rule: if a player gets injured after 10 minutes, it would be a terrible disadvantage to play most of the game with 10 players through no fault. So in the 1965–1966 season the English Football League began to permit one substitute, and only as a replacement for an injured player. However, the genuineness of injuries is very difficult to monitor, and if this were the rule it is possible that injuries would be faked. So an injury substitution very quickly (within two years) became normalised as (also) a tactical substitution (for example, substituting an attacker for a defender), and coaches started to use the substitute as a 12th player at their disposal, either with or without an injury to another player.

Nowadays teams have many substitutes on the bench, with a maximum of 5 to be used on 3 occasions, and injury substitutions and tactical substitutions are commonplace. This might be a good thing, to avoid the injuries that come with too many games, and to provide exciting options for athletes late in the game. However, we also see a third kind – 'game-disruptive' substitutions – which are not for injury, nor for team-tactical or football-tactical reasons, but simply in order to waste time and break up the rhythm of the game towards the end – to prevent the opposition from having the chance to play in the last minutes. It makes football into the idea of the squad game (like American Football – 45 against 45), while coaches are able to control the game with contest-avoidance and time-wasting.

Here is an unforeseen (and undesirable?) consequence of the development of the substitute rule. We are entitled to ask – is this what we want? Or do we prefer the original idea of 'football' – that the essence of the game of football is that 11 play 11 for 90 minutes of continuous action, which enables certain internal goods of football to thrive – such as the stamina and determination required to maintain performance values (skill, concentration and effort) over a continuous period. This makes the last 10 or 15 minutes most interesting – when players have already played for 75 or 80 minutes – when we should be seeing the drama played out at its most intense and conclusive.

At just this time, the present rules permit the coach to attempt to kill the contest with game-disruptive substitutions – which seems to contradict the logic of the contest, and to prevent the expression of the internal goods of the sport. It is anti-football. If we want football to return to its 'original' idea and values, FIFA could suggest new rules for substitutions: a team may have two substitutes plus a goalkeeper, but no more; and no substitutions should be allowed in the last 10 minutes. If there is a genuine injury during this last 10 minutes, it is not too much of a disadvantage to play with only 10 (not like losing a player for 80 minutes), and it prevents the anti-football

manoeuvres of the cynical coach trying to see out time. And so, the rules of a sport can be adjusted to enable the activity to work well, to set adequate challenges, and to make the sport interesting for players and spectators.

Now, this new rule seeks to preserve what some see as the internal goods of football. But others may disagree. The point is: whatever you think is good or bad about the internal goods of the game, they have been produced by the intended or unintended consequences of the adoption of some constitutive rule.

'Gamewrights' (the people designing the rules), if they were skilled enough, could design just the sport they want, that exhibited just the internal goods that they wish for the athlete to gain from the sport. For example, if they wish for fast, open, flowing, skilful football, then they might re-think the offside rule, which most people find difficult to understand, anyway. Or, for example, they could make the offside rule apply not at the halfway line, but from the edge of the penalty area (18 yards from goal). Would that not immediately spread out play and give players more space?

To review, the logic goes like this:

- a necessary condition of sport is that it has rules,
- the most important rules are the constitutive rules,
- constitutive rules define the sport and condition its internal goods,
- and the internal goods of a sport yield a criterion for or against the introduction of new rules – and also the introduction of new technologies.

So, first we need to specify its internal goods, then identify rules or practices that detract from these internal goods, and finally suggest changes to its constitutive rules that will enhance it. Let us see this with three examples, in order to illustrate how this criterion works with respect to technology. The main question is: 'What do we want for our sport?'

- Better javelins – no, but better vault-poles – yes? Why?
- Improved running shoes – OK, but improved swimsuits – not allowed. Why?
- Artificial surfaces – good for field hockey, bad for football? If so, why?

Javelin and pole vault

Better javelins – no, but better vault-poles – yes? Why?

The rule used to be that athletes could take their own javelin to a competition. So there was a secretive competition between scientists/technologists to produce the best javelin, so that their athletes would get an advantage and have the best chance to win. But the javelins became so 'good' that the athletes were throwing them out of the arena onto the track, and even threatened the spectators' seating area (Ansari, 2022).

So fresh criteria for javelin design were needed, and fresh rules for javelin throwing. First, a decision has to be made, where the event will take place. If the event is to be inside the stadium, the javelin must be impossible to throw out of the designated area. Of course, this is an 'external' safety criterion, or value: let us stay in the arena, and hurt no-one. There were other major considerations, such as the problem of "the increasingly frequent flat landings and the resulting discussions and protests because of attempts declared valid or invalid by competition judges" (Martin, 2022). Such considerations influenced the constitutive rules, especially the javelin design criterion.

The javelin must be constructed such that its best throw does not exceed the limit of the arena, which is to say that further technological improvement is not welcome: "The objective was a javelin that would not fly as far and would land point downwards" (Lawler, 1993, p. 15). There was an issue about technique, too: "The old javelin floated. Correctly cast, the old spear gave the thrower bonus metres for free. In contrast, the new spear has to be driven. Today's successful throwers have returned to 'pure' technique and have accepted full responsibility for the throw" (Lawler, 1993, p. 16).

As well as safety, fairness was the second value behind the new provisions, influencing the event rule: athletes cannot bring their own javelin. A number of (identical) javelins were provided, and all athletes could use any one of them, but not a different one. This provided the athletes with an internal good of the sport, which is an internal good of all sports: equality of contest. In this case, we do not want to see the best javelin thrown by someone; we want to see the best javelin thrower win. So, safety and fairness are the two values behind the new rules.

One criticism of such revisionism is that it inhibits technological progress. But it need not do so. We could have a separate 'designers' competition every few years, with the 'best' javelin then adopted as the 'official' javelin for the next period. But the criteria for the 'best' javelin would be decided by the athletic community, according to how it sees the internal goods of javelin throwing, and not by technologists alone. Technologists would have to work to a 'brief', which would be written according to specifications of the constitutive rules, and of the internal goods identified.

This kind of javelin competition would have two separate (and separately judged) competitions, one for designers and a subsequent one for athletes. Compare this with Formula 1 car racing, which also has two separate competitions, one for the drivers and one for the manufacturers, but they are simultaneous and simultaneously judged. There is one race, and one set of rankings. Here, since car design differences are permitted, within specified limits, it becomes difficult to tell who is the better driver, or which is the better car. Presumably, this is why it is necessary to have two separate competitions. Alternative formats such as 'Formula Ford' racing give 'the same' car to each driver, which makes it easier to determine who is the best driver.

In contrast to javelin, pole vault does not want to go back to bamboo or metal poles, because carbon fibre poles enable greater skills, a more gymnastic and spectacular event, and the achievement of greater heights: "The increase in the world record height achieved in pole vaulting can be related to the improved ability of the athletes, in terms of their fitness and technique, and to the change in materials used to construct the pole" (Davis & Kukureka, 2012). The sky is the limit.

Running and swimming

Improved running shoes – OK, but improved swimsuits – not allowed. Why?

Whilst pole vault is for innovation and wants carbon fibre poles, swimming does not want flippers even though they make swimmers go faster, which would make for exciting races and world records. Swimming does not want the mono-fin, either, which is even faster – but why not? Maybe the answer here is that it does not even count as 'swimming' (it changes what swimming *is*). To make this entirely clear, the constitutive rules should specify just what does (and does not) constitute 'swimming'. If flippers and fins were outlawed as not really 'swimming', it would still be open to

others to create another sport, just as the hands-using football players created rugby. As a matter of fact, this sport is called 'finswimming', and if we wanted to we could propose new disciplines, such as e.g. monofin butterfly, as an enrichment of its contemporary four disciplines of finswimming on the surface (mono or bi-fins), apnea and immersion.

Similarly, until race walking was invented, there was no need to define 'walking'. But if we want a sport of race walking, its constitutive rules must say what 'walking' is, otherwise there is no event of 'walking' recognizable from 'running'. The same kind of point applies to the case of Oscar Pistorius: should he be allowed to compete with 'blades'? In the Paralympics, the rules clearly state what kind of disability and what kind of blades are acceptable, which gives the rationale for his inclusion. But whether he should be allowed to compete in the Olympics is a different matter, because what Pistorius does is not 'running', but rather 'blading' (see Edwards, 2008, p. 120), which is a different ability test. This is why empirical arguments about relative advantage are irrelevant (Ibid., p. 123).

This also explains why new technology such as 'spikes', or other kinds of running shoe, are acceptable, whereas blades, wheels and wings would be unacceptable. Spiked shoes enhance 'running' – but bladers and wheelers face a different kind of test in a different kind of event. The introduction of the Vaporfly running shoe challenged this analysis, however, since this shoe was certainly an enhancement. World Athletics had a problem to solve: why, and on what grounds, should the Vaporfly be accepted, or banned? Is it an acceptable enhancement of running (as were spikes), or are the soles of these shoes to be seen as analogous to springs, since they give a 4% 'return' in energy, and should they also be banned? (See Roe, 2019). World Athletics has now issued specific rules on athletic shoes. Rule 1.2 specifies the leading rationales in this matter.

> Without prejudice to the specific limitations and requirements of these Regulations, these Regulations seek to balance the following principles:
> 1.2.1 fairness within the sport of Athletics;
> 1.2.2 measures that support health & safety (including injury prevention) of Athletes upon whom high levels of physical and mental demands are placed;
> 1.2.3 performances (including records) in Athletics are achieved through the primacy of human endeavour over technology in Athletic Shoes and advances in the same (e.g. to allow for meaningful competition); and
> 1.2.4 acknowledging that Athletes wish to compete in 'high quality', 'innovative' and 'leading' Athletic Shoes. (World Athletics, 2021, p. 4)

However, in that case, why not accept the 'go-faster' swimsuits, such as the LZR suit, which propelled inferior swimmers to world records, before it was banned? The answer would seem to be in the name of one such suit: the Hydrofoil. A hydrofoil boat is a boat with extra technology to give the boat 'lift' out of the water so as to reduce drag and to make the boat go faster. The LZR-type swimsuit uses new materials that trap air inside the costume (which can take 40 minutes to put on), so as to perform the same functions. Swimmers report that they feel as if they are 'gliding'. We can now see that

it might easily be thought that 'gliding technology' changes the event into something that might be thought to be not 'swimming' at all; but rather 'hydrofoiling'. The overall justification of the ban by FINA captured it as follows: "FINA wishes to recall that the main and core principle is that swimming is a sport essentially based on the physical performance of the athlete" (Inside the Games, 2009). Presently, World Aquatics (2025, pp. 18ff.) has rules on swimwear and offers a list of approved swimsuits on their webpages (https://approved.swimwear.fina.org/).

One internal value of all sports here is equality of challenge – all competitors must face the same challenge, or else the basis for competition is undermined. Another value is equality of access – do all competitors have access to the latest technology? If not, then privileged countries, clubs, or athletes may win thanks to their privileged access, and not because of their athletic ability.

Artificial surfaces for field games

Artificial surfaces – good for hockey, bad for football? If so, why?

The short answer is that a completely flat and predictable surface is a great asset to a small-ball-and-stick game like field hockey, and it allows the optimal exercise of the internal goods of the sport, such as small ball control, fine stick work, accurate passing, etc. (We can compare this to a small puck on slick ice; or to the air-ball in floorball.) Grass is an inferior surface for field hockey because it is less predictable, more easily damaged, and more subject to the vagaries of weather conditions. Football, however, as a large-ball game, does not require such a fine-grained surface, and in fact requires something like grass in order for the ball to bounce satisfactorily (i.e. not too much and too high), for the ball to take spin and swerve, and for it to 'sit up' a little for a strike. Of course, it may be true that, in the future, there will be technological developments that mimic the virtues of grass, and have none of its disadvantages – but, for now, attempts to replace grass with artificial surfaces have been resisted. And the reason is because those pitches have been unable to allow for the exercise of the internal goods of football.

But let us go back to the idea of the 'pudding' football. The present-day ball is nothing like that, and presents the player with optimal, predictable and consistent properties. But consider what happened in 2010, when sport technologists from the University of Loughborough were asked to design a new FIFA ball for the 2010 World Cup. Some players said that they produced a ball that curved and bent unpredictably in flight, presenting unreasonable challenges for the goalkeeper, and giving the striker too much of an advantage (but see a defence of the Jabulani ball in Ghosh, 2010). It is fair enough if the goalkeeper is beaten by speed, placement, disguise, etc. A deflection is tough luck. It is fair enough if a keeper is defeated by a strong and skilful striker – but to be defeated by an unpredictable wobbly ball negates all the fun, fairness, skill and challenge. It makes goal-keeping more difficult, but for a non-footballing reason, failing to encourage the internal goods of the game. If the allegations about the poor performance of the Jabulani ball are true, then it is technology wrongly applied.

CONCLUSION

The argumentation in this paper tried to show that it is within our power to define the kind of sport that we want by adjusting the constitutive rules. Further, we think that it is our responsibility to seek to identify the internal goods that we think make our sport challenging, exciting and worthwhile; and to seek rule changes to promote those internal goods. Technology is a part of the picture: we cannot do without it, but we should use the power of the constitutive rules, and our understanding of the internal goods of our sports, to control it. Technology should serve sport, not dominate it.

This paper proposes a criterion to help decide whether or not (and why) to welcome new technologies into sport, which relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our acknowledgement of the 'internal goods' of sport as a social practice, and also of the individual sport. The idea is that the internal goods of sport (which are what we all seek) are created by the constitutive rules; and so proposed new technologies, and associated rule changes, should be assessed according to their ability to promote the relevant internal goods. The test for the acceptability of a proposed technological innovation is: will it enhance or detract from the internal goods of my sport?

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Self-awareness through suffering: A virtue based perspective of combat sports

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ABSTRACT

This paper explores the significance of combat sports through the lens of virtue ethics, arguing that these practices, often criticized as inherently violent, offer a distinct and uniquely powerful path to personal growth and moral development. It argues that the specific kind of suffering, discipline, and hardships intrinsic to combat sports do not merely build character but offer one of the most direct and embodied means of pursuing *eudaimonia*, i.e., human flourishing. The paper compares combat sports with other dangerous sports, such as dangerous team sports (e.g., American football) and some individual sports, especially ultra-sports in nature settings. It situates combat sports within a broader ethical narrative that cultivates resilience, courage, self-awareness, and humility. Ultimately, the paper defends combat sports as not just a valid, but an especially potent, practice for realizing human flourishing under conditions of hardship and adversity.

KEYWORDS

virtue ethics; combat sports; martial arts; eudaimonia; moral development

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INTRODUCTION

Hockey, rugby, combat sports[1], climbing, and ultra-running are examples of sports that require athletes to willingly confront injury, harm[2], and even the risk of death. The question arises as to why people would deliberately seek out such extreme challenges;

[1] When combined, combat sports are also referred to as Mixed Martial Arts (MMA), but individually they include striking-based martial arts such as Muay Thai, boxing, and kickboxing, as well as grappling-based disciplines focused on positional control and submissions, such as wrestling, judo, and jiu-jitsu.

[2] By "harm", I refer to injury that significantly impacts a person's health, cognitive function, or ability to move freely.

and whether embracing physical danger and suffering might lead to good consequences. This paper discusses combat sports from the perspective of virtue ethics and discusses issues of human flourishing, arguing that the unique challenges of combat sports can offer a transformative path toward personal growth and self-mastery. It explores how, through disciplined practice and voluntary exposure to suffering and adversity, individuals can cultivate resilience, courage, self-awareness, and humility – virtues central to living a flourishing life. Both elite competitors and recreational practitioners are considered here, as I will argue that the focus on training, rather than competition alone, makes the cultivation of virtues central to human flourishing relevant across both contexts.

It is important to acknowledge at the outset that combat sports, particularly mixed martial arts (MMA), carry a substantial risk of injury, including concussions and other forms of traumatic brain injury, as documented in a growing body of research and media reporting (Lockwood et al., 2018; Gross, 2020; Mańka-Malara & Mierzwińska-Nastalska, 2022; Karpman et al., 2016; Rainey, 2009). This reality must be addressed by any philosophical analysis of their ethical legitimacy.

The risk of serious injury is not unique to combat sports. Many sports involve potential for harm. Activities such as climbing carry risks for broken bones, twisted ankles, concussions, or even death. For example, a 2005 New Zealand study highlighted that climbing is associated with serious risk of serious injury and mortality with 4.3 per 100 persons dying as a result of their injuries or accidents (Monasterio, 2005). Similarly, American football tackles have resulted in hundreds of fatalities from brain and spinal injuries. Brain injury-related fatalities account for 69% of all football fatalities from 1945 through 1999 with 497 deaths as a result of players either tackling or being tackled in a game (Cantu, 2003). We might group these as 'dangerous sports' (Russell, 2005), especially when compared to low-contact activities such as table tennis, golf, and curling.

However, sports can also be distinguished by the *nature* of the risks of harm they involve. Combat sports, American football, and ice hockey present team-sports, with contact-based risks, where harm may result from direct collisions or confrontation. In contrast, climbing and ultra-running involve self-directed or environmental risks, without the unpredictable factor of another person actively opposing the athlete.

As Ebert, Durbach and Field (2024) observe, participants in adventure sports are frequently portrayed as "daredevils" or thrill-seekers, an image rejected by the athletes themselves, who view their pursuits as disciplined and meaningful. A similar dynamic surrounds combat sports, which, though also practiced with purpose, discipline, and personal meaning, are often mischaracterized as merely violent or reckless. This moral suspicion echoes a broader public tendency to misunderstand high-risk physical pursuits. Indeed, combat sports often attract some of the harshest criticism, frequently seen as 'violent' rather than recognized for their potential to foster personal growth.

Despite comparable dangers inherent in other sports, combat sports are often dismissed as morally legitimate means of cultivating virtue and promoting human flourishing, largely due to their association with intentional bodily confrontation. For example, Dixon (2001, 2015) argues that boxing and MMA are intrinsically immoral due to their inherently violent nature, suggesting that the deliberate infliction of harm as a central aim place such sports beyond moral justification. With awareness around

the risk of harm, and recognition that all these sports carry some potential for danger, the question arises: why are some of these sports widely accepted by the public, while others remain morally suspect?

The ethical justification becomes more complex when a sport is *perceived* as inherently violent. Dangerous sports will always exist, and the risk of harm will always be present even in sports seen as non-dangerous (e.g., golf). However, sports that involve 'violence' are often more morally problematic for the public to understand and rationalize. Such violence leads to a deep ethical dilemma, especially when comparing combat sports with contact sports like American football. While American football may involve instances of extreme bodily confrontation, the central focus of the game is not the intentional infliction of bodily harm, but advancing the ball and scoring, making it more morally acceptable in the public eye – its primary aim, advancing the ball and scoring, differs from the overt interpersonal contest in combat sports. This fundamental difference may help explain why some sports like football are often perceived as more morally acceptable in public discourse, a distinction that Parry (1998) illuminates in his discussion of aggression versus violence in sport.

In contrast, combat sports are structured around a central objective: temporary immobilization of an opponent. This involves direct bodily engagement until the opponent fails to adequately protect themselves, concedes, or is forced to concede; or until their opponent accumulates more points within a set time limit through dominant performance. Given that the risk of serious injury is inherent in most combat sports, we must ask why athletes choose to participate in such practices?

While many struggle to justify the value of combat sports due to their seemingly violent nature, this paper argues that they possess unique ethical significance, offering a transformative path toward self-awareness and human flourishing. I defend combat sports as a powerful tool for personal development within a virtue ethics framework. As Russell (2005) observes, dangerous sports at their best offer an opportunity to confront and push beyond the perceived limits of the whole self, physically, emotionally, and existentially, in ways rarely encountered in everyday life. This article will focus mainly on virtues that combat sports offer as a result of structuring space for practicing and strengthening resilience, perseverance, courage, humility, and self-awareness, allowing athletes to develop virtues through repeated challenges and reflection.

This paper focuses on a significant yet often overlooked reason: the pursuit of self-transformation and personal growth through disciplined practice, suffering, and structured hardship. By presenting combat sports as a channel for refining one's values and developing virtue, the paper defends their ethical legitimacy and argues these practices provide a means for individuals to expand beyond their preconceived limitations and cultivate the virtues essential for human flourishing.

The discussion begins by clarifying key distinctions between martial arts and combat sports, before outlining the theoretical connection between virtue ethics and personal development in combat sport contexts. It then examines suffering and hardship across various sports as a means to cultivate resilience, courage, self-awareness, and a deeper sense of purpose. Last, but not least, it turns to the specific experiences of the combat athlete, exploring how training fosters the self-awareness necessary for living a flourishing, meaningful, and virtuous life.

Conceptual clarification: Martial arts or combat sports?

The terms 'martial arts' and 'combat sports' are often used interchangeably in both popular and academic discourse, but scholars in the philosophy of sport have emphasized their conceptual divergence, particularly in terms of purpose, pedagogy, and ethical orientation. Martínková and Parry (2016) offer a *purpose-based* classification system, distinguishing martial arts as educational practices aimed at self-development and moral cultivation, and martial sports or combat sports as 'achievement sports', primarily motivated by winning, scoring, and measurable achievement (pp. 151–155). Though both may involve discipline, rigorous training, and mastery, their *telos* – or ultimate purpose, differs: martial arts are directed toward the holistic development of the practitioner, while combat sports focus on external results within competitive frameworks. Expanding on this distinction, they classify traditional martial arts or even more spiritual martial paths as 'ways of life' (*dō*), oriented toward personal transformation and moral cultivation. In contrast, combat sports are described as "achievement sports", motivated by competition and observable success. As Martínková, Parry and Vágner elsewhere explain (2019, p. 3), the aim of martial arts "is not to defend oneself, to subdue or even kill the opponent, but to improve oneself and to develop into a better human being".

In this paper, the term 'combat sports' refers to structured and institutionalized physical practices involving direct bodily engagement: such as boxing, mixed martial arts (MMA), wrestling, and Brazilian Jiu-Jitsu (BJJ). These sports are often associated with competitive formats, yet many are also practiced recreationally or non-competitively, in training environments where the focus is on personal development rather than victory. This distinguishes them from certain traditional martial arts, such as Tai Chi, Aikido, or Karate, which are typically framed as lifelong pursuits and emphasize philosophical or spiritual dimensions (*dō*) (Martínková & Parry, 2017).

However, this division is not clear-cut. Certain contemporary practices like BJJ occupy a unique position: while central to modern combat sports like MMA, they are also often pursued as lifelong disciplines that emphasize personal development and ethical engagement. Though not always framed as spiritual disciplines, such practices often involve long-term commitment and transformation – demonstrating qualities resonant within the ethos of *dō*. This is reflected in BJJ's rank structure: according to the International Brazilian Jiu-Jitsu Federation (IBJJF), attaining a 9th-degree red belt requires a minimum of 48 years of active practice *after* earning a black belt. Since black belts are not awarded before age 19, this means the red belt cannot typically be achieved before the age of 67 (IBJJF, 2016). Such a timeline marks not only technical mastery but also reflects an orientation toward lifelong cultivation, aligning BJJ, in some cases, with values traditionally associated with *dō*, such as patience, humility, and self-mastery.

Theoretical framework: Virtue ethics, eudaimonia & combat sports

Virtue ethics takes an agent-centered approach to morality, emphasizing the cultivation of moral character and practical wisdom as the foundation of ethical action. Unlike deontological frameworks, which mandate adherence to universal moral rules, or consequentialist theories, which assess right action by outcomes, virtue ethics focuses on the holistic development of moral character through habituation and lived experience.

Eudaimonistic virtue ethics defines moral actions as those that lead an individual toward eudaimonia – a concept often best translated as "flourishing" or "true, genuine happiness", which is "the kind of happiness worth pursuing" (Hursthouse & Pettigrove, 2023). By cultivating virtues, positive character traits and dispositions, alongside practical wisdom, an individual gains the essential qualities necessary for flourishing and living a fulfilled life.

Virtue ethics offers a compelling theoretical framework for examining the transformative potential of combat sports, particularly the role of suffering in fostering practical wisdom and the virtues necessary for flourishing. Through their journey, athletes cultivate self-affirmation, develop wisdom of both the self and the external world, and refine virtuous traits. As Russell (2005) argues, while many sports challenge the whole person, dangerous sports stand apart in that they engage all of our basic human capacities under real conditions of threat. This total engagement offers a distinctive and powerful path to moral growth and self-awareness.

Hackney (2009) suggests that the fighter's journey towards becoming an effective fighter, experiencing joy, forming deep friendships, growing spiritually, and developing moral character, illustrates how combative practice and moral development are not only compatible but mutually reinforcing. This relationship between discipline and ethical transformation aligns closely with the Aristotelian model of habituation, in which virtues are cultivated through repeated practice and intentional action over time (Aristotle, *Nicomachean Ethics*, Book II).

Hackney (2009) references André Comte-Sponville's explanation that "virtue is a quality of excellence for humans, and the more virtuous one becomes, the more human one becomes" (p. 27). The rest of this article will argue that combat sports provide a path towards the development of virtuous human beings, thus contributing to their human excellence.

Suffering in combat sports *versus* other dangerous sports

Combat sports offer athletes a unique opportunity to confront significant risk of harm, pushing them to their limits. Yet, it is important to recognize that while these pursuits test athletes through extreme hardships, this challenge is structured with evolving safety regulations aiming to minimize irreversible harm. Differing from activities involving uncontrolled violence, modern combat sports are governed by rules that aim to protect long-term well-being while preserving the integrity of the challenge (Martínková & Parry, 2016, pp. 154–155). Unlike conventional competitive sports, combat athletes undergo a test that extends beyond mere victory or defeat. While combat sports involve potential to inflict harm, the test lies in the cultivation of perseverance, the mastery of one's limits, and the ability to confront adversity with resilience.

From a virtue ethics perspective, the value of combat sports may lie less in domination and more in the habituation especially of virtues such as perseverance, resilience, and humility, developed through repeated trials (Russel, 2015; Sailors, 2025). This mirrors Martínková and Parry's (2017) view that the educational value of dangerous sports (and apparent-danger-seeking sports) lies not in danger itself, but in the development of self-reliance, confidence, and especially risk education, which together support long-term personal growth. By voluntarily exposing themselves to the uncertainties of their practice, through both competition and training, fighters endure immense suffering

and discomfort, forcing them to confront their own being, and revealing their limits. Such thresholds are rarely reached in other sports or everyday life, as I will examine later. It is here that the distinct value of combat sports begins to unfold.

Through this suffering and the confrontation with fear, individuals gain profound insight, as their enduring reveals newfound efficiency and agency. Overcoming such trials reinforces the value of sacrifice, deepening the athlete's sense of purpose. As Atkinson and Young (2008) suggest, endurance through physical adversity affirms bodily efficiency and agency, reflecting a powerful realization of having used oneself to the fullest. When athletes persevere, these experiences cultivate a deep sense of integration with their own flourishing, bringing both fulfilment and meaning. The wisdom gained through suffering and survival in combat sports is not fleeting – it is lifelong, inspiring, and deeply transformative.

Combat sports can be compared to other sports that share some of these traits. One key distinction, however, lies in whether the sport is performed individually or as part of a team. Rugby, football, and ice hockey players also endure rigorous training, injuries, and hardship. However, when success or failure is dependent on collective efforts, we can question whether it truly allows the individual to push themselves to their limits. It could be argued that these athletes are not tested to their complete breaking points. Athletes in team sports can walk off the field, sit on the bench, or be substituted when injured. In contrast, an ultra-runner facing hardships in her race has no teammate to share the burden – she must endure and persist. Similarly, a fighter mid-round who realizes it is 'not his day' cannot be replaced. When he chooses to stop, he must face the full consequences alone.

When a runner quits or a football player experiences loss, they can often deflect accountability, attributing failure to team performance or external factors. In combat sports, however, failure is direct and inescapably personal. The opponent is not a passive backdrop but an active agent – imposing their will and demanding that the athlete confront escalating adversity. This exposure to one's limits, without substitution, diffusion of blame, or escape, creates a uniquely raw environment for suffering and personal transformation. There is little room for self-deception, since every failure is the athlete's alone. As Samuels (2015) writes in his *Grantland* feature on the Gracie Jiu-Jitsu lineage, "the price of clinging to one's illusions is relentlessly exposed". In combat sports, failure cannot be externalized, it demands a confrontation with the self, forcing athletes to accept reality and evolve through it.

But even among individual disciplines that emphasize suffering, key differences emerge. Though renowned for the hardships they entail, ultra-sports differ from combat sports in meaningful ways. Those who compete in ultra-sports (especially those in nature) deliberately expose themselves to the harsh unpredictability of nature, risking their lives, not from a desire to come to harm, but in seeking personal growth. Krein (2019) argues that it is precisely through the interaction with powerful, uncontrollable natural forces that athletes gain unique opportunities to test and transform themselves. Thus, for many athletes, risk and suffering are not obstacles to be avoided, but integral components to their athletic and personal development. Similarly, cyclist Lance Armstrong, for example, described suffering as a necessity for both his athletic and personal development, stating:

> The experience of suffering is like the experience of exploring, of finding something unexpected and revelatory. When you find the outermost thresholds of pain, of fear or uncertainty, what you experience afterward is an expansive feeling, a widening of your capacities. (Armstrong & Jenkins, 2003, pp. 222–223)

This willingness to embrace suffering reflects a broader pattern among athletes: the deliberate pursuit of challenges that threaten the collapse of the self as a whole (bodily, emotionally, and cognitively). In willingly exposing themselves to real danger, athletes foster resilience through direct confrontation with pain, limitation, and the possibility of being broken in every dimension of their being under unrelenting pressure. This perspective is echoed among ultra-runners. For example, ultra-marathon[3] athlete David Horton, who, reflecting on his first attempt to complete the 3,540-kilometer (2,220-mile) Appalachian Trail, recounted that by his 10th day of 45 miles per day, he was urinating blood and running with tendonitis and shin splints for the next 1,000 miles (Sheridan, 2010, p. 171). In the documentary The Runner, which chronicles Horton's career in ultra-running, he states, "I suffered a lot. But it was worth it. Through suffering we can have a better impression of who we really are and what we can do ..." (Benna, 2006). Renowned ultra-runner Nick Hollon has also spoke candidly about the physical and existential challenges of the sport. In 2012, he nearly died during training – an experience he later described as profoundly shaping his outlook on suffering, the limits of human experience and the transformative potential of pushing through. Echoing Horton's perspective, the multiple world record holder stated in a news article:

> There was a point in the fifth loop of the Barkley where I entered a state of nirvana and euphoria. The pain in my legs disappeared. It was one of the most focused, happy, and present moments of my life. Running these far distances and pushing my body to those limits unlocks that state and other runners have similar experiences. It's what keeps people coming back – that state of clarity keeps people coming back. (Gander, 2017)

The accounts of these athletes illustrate their willingness to disregard the inherent dangers of their sport and endure extreme hardship as a means of achieving self-awareness and the associated benefits. This suggests that, for them, the rewards of such experiences significantly outweigh the potential risks, including close encounters with death. Self-awareness and personal fulfilment arise through the execution of the athlete's autonomous decisions and the wisdom gained from these trials. While it is reasonable to argue that all athletes experience suffering and discomforts in training and competition, Russell (2005) argues that non-dangerous sports, while challenging, do not test an individual's basic human capacities in the way that dangerous sports do, where athletes must face threats to their very being or to fundamental aspects of it.

This resonates with Martínková's (2024) account of ultra-sports in nature, where athletes deliberately subject themselves to natural hardship as a way of encountering their own limits and achieving a form of self-realization rooted in physical vulner-

[3] An ultramarathon (also called ultra marathon running or ultra-running) is any footrace longer than the traditional marathon length of 42.195 kilometers (26.219 miles).

ability and existential clarity. She writes that such athletes, through "a heightened self-awareness together with an awareness of and attunement to the surrounding nature", experience "a deepening of self-knowledge ... while testing one's limits and possibilities; and determining what is bearable and what is unbearable, with respect to natural, often extreme, conditions" (Martínková, 2024, p. 8). These values, she continues, "enable a more mature type of agonism than in traditional sports since, within the hardships, athletes are better able to realize their vulnerabilities and their place in the world" (Ibid., p. 8). Similarly, Krein (2019) argues that the value of nature sports lies not merely in their risk of harm, but in the reflective and transformative experiences that can emerge through encounters with nature, challenge, and uncertainty.

Ultra-running in nature and combat sport do share important similarities. In both, athletes battle their own internal thoughts: doubt, exhaustion, and the temptation to quit, while facing an external force that threatens to break them. However, the nature and immediacy of that force differ. In ultra-sports in nature, athletes contend with natural elements (and sometimes wild animals) (Martínková, 2024, p. 7). In combat sports, the resistance is embodied in another person, an opponent who actively seeks to disrupt, challenge, and overcome them in real time. In this way, combat sports offer a uniquely embodied trial of resilience, where athletes must continuously respond with full intensity to both the opponent's pressure and their own limitations. revealing and refining the whole self in the process. This element of imposed adversity absent in self-paced sports, makes combat sports a rare domain where one's will is exercised under relentless, escalating pressure.

So, while ultra-runners can control the pace and adjust to conditions, a fighter's resilience is tested by an active opponent whose presence is immediate and unrelenting. It cannot be ignored or deferred. In ultra-running, the athlete may pause, slow down, or stop (and in some cases exhaustion or injury may intervene), and while this suffering may be extreme, the experience remains largely self-modulated. In contrast, for combat athletes, stopping is never a neutral decision. They must endure until stopped by a referee, forced into submission, or compelled to tap out (ending the contest), all under immediate continuous, escalating pressure from the opponent.

This dynamic extends beyond competition into the training environment itself. While many ultra-runners may pursue personal growth over competition, combat sports even in training offers a different kind of challenge: one defined by unpredictable resistance from an active opponent threatening their autonomy. Even in practice, failure carries immediate consequences. In combat sports, failure is not just a dropped pace, or a personal shortcoming, it is an immediate reckoning that tests the whole person: bodily, emotionally, and existentially, through direct confrontation with an adversary actively seeking to impose their will.

Unlike the ultra-runner, whose suffering is largely self-regulated, the martial artist cannot simply choose to 'slow down' without consequence. Every lapse of effort has immediate external consequences. They must persist, adapt, or be defeated. This unavoidable confrontation is central to why combat sports serve as such powerful tools for self-awareness. Combat athletes are not granted the luxury of evading adversity or controlling the intensity of their trials the same way; they must confront these challenges under constant pressure or risk defeat. In doing so, they adapt, and grow through the experience.

Beyond hardships, combat sports present a direct challenge to one's integrity, expressed through embodied action. Failure does not just mean succumbing to external pressure; it means being overcome by an opponent of a similar level asserting their dominance. This unavoidable confrontation with suffering and external challenge makes combat sports an unrivalled space for self-affirmation. Russell (2005, p. 15) supports this view, emphasizing that self-affirmation arises from tests that engage every aspect of the self. Russell (2005, p. 14) supports this view and refers to Aristotle, who identifies rational thought as the defining characteristic of human beings and a fundamental component of true virtue and *eudaimonia*. Russell extends this idea by arguing that judgment and decision-making under conditions of stress and danger are uniquely cultivated through dangerous sports:

> Dangerous sport, in its best exemplars – in, say, mountain climbing or boxing or bicycle stage racing – provides one avenue for such self-affirmation by challenging one's whole self at the limits of one's being. It is a particularly rich avenue of realization because it forces us to confront and overcome fear of danger and to face physical threats to those things that we cannot put a value on. (Russell 2005, p. 15)

Given this, it follows that combat sports provide a structured environment for developing rational thinking in high-pressure situations. The ability to make morally sound or 'virtuous' decisions is not innate but requires continuous social practice, something combat sports rigorously instill through repeated exposure to hardship and adversity. Russell (2005) argues that dangerous sports, like those pursued by combat athletes, provide a unique and intrinsic value of self-affirmation, one that must be recognized in discussions of well-being, as they push individuals to fully confront their perceived limits in ways other sports do not. Building on Russell's (2005) account of self-affirmation through dangerous sport, Sailors (2025) emphasizes that the significance of such practices (like combat sports) lies not simply in enduring hardship, but in how athletes must continually draw on multiple virtues, such as striving and resilience, and exercise sound judgment while doing so. This process unfolds most clearly in the demanding context of training, where struggle and reflection foster moral insight over time.

In contrast, athletes in sports such as rugby or football face the risk of injury and endure pain, but injury is often an unintended *byproduct*, not the central challenge. In combat sports, however, athletes knowingly engage in contests where absorbing strikes, chokes, and throws are not only expected but a fundamental component of the sport. This distinction may help explain why combat sports offer a unique path to self-affirmation: athletes face external challenges in the form of an opponent while simultaneously confronting their internal limits, in an environment where enduring hardship is integral to the contest.

Yet this does not mean the athletes in combat sports seek violence for its own sake. As Parry (1998) explains, there is an important ethical distinction between vigorous or forceful play (aggression) and acts of intentional harm (violence). In combat sports, *controlled* aggression is foundational to the discipline and does not necessarily aim to injure. While the risk of harm is real, these sports are structured by rules, norms, and safety protocols designed to mitigate unnecessary violence and protect athletes' long-term well-being (Martínková & Parry, 2016, p. 155).

Even when the athlete's purpose is not to harm but to push personal limits, refine discipline, and cultivate self-growth, a moral tension remains. Parry (1998) acknowledges that combat sports like boxing present a sharp paradox: "hurting or harming someone so badly that he cannot continue the contest is a sufficient condition of victory" – a fact that perhaps makes boxing harder to justify, ethically speaking, especially for children and youth (Torres & Parry, 2017). Despite this, combat sports operate within a framework of mutual consent and regulation, which differentiates them from illegitimate or uncontrolled violence. It is this balance between intent, structure, and the managed risk of harm that challenges the usual lines between violence and ethical sport and invites us to think more deeply about what it means to compete with integrity in combat sports.

Yet such value may not be readily visible to outsiders. As Ebert et al. (2024) explain, individuals who have never engaged in high-risk sports often face an epistemic barrier that prevents them from fully grasping the personal significance these activities hold. This helps explain why combat sports are so often morally misjudged by those who view them from the outside as violent, senseless, or even criminal, rather than as sites of personal growth and ethical striving.

Building on Russell (2005), Lopez-Frias and McNamee (2017) emphasize that individuals have the right to pursue lives they have reason to value, even when such pursuits involve risk of harm. This perspective reinforces that combat athletes, like other athletes in dangerous sport, knowingly engage in their sport as a meaningful path to self-growth. If suffering and even the risk of injury are widely accepted as necessary paths to excellence in other extreme sports, why are combat sports still so often reduced to mere violence, while athletes in other high-risk disciplines are celebrated for embracing peril, risk, and resilience? In combat sports, the risk of harm and hardship are not incidental; they are essential to self-improvement and the realization of personal potential. The process of growth occurs not only through personal effort but also in direct engagement with an opponent who challenges and sharpens one's limits. It is this dynamic that makes combat sports distinct and worthy of recognition as a meaningful, transformative practice – not merely an act of violence.

Training as the catalyst for self-awareness in combat sports

This section explores how the rigorous demands of combat sport training can foster deep personal insight, supporting long-term growth and the development of core virtues.

Fighters spend only a limited amount of time in competition each year.[4] The most significant part of their journey lies not in those fleeting moments of competition, but in the rigorous hours of training that precede and follow. While some individuals *do* engage in combat sports for the competition, for other athletes, the most meaningful aspect of their participation is the self-developmental value embedded in training, which points to a close relationship between combat sports, martial arts and martial training, as noted by Martínková and Parry (2017).

This is echoed by athletes themselves. Georges St-Pierre, former UFC Welterweight and Middleweight Champion and UFC Hall of Famer, who is widely regarded

[4] The average MMA athlete has 3 fights a year.

as one of the greatest mixed martial artists of all time reflected: "There is a difference between a fighter and a martial artist. A fighter is training for a purpose: He has a fight. I'm a martial artist. I don't train for a fight. I train for myself. I'm training all the time. My goal is perfection. But I will never reach perfection" (St-Pierre, n.d.). His words reflect a profound vision of his martial practice as a lifelong path of self-mastery and development, a stance aligned more closely with the philosophical ethos of dō than with narrow competitive ambition. This makes his perspective all the more compelling given a career marked by 26 (out of 28) professional wins, 8 by knockout and 6 by submission. St-Pierre's immense success in one of the most demanding arenas of combat sport gives this perspective exceptional weight: his 'philosophy' is grounded in lived experience, not distant ideals. It emerges from years of training, struggle, and transformation, offering a powerful example of how combat sports can serve as a path not only to competitive excellence, but to self-mastery and deeper personal growth.

This is not only evident anecdotally, but also reflected in empirical research. Chinkov and Holt's (2015) found that BJJ practitioners often report increased self-awareness, humility, perseverance, and emotional control, traits that echo those emphasized in philosophical accounts of moral development. These findings suggest that combat sports like BJJ can function as transformative practices. In both competition and training, fighters endure intense challenges that test their whole being – bodily, emotionally, and existentially, as they work through their limitations. It is through this repeated, embodied hardship and adversity, where struggle and failure are routine, that both technical skill and moral character are refined.

The structure of training itself reflects this transformative potential. While developing technique is essential, training in dangerous sports is recognized as a vehicle for cultivating virtues critical to human flourishing, resilience, courage, perseverance, humility, and empathy (Russel, 2005; Sailors, 2025; Turp, 2023, Chinkov & Holt, 2015). These virtues are cultivated via the repeated, constant exposure to adversity where athletes must adapt, regulate, and act with discipline and self-control.

Training scenarios in combat sports, such as in BJJ and boxing illustrate this. When being hit, choked, or trapped beneath an opponent, maintaining composure, and resisting panic demonstrates key virtues like resilience (withstanding pressure), courage (enduring without fear), humility (accepting defeat and learning from mistakes), and self-awareness (recognizing your limits). As Chinkov and Holt (2015) found, repeated exposure to these kind of training scenarios enables BJJ athletes to manage emotions like fear, frustration, and anxiety – particularly when confronting difficult opponents or these physically demanding positions. Participants reported feeling "mentally tougher" and learning to "stay calm under pressure", even in situations of acute vulnerability both in and out of sport (Chinkov & Holt, 2015, p. 8). The increased capacity to stay composed under pressure reflects more than athletic growth, it expresses moral development. As Russell argues, "resilience is a virtue expressed in the ability to adapt positively to significant adversity" (2015, p. 164).

Therefore, cultivating these virtues in training, through sustained, embodied adversity indeed can guide athletes toward disciplined, resilient, and ethically grounded conduct both within and beyond competition. Repeated exposure to adversity raises their threshold for challenge and endurance. Confronting their deepest fears, combat

athletes are pushed to self-awareness, and a deeper understanding of themselves. The reward lies not in external validation, but in the intrinsic fulfillment that arises from the pursuit of human flourishing.

On receiving his black belt, Jiu-Jitsu athlete Joe Rogan says, colloquially:

> Martial arts are a vehicle for developing your human potential, and nothing in my life has ever put me in face with reality better than Jiu-Jitsu. In life, we can distort our perception of things in order to make ourselves more comfortable, in order to make ourselves accept where we are. There's a lot of people out there that are running around full of shit. You can't be full of shit when you do Jiu-Jitsu. It's impossible to be full of shit because reality comes at you in the purest form possible: A life or death struggle, using your determination, your focus, your techniques, your mind, and your training, over and over, and over again. (Rogan, as cited in Bravo, 2012)

But more than just resilience, combat sports forge an almost paradoxical relationship with suffering itself. Unlike athletes in other sports who push through or past pain as a temporary obstacle, fighters must learn to exist within it: to function, think, and adapt under relentless pressure. As depicted in *Choke* (Goodman, 1999), this process forces athletes to find clarity within the chaos, to train the mind and body together, and to redefine the very meaning of struggle itself. The film's central voice is Rickson Gracie, a red belt in Brazilian Jiu-Jitsu, one of the most revered practitioners in the history of the discipline and a figure widely respected for both his technical mastery and his embodied understanding of the demands and meanings of combat. His lifelong commitment to the art gives his reflections a distinct authority, drawn from decades of navigating the full complexity of fighting as a lived practice:

> In these tough positions, you're in a little piece of hell. But through daily suffering, you learn to survive in these situations. You have to find comfort in the uncomfortable. You have to be able to live your worst nightmare. Jiu-Jitsu puts you completely where you must have complete focus on finding solutions to the problem. This trains the mind to build that focus. To increase your awareness. Your capacity to solve problems. Sometimes, you don't have to win. You cannot win. But that has nothing to do with losing. (Goodman, 1999)

Gracie (as cited in Goodman, 1999) suggests that even in defeat, combat athletes do not lose. Rather, they cultivate resilience, self-awareness, and moral fortitude. Indeed, as Skillen (1998) also observes, there is often more to be gained in loss than in victory. Growth in combat sports emerges not from the outcome of a match, but from the character transformation forged through persistent challenge and adaptation. While external success may fluctuate, the enduring achievement lies in developing the capacity to face adversity with clarity and strength. Russell (2015) illuminates, resilience is a virtue that teaches us not only to endure adversity, but to actively thrive in its midst, cultivating creativity, moral resolve, and the imaginative capacity to reframe our limitations. Through this process, athletes do more than recover from hardship, they learn to transcend who they were, reshaping themselves in response to setbacks and reversals.

In this light, success in combat sports is not solely defined by victory over others, but by the ongoing contest with oneself. Each bout, especially in training, becomes an opportunity for growth, not a pursuit of dominance, but a deliberate path towards self-mastery. Individuals are presented an opportunity to overcome personal limitations and refine virtues such as courage, humility, perseverance and resilience, in the pursuit of personal excellence. This process redefines 'winning' as a disciplined path of moral self-cultivation.

Building on this moral growth, the unique demands of combat sports also foster a profound sense of empathy. Through the relentless cycle of training, struggle and setbacks, athletes develop a deep understanding of what it means to suffer and to endure. Having confronted their own vulnerabilities, they become attuned to the struggles of others, cultivating compassion that extends beyond the *dōjo* or competition arena. This reinforces humility and a recognition of shared human hardship. Self-awareness, shaped by repeated struggle and reflection, becomes the compass guiding athletes toward personal flourishing – not as a final destination, but as a continual practice of becoming. Continuous growth through the disciplined practice of virtue.

CONCLUSION

The aim of this article is not to suggest that combat sports guarantee a virtuous life, or that suffering should be pursued as a path to wisdom. Rather, I argue that combat sports offer a meaningful and specific avenue for cultivating virtue. Combat sports present a compelling context for the development of moral virtues. The challenges that athletes face, especially hardships inflicted by an opponent, the resultant suffering, and the ever-present risk of harm can cultivate courage. Resilience develops through relentless training, especially in moments where failure is inevitable and regular. Perseverance emerges not as an ideal but as a necessary trait, honed under pressure and in the face of challenges that would tempt many to quit.

Ultimately, the value of combat sports lies not in momentary triumphs, but in the ongoing pursuit of self-mastery. Individuals gradually unlock their potential and nurture the virtues that shape their highest selves. For these athletes, the *real* fight is the one within. A personal struggle to become more self-aware, and more aligned with their fullest human potential. The true value of combat sports is found in the journey, with insights emerging through continuous effort and the transformative power of enduring struggle. As Sheridan (2010, p. 6) aptly puts it:

> Fighting is much greater than a sum of its parts; it is more than a sport, more than any other form of competition in modern society. It is about truth.

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The CMAS code of ethics and the challenges of safeguarding athletes – the Vertical Blue Case

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ABSTRACT

In this paper, we examine the recent 'Vertical Blue Case' involving two Croatian free divers, Vitomir Maričić and Petar Klovar, in a competition in the Bahamas, and the decision to suspend and punish the athletes made by the *Confédération Mondiale des Activités Subaquatiques* (CMAS), which solely relied on its Code of Ethics.

After laying out all the relevant facts, we first critically analyze the *CMAS's Code of Ethics* (the Code) and the articles used to justify the punishment. Secondly, we highlight many ethically questionable practices, unfair procedures, and anti-doping rule violations that heavily impact the particular case but were not considered in the decision made by CMAS. Thirdly, we demonstrate that several human rights violations were committed against the Croatian free divers. Fourthly, we reveal several problems with the Verdict itself. CMAS, for its part, defended its actions as necessary to safeguard the integrity of the sport, invoking its emergency powers under Article 10.2 to justify provisional measures in response to what it perceived as serious ethical concerns.

Finally, we argue for the correction of the CMAS decision and propose practical solutions, including revising the Code and establishing clear boundaries for its use in resolving cases in sports, especially in relation to laws and rules in sports.

KEYWORDS

doping case; ethically questionable practices; human rights violation; CMAS verdict

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INTRODUCTION

The 'Vertical Blue Case' presents a complex and contentious case in the sport of freediving, involving sanctions imposed on two top Croatian divers, Vitomir Maričić and Petar Klovar, by the *Confédération Mondiale des Activités Subaquatiques* (CMAS). This article critically examines the legal and ethical controversies surrounding the CMAS decision in this case. The core issue revolves around CMAS's reliance on its Code of Ethics as the sole basis for imposing sanctions, despite the absence of any confirmed anti-doping rule violations, as confirmed by the International Testing Agency (ITA). This analysis will highlight procedural irregularities, ethical concerns, and potential violations of the athletes' human rights. We will argue for a clearer distinction between ethical standards and legal norms and call for reforms to the CMAS Code of Ethics to better protect athletes' rights and prevent misuse.

In this paper, we will critically assess the case in detail. After presenting all relevant facts, we will first examine the CMAS Code – its purpose, its key provisions, and its adequacy as a basis for sanctioning athletes. We will also demonstrate that other more egregious violations of the Code occurred in this case, but were overlooked and went unpunished. Additionally, we will argue that several ethically questionable practices took place, along with potential violations of anti-doping rules. Furthermore, we will show that the basic human rights of the sanctioned athletes were compromised during the CMAS decision-making process. Finally, we will reveal several significant issues with the decision itself.

Our legal critique addresses whether CMAS's actions contravened established regulatory frameworks, such as the World Anti-Doping Code (WADA) and International Testing Agency (ITA) determinations. The ethical critique, on the other hand, questions whether these actions upheld the principles of fairness, integrity, and the dignity of athletes, regardless of legal formalities.

In conclusion, we will call for the reversal of the decision and propose necessary changes to both the Code and its enforcement procedures to prevent similar problems in the future.

1. 'VERTICAL BLUE CASE' BACKGROUND – THE FACTS

Vertical Blue is a freediving competition organised by a private entity in Dean's Blue Hole[1], Long Island, Bahamas. In this article, we are referring to competition that was held from 20th to 30th July 2023 under the ausoices of the *Association Internationale pour le Développement de l'Apnée* (AIDA), but which had its own specific doping control policy and procedures.

On July 4, 2023, three Croatian free divers, Vitomir Maričić, Petar Klovar, and Sanda Delija, landed in the Bahamas, where Maričić and Klovar registered to participate in the Vertical Blue competition. Both athletes are top-tier free divers with a track record of remarkable achievements in their sport, both within the frame of CMAS competitions and those held under the aegis of AIDA, an independent freedivers' association in charge of organizing and licensing the organization of freediving tour-

[1] More information can be found at https://events.verticalblue.net/.

naments[2]. As professional competitors, Maričić and Klovar are registered in the *World Anti-Doping Agency's* (WADA) internet-based database for managing anti-doping information, called *Anti-Doping Administration and Management System* (ADAMS). Accordingly, ADAMS-registered athletes may be tested in every competition and at their residential address or whereabouts on a regular basis.

Upon arriving at Deadman's Caye Airport on Long Island in the Bahamas, they were met by William Trubridge, a local organizer of the free-diving event who was also a competitor in the competition he was organizing. He escorted them to local police officers who ordered a search of their luggage. It is important to point out two facts: one, that the police officers were off duty at the time[3]; and two, that Trubridge actively participated in the luggage search alongside police officers, which is contrary to the law or any common practice. In the search, different kinds of medications were found, including benzodiazepines – Normabel 5 mg, Diazepam 5 mg, Diazepam 2 mg, Diazepam Alkaloid 2 mg; diuretics – Furosemide 40 mg; and sildenafil. One of them, furosemide, is banned by WADA, and its mere possession is punishable. However, the athletes thus inspected never received or signed any kind of official police reports that listed substances that were found in their luggage.

Additionally, Trubridge secretly recorded the luggage search and posted the video on YouTube[4]. Video is problematic in several ways. Firstly, video was taken without asking for the athletes' consent or receiving it. Secondly, it was posted without consent of the conversants. Thirdly, it is unclear whether the recording is genuine or modified in some way(s). For example, we do not know whose voice is which, except for the written information in the video suggesting so. Fourthly, such recordings violated the VB special Doping Control policy and Procedure rules (which are problematic in themselves – this issue will be explored in the section dealing with human rights violations), which only permit secret recordings by the AIDA judge or doping officer – not by the organiser, Trubridge. Finally, while the video contains some pictures with the obvious intention to suggest that a doping breach had indeed happened, it is not clear whether this is some form of manipulation.

While the video posted by William Trubridge on YouTube raises ethical concerns, in our opinion it cannot be considered legally admissible evidence without proper verification of its authenticity, and without the consent of the parties involved. More importantly, disciplinary actions should be based on verifiable procedures rather than informal digital content circulated through unofficial channels.

Furthermore, on the same day, the athletes were tested "out of the competition" by Dominic Laing, the Doping Control Officer (DCO) of the *Bahamas Anti-Doping Commission* (BADC)[5]. Improbably, Laing was not officially entitled to provide the tests because his DCO license expired earlier the same year on 13th February 2023. Despite this, the samples were sent to a WADA-accredited laboratory in Montreal,

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2 Official internet site can be find at https://www.aidainternational.org/.

3 The Report Statement made by the police officers who conducted a search states the following: ... "The luggage transported into the Commonwealth of the Bahamas by the athlete Petar Klovar was examined by off-duty Royal Bahamas Police staff as well as Vertical Blue staff".

4 Video can be found at https://www.youtube.com/watch?v=3cK3bFSv6X8.

5 Official internet site can be find at http://www.bahamasadc.org/.

INRS Centre Armand-Frappier Santé Biotechnologie, and the results of the sample analysis were all negative.

The designated testing and result management authority for the Croatian free diving athletes in this case was the BADC. Surprisingly, and without explanation, the BADC decided to transfer the management of the doping test results to the *International Testing Agency* (ITA), which is officially responsible for all anti-doping activities on behalf of CMAS, the international federation representing underwater activities in sport. In any case, after ITA reviewed the matter, no anti-doping rule violation was found and the result management was suspended.

The case took a surprising and unexpected turn when the CMAS President, Anna Arzhanova, contrary to the ITA findings, provisionally suspended the Croatian athletes pursuant to Article 10.2 of the *CMAS Statutes*, which allow the president to take provisional measures such as suspending athletes in matters and reasons of urgency. This suspension was enacted by presidential order on July 26, 2023, and this was ratified by the *CMAS Board of Directors* on September 23, 2023. The president of the *CMAS Disciplinary Committee* and CMAS Acting Sport Prosecutor, Stefano Brustia, upon the appointment of CMAS President Anna Arzhanova, initiated *Disciplinary Proceedings* No. 01/2023 against Vitomir Maričić and Petar Klovar, both Croatian nationals and freediving athletes, members of the Croatian Diving Federation, a national federation affiliated with CMAS. Stefano Brustia, along with Lavinia Di Basilio and Camilio Ungari Trasati, CMAS prosecutors on this case, invoked the *CMAS Code of Ethics*, Article 1.2 and Article 2.2, asserting that the Croatian athletes violated these provisions. 'Article 1.2 Fair Play' states:

"Fair play is the guiding principle in the sport of Underwater Activities & Sports. All Participants taking part in Underwater Activities & Sports shall behave with fairness and honesty.

All Participants shall operate within and abide by the rules of the sport.

All doping practices at all levels are strictly prohibited. The provisions against doping in the Anti-Doping Code shall be scrupulously observed. Underwater Activities & Sports is committed to be a drug free sport."

And 'Article 2.2 Representational duties' of the Code of Ethics provides that:

"Participants shall represent CMAS honestly, respectably and with integrity."

Finally, CMAS, through the undersigned Sport Prosecutor, referred the athletes to the *CMAS Disciplinary Committee* with the request for the committee to adjudge on 26th January 2024 as follows:

"The Disciplinary Committee of CMAS, composed by Stefano Brustia (President), Lavinia Di Basilio (Member), Carnillo Ungari Trasatti (Member), after having reviewed and considered the positions and defensive arguments of the Parties, rendered the following decision to:

a) Adjudge and Declare that the Athletes Vitomir Maričić and Petar Klovar infringed articles 1.2 and 2.2 of CMAS Code of Ethics.
b) Adjudge and Declare that such infringements are seriously high pursuant to the article 3, paragraph iv) of CMAS Code of Ethics.
c) Adjudge and declare that the seriousness of the infringement may be validly mitigated by the absence of previous disciplinary records, and hence.

d) Sentence both Athletes to six-month suspension from any activity within CMAS and a fine of Euro 5,000 each, to be effective upon notice of this Decision and deducted the suspension term already imposed on interim basis pursuant to the Presidential Order of 26th July 2023.
e) Sentence the Athletes jointly to bear the administrative and legal costs of these proceedings in the magnitude of Euro 2,500.00.
f) Oder CMAS to notify this decision to all National Federations affiliated to CMAS in view of giving full enforcement thereof (*CMAS Ruling*, 2023: 12–13)."

2. CMAS CODE OF ETHICS

Since the Croatian free diving athletes were sanctioned pursuant to the CMAS Code of Ethics it is an important and logical first step to look into it deeply, especially those articles crucial for the decisions delivered, as they carry significant legal and competitive implications for the athletes.

The Code is a concise three-page document that provides a clear framework for ethical conduct among all CMAS 'participants', which includes CMAS members, officials and associated personnel, athletes, team managers etc. The Code is integral to maintaining the five core values: a) equality – ensuring inclusion, impartiality, and protection from any form of harassment; b) fairness – maintaining fair competition and adherence to the rules; c) integrity – protection of CMAS sports from bribery, corruption, betting, and – conflict of interest; d) respect – treatment of others with dignity and mutual valuing among competitors; and e) environmental responsibility – protection of the environment and sustainable development.

The code's articles 1.2 and 2.2

The Croatian free divers were sanctioned for violating Articles 1.2 and 2.2 of the Code, though the specific details remain unclear. Article 1.2 is designed to protect and promote fair play as a fundamental principle in CMAS sports. It outlines three ways athletes can uphold fair play: by behaving with fairness and honesty, abiding by the rules of the sport, and competing without using prohibited doping practices. Article 2.2 focuses on the representation of CMAS sports, stating that all participants have a duty to act with honesty, respect, and integrity.

Both articles, as well as the entire Code, are written in a universalistic manner that fails to explain, guide, or illustrate precisely how they should be applied to specific cases and situations in sports everyday life. Consequently, this leads to a situation in which varying interpretations are possible. This makes the fact that they were used as the sole legal basis for sanctions particularly problematic, as the possibility of varying interpretations and terms which are too general undermine legal certainty. Therefore, we believe that a much more detailed explanation of the decision is necessary, specifically detailing exactly how (in what manner) and through which actions the articles of the Code were violated by the sanctioned athletes. Specifically, about:

– rule violations: when did they break the rules, and which specific rules were violated?
– anti-doping violation: what anti-doping violation occurred, especially considering that ITA, the official doping-testing agency, did not find any infractions?

– misrepresentation of CMAS: how, where, and when were the divers dishonest or unfair?

Other (non-sanctioned) breakings of the code in the Vertical Blue Case

Strangely, several obvious breakings of the Code's rules done by Trubridge weren't considered and/or sanctioned:
– being in a conflict of interest,
– failing to report conflict of interest,
– violating human rights.

Trubridge repeatedly violated Article 1.4.1 of the Code regarding conflict of interest. Firstly, as a participant in the same competition and holder of the world record in the sport discipline, he failed to "disclose any personal interests that could be linked with their prospective CMAS activities [...] when performing an activity for CMAS," nor did he disclose his "private or personal interests" and the potential for "gaining any possible advantage" (Code, Article 1.4.1a). Furthermore, he did not "avoid [any] situation that could lead to conflicts of interest"; in fact, he initiated such a situation. Additionally, he did not disclose his relevant relationship with the Croatian athletes, which is critically important given Article 1.4.1b's instruction to refrain from engaging if one's actions and opinions can affect other parties in a relationship.

Furthermore, he failed to follow the Code's instructions that if a "conflict of interest, or the appearance of a conflict of interest, arises, or if there is a danger of such a conflict arising, the individual concerned must refrain from taking any further part in the handling of the matter" (Ibid.). Contrary to these clear directives, he proceeded with handling the case anyway without reporting relevant facts that put him in a position of conflict of interest.

Finally, he violated Article 2.6, which states: "Participants shall ensure that the personal rights of those persons whom they contact and with whom they deal are protected, respected, and safeguarded" (Code, Article 2.6). On the contrary, in our opinion, Mr. Trubridge took several advantages over the Croatian athletes and put them in an extremely vulnerable state. Specifically, he not only secretly recorded a video of the Croatian athletes but also uploaded the video to a YouTube channel. This action is also contrary to the Code, which states:

"Should the infringement be committed to obtain an illicit benefit, including sport outcomes, the relevant results, such as titles, prizes etc. shall not be awarded or revoked if already awarded" (Ibid.).

Problems and limits with code of ethics applicability

It seems to us that with Codes of Ethics (CE) being adopted by many international federations, the conditions under which athletes are controlled have become less clear, creating a grey area where their rights can be violated with limited possibilities of recourse to justice. Unlike the well-defined anti-doping rules regulated by the *World Anti-Doping Code* and *International Standards,* every CE is subject to different interpretations because its provisions are often too broad. As a result, athletes could find themselves sanctioned for violations of ethical standards that the CE does not clearly define.

The Vertical Blue case, involving two high-profile freediving professional athletes, is emblematic of this issue. By examining the Vertical Blue case, we realized that there is a need to review the CMAS Code of Ethics, particularly in relation to the behaviour of athletes.

In our opinion, a discussion is needed on the general role of the CE to shed more light on this particular case for CMAS. And in this case, the Code overrides existing Sports Laws and Rules, rendering them meaningless and needless. More concretely, the Code does not respect decisions made by the officially and specifically appointed body for investigating doping violations, the ITA, and instead punishes athletes for these doping violations.

The role of the CE is unclear, particularly regarding when and in which cases it should be applied. While rules and laws tend to be very specific and clear, the CE is designed to serve as a guideline rather than a legal mandate. This ambiguity is precisely why sanctions should not be based solely on the CE.

Furthermore, the CE appears to lose its purpose when there are existing laws that address ethical violations, such as doping. In our opinion, ethical principles translated into laws can serve as a basis for sanctions because the primary role of the CE is to provide guidance on ethical or non-ethical behaviour, practices, and actions. Once an 'ethical decision' is made by an independent ethical committee with ethical experts, it should be evaluated against existing laws and rules for appropriate sanctions. This approach ensures that ethical guidelines inform but do not override established legal frameworks.

Another problem is the usage of complex ethical terms without providing precise enough explanations or definitions: equality, fairness, honesty, respect, and integrity. These terms have been heavily discussed in the philosophy and ethics of sport discipline. Leaning on this literature can bring clarity and precision to crucial terms based on decades of rich discussions and considerations about fairness or fair play (Butcher & Schneider, 1998; Loland, 2002; Simon et al., 2015, etc.), integrity (Gardiner et al. 2017; Harvey & McNamee, 2020; Škerbić & Greguric, 2023; McNamee, 2024, etc.), respect (Fraleigh, 1984; Butcher & Schneider, 1998; Dixon, 2007; Simon et al., 2015, etc.), and equality (Tännsjö & Tamburrini, 2000; Morgan, 2006; Francis, 2016, etc.) in sports, and (intrinsic) values of sport (Simon, 2000; Tännsjö & Tamburrini, 2000; Russell, 2007; Morgan, 2012; Martinková, 2013; Škerbić, 2021, etc.). On the other hand, doping and anti-doping are among the most dominant and debated topics in the field, especially within the bioethics of sport sub-discipline. Moreover, some prominent authors, such as Angela Schneider, Mike McNamee, Sigmund Loland, and Silvia Camporesi, have been and continue to be part of WADA's ethical bodies.

However, aside from WADA's Code, it is peculiar that neither general codes of conduct in sport nor sport-specific ones have been significantly addressed within the disciplines of philosophy or (bio)ethics of sport. McNamee's 1998 analysis stands as a rare exception in this regard, but it is still relevant for our discussion. McNamee bases his critique on two key points: first, that codes of ethics (CE) introduce moral conservatism, retreating into a rigid language of moral certainty – centered on duties, obligations, principles, and rules. Second, he argues that CE promote moral minimalism, where the primary concern is encapsulated by the claim, "we have done nothing wrong or immoral; we have broken no rules".

This mindset reduces morality to rule-following and overlooks the inherent complexity of ethical behaviour. This mindset reduces morality to mere rule-following and fails to recognize the complexity of ethical behaviour. Furthermore, McNamee argues that codes of ethics (CE) transfer "blameability" and, by extension, "punishability" to the organizations that enforce them. While rules are indeed important and necessary, McNamee emphasizes the need for greater focus on the variety of rules, the inherent difficulties in their interpretation and application, and their characteristic underdetermination.

Code writers often attempt to shift context-sensitive judgment to the rule of law, but rules themselves do not define their own scope or interpretation. It is the agents – who possess varying degrees of virtue and vice – who ultimately interpret and apply them. Finally, it is important to acknowledge that even once a rule is clearly defined, it will only be genuinely followed, in the fullest sense, by a virtuous agent (McNamee, 1998).

"Are we not to prefer those who merely keep the rules for fear of being punished but those who keep them in order that the contest is a fair and equal test of relevant abilities and powers?" (Ibid., p. 161).

We will conclude this section with the logical assertion that ethicists of sport are well-positioned to offer solutions to the problems outlined. They should be actively included in interdisciplinary teams, working alongside experts in law, anti-doping, and sports sciences as authors and co-authors of codes of ethics.

3. ETHICALLY QUESTIONABLE PRACTICES AND ANTI-DOPING RULES VIOLATIONS

We argue that, in this case, many anti-doping rules were violated, and several ethically questionable practices by different individuals directly harmed the accused/sanctioned athletes.

First was the appearance of William Trubridge, who was both an organizer and a competitor in this competition. This represents a classic conflict of interest and a violation of *the World Anti-Doping Code,* particularly Article 4.1.2 of the *International Standard for Testing and Investigations* (ISTI), which states that:

"The Antidoping Organization shall ensure that Athlete Support Personnel and any other Persons with a conflict of interest are not involved in test distribution planning for their Athletes or the process of selection of Athletes for Testing."

Second, what adds an additional dimension to the conflict of interest is that the Croatian freediver Klovar announced his intention to break Trubridge's AIDA world record in the *constant weight without fins* (CNF) discipline. *Constant weight without fins* is an AIDA International freediving discipline in which the diver descends and ascends by swimming without the use of fins or pulling on the rope, except for a single hold to stop the descent and start the ascent. CNF is the most challenging depth discipline in freediving due to the physical effort required to swim without assistance.

Third, it is unclear why the *Bahamas Anti-Doping Commission* allowed local organizers and competitors in the competition to conduct the doping control and search of the athletes.

Fourth, the BADC sent DCOs with expired licenses to perform doping control, which is contrary to Article 5.3.3. Moreover, the ISTI established by WADA explicitly states that:

"Sample Collection Personnel shall have official documentation, provided by the Sample Collection Authority, evidencing their authority to collect a Sample from the Athlete, such as an authorization letter from the Testing Authority. DCOs shall also carry complementary identification, which includes their name and photograph (i.e., identification card from the Sample Collection Authority, driver's license, health care, passport, or similar valid identification) and the expiry date of the identification."

Fifth, the DCO did not have a mission order for doping control, conducted the tests at an inappropriate doping control station, and failed to provide basic conditions for doping control, such as bottled water.

Sixth, connected to the previous point, the luggage search was performed by William Trubridge and an off-duty police officer, without a search warrant, and on private premises, not at a police station.

Seventh, the athletes never received an official report signed and stamped by the Royal Bahamas Police. Instead, they were given a paper listing the medications found in their luggage, signed by the off-duty police officer.

Eighth, the athletes were very vulnerable upon arriving on the remote island where the competition was organized. They were intimidated by police officers carrying firearms. Educated to comply with anti-doping control, they did not oppose its implementation.

Ninth, however, the competitor William Trubridge, who was also the organizer, abused the athletes' trust by organizing an illegal luggage search and doping control.

Tenth, BADC, the testing authority, and the result management authority could not handle result management, so the responsibility was transferred to ITA, which manages anti-doping activities on behalf of CMAS. The result management by ITA analysed the case and found no violation of anti-doping rules, subsequently suspending and closing the case.

Eleventh, the Vertical Blue competition unprecedentedly had its own Doping Control Policy and Procedures, which were not properly communicated to the athletes, even though these specific rules deviated from the WADA rules in important aspects with regards to persons authorised to conduct a search and perform doping control.

Surprisingly and without apparent reason (and also without providing any explanation or justification for her actions), CMAS President Anna Arzhanova suspended the athletes and referred them to the Disciplinary Committee for punishment. The CMAS Prosecutor cited support from Articles 1.2 and 2.2 of the CMAS Code of Ethics and imposed a severe penalty of 6 months' suspension and a €5000 fine on both athletes.

4. HUMAN RIGHTS VIOLATION

We argue that the athletes' rights were violated, invoking a general ethical principle related to fair play and the representation of CMAS with honesty, respect, and integrity. Above all, their human rights were infringed upon, including the right to liberty and security of person, the right to respect for private life, and the right to a fair trial.

Firstly, international human rights instruments[6] guarantee the right to liberty and security of a person, which is violated in cases of unlawful deprivation of liberty. According to the case law of the *European Court of Human Rights*[7], actions such as stops and searches by police constitute a deprivation of liberty, as does questioning in a police station or similar environment. In the case at hand, the Croatian free diving delegation was subjected to an unlawful and illegitimate search conducted by off-duty police officers, with no authority to perform a search, and the organizer, Trubridge, who himself was in a conflict of interest. They were caught off guard at the airport, after a long flight, by Trubridge and off-duty police officers in uniforms, with one of them carrying a gun. The officers acted in a hostile way, refusing to answer questions and failing to inform the athletes about their rights and responsibilities, directing them to Trubridge for further queries. Trubridge, on his part, confirmed that they were the only athletes being searched. Altogether, this contributed to an intimidating atmosphere which affected athletes' ability to object to the search and enforce their rights more vigorously. International standards in search provide that no consent to a search will be considered to have occurred where a person has been placed under duress, which is also the case where there is a lack of procedural guarantees protecting a person's ability to express their true will.

As previously stated, the Vertical Blue competition has its own doping control policy and procedures, which provide a specific procedure (different from the WADA rules) to carry out searches and perform doping tests. In addition to this arbitrariness being unprecedented among international organizations and competitions, checks carried out by the athletes found no trace of such specific rules in their email correspondence. The *Vertical Blue Doping Control Policy and Procedures* was published on the Vertical Blue website somewhere after June, 7, while the athletes registered for the event in February or early March 2023. This further undermined transparency and the athletes' ability to give a fully informed consent.

Furthermore, they never received and/or signed the police reports listing substances supposedly found in their luggage. This further breaches their rights due to the unlawful and illegitimate anti-doping test, the unsubstantiated "factual background" of the indictment, and ultimately, the search conducted not by local authorities but by William Trubridge, who serves as both organizer and competitor.

Secondly, protecting personal data is fundamentally important for individuals to enjoy their right to respect for private life (Camporesi & McNamee, 2018). This right was violated in this case, as athletes were secretly recorded without their consent or authorization. Such recordings also violated the VB special doping control policy and procedure rules, which only permit secret recordings by the AIDA judge or doping officer – not by the organiser, Trubridge, making them illegal and illegitimate.

Moreover, the recorded footage was later distributed on social media platforms, seemingly in an attempt to initiate a "witch-hunt" against Maričić and Klovar, again

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[6] *Article 9* of the *International Convenant on Civil and Political Rights*; *Article 5* of the *European Convention on Human Rights*.

[7] Foka v. Turkey no. 28940/95, 24 June 2008; Gillan and Quinton v. The United Kingdom no. 4158/05, ECHR 2010; Cazan v. Romania, no. 30050/12, 5 April 2016; Osypenko v. Ukraine no. 4634/04, 9 November 2010.

without their consent or authorization. Even more, in the hearings Croatian athletes specifically dispute the recording stating that it was "manipulated in some way" (CMAS Verdict, p. 11).

Thirdly, regarding the right to a fair trial, the mono-national composition of the *CMAS Disciplinary Committee* – comprising solely members of Italian nationality, with only one member possessing antidoping expertise (who was not involved in the particular case) – is unprecedented among international organizations.

Typically, judicial bodies of international organisations are carefully composed to include judges of different nationalities and experts from various legal systems and cultures. This diversity helps mitigate the risk of shared biases among judges from the same legal culture when making decisions.

The independence and impartiality of a judicial body are crucial elements of the right to a fair trial, as outlined in Article 6 of the *European Convention on Human Rights*. The composition of such a body must provide adequate assurances to eliminate any reasonable doubt about its impartiality.

5. ISSUES WITH THE VERDICT

It is important to recognize that CMAS acted under its internal statutes, which allow for emergency measures, and viewed the athletes' conduct as potentially jeopardizing the integrity of the sport. From this standpoint, CMAS may have believed it was acting in the sport's best interest by invoking ethical standards to an exceptional context. However, even in such circumstances, the enforcement of disciplinary measures must adhere to broader legal norms and procedural safeguards to preserve legitimacy and prevent arbitrariness.

However, we find several important problems with the CMAS's verdict solely governed by the Code against two free divers for not 'behaving with fairness and honesty' (Code, Article 1.2) and not "representing CMAS honestly, respectably and with integrity" (Code, Article 2.2).

Firstly, even the initial statement by CMAS in the Verdict that "the case at hand is governed solely by the CMAS Code of Ethics" and that "The WADA Code does not apply actually" (Ruling, pp. 8–10) is questionable, if not false. The crucial point for their verdict is the athletes' 'undeniable' possession of furosemide, which is "a substance prohibited by the WADA list, and its mere possession is punishable under the WADA Code, unless there is a valid TUE" (Ruling, p. 8). Thus, CMAS claims that the WADA Code doesn't apply while simultaneously using it as a critical rationale for the verdict.

This is also very strange in light of the fact that CMAS is an international sports federation under WADA and is also a *WADA Code Signatory*. This means it must conduct drug tests, manage results, provide education, and enforce sanctions, all while complying with the WADA Code. Additionally, all anti-doping activities on behalf of CMAS are managed by the *International Testing Agency* (ITA).

Secondly, we find it problematic that the verdict stands alone on the Panel's "opinion that the Athletes' behaviour was aimed to attempt to alter their physical conditions" and satisfaction with the conclusion "that it is likely (more probable than not) that those substances were carried in view of their use on the occasion of the com-

petition" (Ruling, p. 10, Point 34). This reliance on opinion and probability rather than proof is concerning and undermines the credibility of the verdict, especially in light of the ITA's investigation, which cleared the athletes of any doping violations. Moreover, it is unclear why there was an effort to claim that the athletes intended to use prohibited substances when "it is not necessary to establish the intent to use the Prohibited Substance" (Ruling, p. 10, Point 35). Furthermore, the standard of proof normally used in doping-related cases is that of "comfortable satisfaction", defined by the *Court of Arbitration for Sport* as greater than a mere balance of probabilities, but less than proof beyond a reasonable doubt, taking into consideration the seriousness of allegation (CAS 2009/A/1920, CAS 2013/A/3258, CAS 2010/A/2267, CAS 2009/1920).

Compared to CAS jurisprudence (e.g., CAS 2013/A/3258), which adheres strictly to the "comfortable satisfaction" standard, CMAS's reliance on "likelihood" or subjective belief marks a significant departure. CAS rulings consistently emphasize that sanctions, particularly serious ones such as suspensions and fines, must be based on clear, objective evidence rather than mere suspicion or ethical interpretation.

The more serious and the less likely the allegation is, the higher level of proof is needed. This explains why CMAS decided to treat what is in its essence a doping case as an ethical violation, enabling it to apply broad rules which are not designed for cases in which serious legal sanctions may be imposed, and to use a lower standard of proof.

In this case, we are dealing with two top-tier athletes, one of whom is a coach, a judge, a member of the CMAS freediving committee and a renowned speaker. Additionally, while Furosemide is a WADA prohibited substance, it is also a drug used for managing pulmonary edema and lung squeeze, both common issues which can affect divers, all the more concerning when they are travelling to a remote location with difficulties in accessing an ER quickly or with question marks over the accessibility of the medical officers on site, especially since it is a competition organized by a private entity (Ruling, p. 5, Point 21; p. 7, Point 25). Similarly, Benzodiazepines and Sildenafil can also be considered as lifesavers. From this angle, the argument made by the Panel that "the use of those substances should be prevented in the interest of athletes' health safety" is even more problematic (Ruling, p. 9, Point 37).

It should be noted that Article 2.6.1 and Article 2.6.2 of the *World Anti-Doping Code* provide that: "Possession by an Athlete [or an Athlete Support Person] In Competition of any Prohibited Substance or any Prohibited Method, or Possession by an Athlete [or an Athlete Support Person] Out-of-Competition of any Prohibited Substance or any Prohibited Method which is prohibited Out-of-Competition unless the Athlete [or the Athlete Support Person] establishes that the Possession is consistent with a TUE granted in accordance with Article 4.4 or other acceptable justification." In its Comment to Article 2.6.1 and 2.6.2 WADA states that: "Acceptable justification may include, for example, an Athlete or a team doctor carrying Prohibited Substances or Methods for dealing with acute and emergency situations."

Thirdly, we find problematic CMAS consideration and usage of the secret audio recording made by William Trubridge, who is neither a doping officer nor an AIDA judge, during the luggage search on his cell phone (and selected snippets of the conversation which were uploaded to a YouTube video) but even more CMAS justification for the act:

"We refer to the provisions of Act no. 23/2018 of the Bahamas Parliament which establishes that recording a conversation is lawful when: (a) is made to a party to the private conversation, or (b) is not more than reasonably necessary: (i) in the public interest, (ii) in the performance of a duty of the person making the communication or publication, or (iii) for the protection of the lawful interests of that person, or (c) is made to a person who has, or is believed on reasonable grounds by the person making the communication or publication to have, such an interest in the private conversation as to justify the making of the communication or publication under the circumstances under which it is made" (Ruling, p. 10, Point 39.b).

In our opinion, the provided justification and reference to Bahamian laws are not applicable. We do not see how secretly recording athletes was a reasonable necessity or in the public interest. Furthermore, we question CMAS's obvious insinuation that making a secret recording was not only justified but also Trubridge's duty and responsibility to expose the alleged attempt and balance the competition (Ibid.). Contrary to this, we think that all rationales fail in the face of the facts that Trubridge was not a doping officer, that he ordered doping control as a private individual and was in an obvious conflict of interest, especially considering the fact that Klovar announced his intention to break Trubridge's AIDA world record in the *Constant Weight Without Fins* (CNF) discipline, and that Trubridge removed himself from the list of competitors only a day before the athletes' arrival to the Bahamas, which further calls his good faith into question.

In that respect, it is concerning that the CMAS Verdict completely ignores the fact that many basic procedural safeguards were denied in this case: such as that Trubridge, as a civilian, participated in a search conducted by off-duty police officers, based on the Vertical Blue's own specific Doping Control Policy and Procedures (a document which the athletes were not made aware of), that the athletes never received or signed a police Report Statement, and that they were placed in a vulnerable situation where they could not truly enforce their rights and object to a search.

Fourthly, while CMAS grounds their decision on the Code, emphasizing that it should be applied "to all CMAS members" (Ruling, p. 7, Point 28), we question why Trubridge wasn't prosecuted for his obvious conflict of interest and breaking of the Code.

Finally, we find it worrisome that the CMAS Verdict was made by the Panel consisting of three experienced law experts, all hailing from the same country, Italy. This raises concerns about fairness and impartiality, especially for a decision based solely on the Code. It would have been more appropriate, if not necessary, to include at least one ethicist who is an expert on the Code and the ethics (of sport) and an expert from a different country to ensure a more balanced and objective judgment.

In simpler terms, CMAS sanctioned the athletes based on ethical considerations, despite the fact that the official anti-doping authorities (WADA and ITA) found no violations. Instead of relying on concrete evidence, CMAS based its decision on broad and loosely defined ethical principles. Furthermore, it applied a lower standard of proof than is typically required in sports law. From a legal standpoint, CMAS may have exceeded its authority by acting in a quasi-judicial capacity without adhering to essential procedural safeguards – such as ensuring a fair trial or respecting the jurisdiction of officially designated anti-doping bodies.

In conclusion, we argue that the Code of Ethics should not punish athletes for a potential anti-doping violation. Specifically, the *International Testing Agency* (ITA), the authorised organization for anti-doping in sports under CMAS, did not find any anti-doping violation. Therefore, in our opinion, there was no basis for holding the athletes ethically responsible for an anti-doping violation, and especially not for the rather severe punishment.

6. PROPOSALS

We advocate for several proposals that can help resolve this particular case and prevent similar ones in the future.

From a legal standpoint, the CMAS decision raises serious concerns about due process, jurisdiction, and evidentiary standards. The use of expired licenses, lack of proper search warrants, and rejection of ITA findings all challenge the legal legitimacy of the verdict.

In contrast, the ethical critique focuses on values such as fairness, integrity, and respect for athletes' dignity. The unilateral recording, public shaming, and misuse of ethical language to justify punitive decisions reveal deeper issues of moral governance in sport.

Firstly, we argue for the revision of the *CMAS's Code of Ethics*. The Vertical Blue Case shows that athletes are not provided with sufficiently strong safeguards, which are undefined, underdeveloped, and unclear. It also shows that athletes are vulnerable and that there is no secure way to protect their rights. Moreover, instead of sanctioning the person who in our opinion seemed to be the main culprit in the whole event, William Trubridge, CMAS sought to punish athletes for an alleged anti-doping violation treated as an ethical violation. The entire case points to the need to review the rationale and provide a better definition of the Code. This would prevent a unilateral interpretation to the detriment of athletes and protect their vulnerability and elementary human rights.

Secondly, a clear distinction should be outlined and respected between ethical and anti-doping violations, even though using doping is also an ethical failure. The distinction between them is significant: anti-doping violations involve taking prohibited drugs or undergoing procedures and breaking anti-doping rules to gain an unfair advantage in competitions, as defined and prescribed in the anti-doping rules and regulations – these violations constitute breaches of Law and/or Rules and involve specifically proscribed punishments. On the other hand, ethical violations involve failing to follow ethical guidelines, norms, principles, and suggestions. Ethics *per se*, as well as the Code, are not Laws or Rules but rather a set of desired norms and principles for moral behaviour. Thus, the role of codes of ethics is to provide general ethical directions for moral conduct in a specific human environment or practice, promoting specific morally acceptable behaviour. It should be perfectly clear that the guidelines are just suggestions and recommendations, not laws.

On the other hand, in our opinion, the Code cannot provide sufficient legal grounds for lawful decisions to punish sportsmen for actions that were dismissed by the legally appointed bodies (ITA) of the very same sports governing institution (CMAS) that hired them. The purpose of the Code is not to be tightly connected to Law or to

provide grounds for legal decisions when the Law lacks solid proof. Providing proper rationales for punishments based on directives and principles is difficult, if not impossible. It is unclear when a principle is violated and to what extent. In this particular case, despite the decision from the designated official international body (ITA), the decision was made based on violating *The Code of Ethics*.

In our opinion, an ethical committee that includes experts in the ethics of sport should be established. This committee would consider ethical violations and provide opinions or decisions, which would then form the basis for lawful rulings and verdicts.

Thirdly, we argue that this case sets a dangerous precedent where decisions made by official anti-doping bodies (ITA), anti-doping policies and procedures were neglected and undermined, while the Code was elevated above them. We advocate for clear boundaries between the law and rules on one side, and a code of ethics on the other, as well as a clear legal relationship between them. Our opinion is that the decision provided by an official anti-doping agency cannot and should not be overruled by a body relying solely on the Code. This is especially concerning in a case like this, where the sanctioning body (CMAS) issues a verdict that dismisses the relevance of existing law (*WADA's Code*) while simultaneously using parts of it to justify its decision.

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The authors report there are no competing interests to declare.

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https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf
European Convention on Human Rights
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https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights
Ruling of the CMAS Disciplinary Committee in the Case of DC 2023-01, Vitomir Maričić & Petar Klovar vs. CMAS https://www.instagram.com/p/C2nQJ65S/?utm_source=ig_web_copy_link&igsh=MzRlODBiNWFlZ
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Integrating health physical activities into primary education: A study of South Bohemian elementary schools

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ABSTRACT

Objectives: The aim of the study was to analyse the frequency and methods of integrating elements of Health Physical Education into the curriculum in South Bohemian primary schools. This study builds on contemporary research findings indicating that the Czech School Inspectorate (CSI) strongly recommends increasing physical activity in elementary school curricula alongside conventional Physical Education (PE) through Health Physical Education (HPE) programs. The allocation of HPE funds is recommended for the mitigation of functional disorders of the locomotor system, in addition to the promotion of associated benefits derived from physical activity.

Methodology: As part of the quantitative investigation, a self-constructed questionnaire with 22 questions was distributed to the management of 250 elementary schools in the South Bohemian Region with a request to forward it to 1st grade teachers. The questionnaire included closed-ended, semi-closed, and open-ended questions focusing on the use of HPE elements in PE lessons and in other subjects. A total of 92 teachers completed the questionnaire.

Results: The results of the questionnaire survey revealed that 32.6% of teaching professionals in the South Bohemian Region engage in corrective exercise on a regular basis, including stretching and strengthening activities, on a daily basis. The survey further revealed that only 29.3% of teaching professionals incorporate physical education moments into their lessons on a daily basis. Additionally, it was observed that three-quarters of teaching professionals utilize movement to facilitate learning during mathematics or Czech language lessons.

KEYWORDS

corrective exercise; younger school age; physical education; movement moments; learning in movement

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INTRODUCTION

The transition to elementary school represents a substantial life change for both children and their parents, along with new opportunities for cognitive and psychosocial development. Nevertheless, this transition can simultaneously create negative consequences, most notably the curtailment of daily physical activity. Preschool children typically engange in significant amounts of physical activity on a daily basis; however, this is significantly reduced when they enter into school. The national report on the physical activity of Czech children and youth (Gába et al., 2022) highlights that almost half of school children are not sufficiently active, and that the reduced exercise load cannot easily be compensated even by afternoon activities, such as spontaneous play outside or organized exercise after school activity. The influence of digital technologies, which according to Sigmundová et al. (2010) should not exceed 90 minutes per day for children aged 6–11, is another factor that limits children's movement. Hamřík et al. (2012) found that more than half of children spent two or more hours a day in front of screens. The 2022 National Report further illuminates this trend, revealing that a staggering 71% of children already engage in two or more hours of "screen time" daily (Gába et al., 2022). Similar concerns have been raised internationally, with evidence showing that increased sedentary behavior, including screen time, is negatively associated with physical and mental health among school-aged children (Tremblay et al., 2011).

Movement represents a natural need for children of younger school age (6–11 years), which is affected by growth changes and other factors (Dvořáková & Engelthalerová, 2020). In addition to the positive impact on physical and mental health, movement plays a key role in concentration and attention, which has a direct effect on the quality of education (Dvořáková & Engelthalerová, 2020). While sufficient exercise contributes to the positive development of children, hypoactivity has serious risks. A prevailing concern within the contemporary school population pertains to the prevalence of functional disorders within the locomotor system, characterised by posture-related imbalances and muscle dysfunction. Research findings indicate that the prevalence of posture-related disorders in children ranges from 38% to 51% (NIPH, 2016; Šeráková, 2009; Vrbas, 2010). Furthermore, the prevalence of these conditions is known to increase with age, and they have been identified as a contributing factor to the development of locomotor system problems in adulthood (Kratěnová, 2006; Kolisko, 2003). However, it is also important to note the significant increase in both mental and metabolic diseases, and the decrease in physical fitness, which are already being observed in childhood (Sigmundová et al., 2010).

The World Health Organization (WHO) has long recommended that children and young people engage in physical activity for a minimum of 60 minutes per day at a medium to high intensity (WHO, 2010, 2020). The majority of this activity should be of an aerobic nature, while at least three times per week should include exercises to strengthen muscles and bones (NHIP, 2023). For children, these exercises should be natural, for example running, jumping or climbing over obstacles (WHO, 2010, 2020; NHIP, 2023; Sigmundová et al., 2010). These global recommendations highlight the urgent need for systematic physical activity programs in schools. International research confirms that school-based interventions can significantly increase children's

physical activity levels and improve their fitness and health outcomes (Dobbins et al., 2013).

Primary school education plays a pivotal role not only in a child's cognitive development, but also influences other domains, including biological and psychosocial development. In its material Active School, the Czech School Inspectorate (2023a) draws attention to the significant responsibility of schools for the physical development of children, a commitment that is in accordance with the Education Act, which emphasises the support of children's development to the maximum extent possible based on modern knowledge (561/2004, Education Act). This position is further elaborated in the publication by the Centers for Disease Control and Prevention (CDC, 2013), which released the Comprehensive School Physical Activity Program: A Guide for Schools. Furthermore, physical education lessons serve as a critical platform to establish healthy lifestyle habits during early life stages, which are associated with numerous physical and mental health benefits (Pate, O'Neill, & McIver, 2011).

As CSI (2023a) notes, there are a variety of ways in which physical activity can be integrated into the school day. These include physical education, which typically comprises 2–3 hours per week. However, this is often insufficient in light of contemporary lifestyles. It is therefore recommended that physical activities be incorporated into the entire teaching day (Hošková & Nováková, 2008).

Movement breaks are defined as short 2–3 minute blocks aimed at activating attention, compensating for prolonged sitting and correcting posture (Dvořáková & Engelthalerová, 2020). Learning in movement, a kinesthetic approach to teaching where movement facilitates understanding of subject matter, is employed, for example, in the Hejný method of mathematics (Hejný, 2005).

Movement breaks represent a natural form of physical activity occurring during the school day, supporting both physical fitness and a positive social climate in the classroom (Mužík & Vlček, 2010). Another concerning phenomenon limiting schools' ability to foster children's physical literacy is the growing number of students exempted from physical education (Ješina et al., 2024; Vařeková et al., 2022). This trend negatively affects their inclusion in other physical activities within the school environment. This has a detrimental effect on the inclusion of children in other physical activities within the school environment. Conversely, the judicious implementation of health and adapted physical education, as delineated by the Framework Educational Program for Basic Education (NPI, 2024), holds the potential to enhance the efficacy of this endeavour. The prescription of suitable corrective exercise regimens is furthermore contingent upon the capacity of physical education teachers to perform an orientational diagnosis of movement disorders in a practical context (Ješina et al., 2020, Vařeková, 2020).

The aim of this work is to analyse the frequency of use of means for the prevention of poor posture and muscle imbalances in elementary schools in the South Bohemian Region.

METHOD

As part of the quantitative study, a custom-designed questionnaire focused on the use of health physical education procedures was disseminated to the management of 250 elementary schools in the South Bohemian Region with a request to forward it to

1st grade teachers. The questionnaire, created in the Survio environment, contained 22 closed, semi-closed and open questions, which were divided into several sections. The initial six questions addressed the provision of physical education in schools, enquiring about its status as a compulsory or optional subject and the number of pupils exempted from physical education. Questions seven to ten pertained to the recommended elements of physical education included in regular classes, such as diagnostics, stretching, and strengthening. Questions 11 to 13 addressed the incorporation of movement elements into other lessons beyond physical education – for example, movement games in Czech language and mathematics, as well as movement-based activities in other subjects (movement breaks). The subsequent questions focused on the conditions in schools and teachers' subjective opinions regarding the use of movement elements in education.

RESULTS

A total of 92 teachers of first grade from primary schools in the South Bohemian Region completed the questionnaire. Only 2 schools confirmed the teaching of Health Physical Education (HPE) as a separate subject, which corresponds to 3.3% of respondents. In the form of a group exercise person, HPE is only offered at one school, specifically in the form of a yoga group for eight children once a week (Fig. 1).

The majority of respondents reported that their schools had no students exempted from PE, with eight educators reporting one exempted student in their class and only one educator reporting two exempted students.

59.3% of teachers reported monitoring posture and muscle imbalances, and 39.6% only noticing more severe cases. The aggregate response of 89.9% of educators indicates a collective awareness of these issues, albeit with varying degrees of attention.

The incorporation of corrective exercise in PE classes varies significantly. A substantial proportion of teachers (51.7%) consistently integrate stretching exercises targeting muscles with a tendency to shorten into their lessons. In contrast, 47.2% of teachers incorporate these exercises on an occasional basis, while a notable 1% does not include them at all. Furthermore, a significant proportion, amounting to 32.6%, incorporates strengthening exercises targeting weak muscles in every lesson. However, this practice is less common, with only 64% of teachers choosing to do so occasionally. Notably, one teacher does not incorporate strengthening exercises at all. Exercises targeting the deep stabilization system are included in every lesson by 12.4% of teachers, while 61.8% include them on an occasional basis and 20% of teachers are uncertain about the suitability of exercises for this purpose. Furthermore, 29.3% of teachers regularly include physical education moments in their lessons on a daily basis, while 65.2% do so only occasionally. It is noteworthy that only 5.4% of teachers do not incorporate these moments in their lessons. The majority of respondents, specifically 93.5%, expressed the importance of the inclusion of corrective exercise. However, it is also important to note that half of the teachers expressed uncertainty regarding their ability to compile appropriate exercises based on their knowledge.

In 53.8% of schools, pupils have the opportunity to engage in physical activity during school breaks. The most frequently mentioned activities include ball games, table tennis, jumping hoops and spending time on the school playground. Furthermore,

three-quarters of teachers incorporate movement into their lessons, particularly in mathematics and the Czech language. The most prevalent activities include running dictations, movement alphabet, walking and mathematical exercises.

Regarding teaching outside the school building, 26.1% of teachers go out with their children at least once a week, while 54.3% do so at least once a month. 96.7% of teachers said that they have good conditions for walking around the school. Teachers' comments indicated that the biggest obstacle to the inclusion of physical activities in teaching is the lack of time and space. The teachers further noted that parents' insufficient support and physical education teachers' use of unnecessary excuses were significant barriers. The teachers also highlighted the school management's approach to physical activities during breaks as playing a significant role. Additionally, some teachers pointed to the overall decline in normal physical activities in families and the growing number of children with health problems.

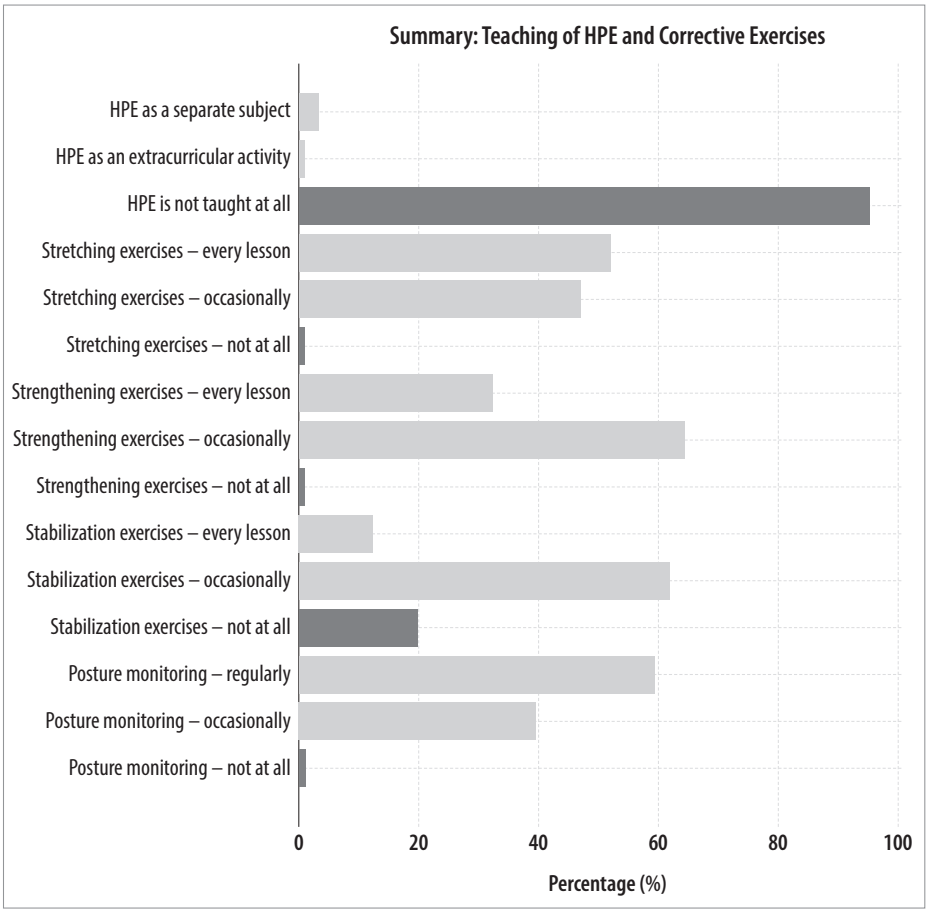

Figure 1 Frequency of selected responses on health physical education and corrective exercise.

DISCUSSION

Current lifestyles, characterised by insufficient physical activity and children spending their free time sitting at the phone or computer, causes a high percentage of children to suffer from functional disorders of the locomotor system and poor posture, which may, in the future, have a negative effect on a number of civilizational diseases and the overall quality of human life (NIPH, 2016; Kratěnová et al., 2006; Kolisko, 2003; Šeráková, 2009). In light of these concerns, the Czech School Inspectorate has initiated a series of thematic investigations and issued methodological recommendations to promote physical activity in schools (Active School, CSI 2023a). These recommendations are underpinned by the observation that pupils spend a significant portion of their day, ranging from a quarter to a third, in educational institutions, making schools a pivotal influence on their lifestyle alongside the family. The inadequate inclusion of exercise in the school curriculum thus poses a fundamental risk to the health development of pupils (Active School, CSI, 2023a).

The primary objective of this study was to determine whether adequate provisions are in place to mitigate the adverse effects of contemporary society on the physical well-being of children in the initial grade of elementary school. The central inquiry posed to educators pertained to the frequency with which they engage in corrective physical education activities.

The results of the questionnaire survey revealed that in elementary schools in the South Bohemian Region, HPE is only minimally taught as a discrete subject. This finding corroborates the national decline in HPE, as evidenced by the Czech School Inspectorate's thematic report for the 2022–2023 academic year, which followed the 2016 survey (CSI, 2016, CSI 2022). This situation indicates the need to include elements of Physical Education in regular PE lessons and also in other subjects in the form of movement breaks. It is also a shame that HPE in the form of an extracurricular HPE group was mentioned by only one respondent. The reasons may include the limited capacity of school facilities for clubs, a lack of interest on the part of children or their parents, and also teachers' unwillingness to participate in these activities.

The data found correspond to the CSI Thematic Report from 2016, which stated that only 3.4% of elementary schools organised the teaching of the separate subject of HPE. At these schools, an average of 10.2 pupils attended the subject in the 1st grade and 9.4 pupils in the 2nd grade (Ibid.). An extensive survey from 2023 then confirmed a very low proportion of schools providing HPE classes. Conversely, a favourable trend was observed in certain schools, characterised by the augmentation of PE hours utilising available time (less than a third of schools) or the introduction of elective subjects related to PE (less than half of schools) (CSI, 2022).

The findings pertaining to the provision of exemption from physical education were found to be remarkably favourable. The majority of the schools surveyed reported no instances of disengaged pupils in the first grade, with only a minimal number of cases being reported among those who did express such concerns. The number of students granted exemption from television classes is a parameter that is subject to close monitoring. Section 50 of the Education Act (561/2004) stipulates the criteria for exemption, which include parental request and a physician's confirmation. Concurrently, the exemption from PE has been the subject of criticism, with commentators asserting

that it constitutes a violation of children's rights to equal access to education (Ješina et al., 2024). This is due to the fact that support measures are not applied in an appropriate manner depending on the needs of the individual, as is customary in other subjects. The ombudsman of the Czech Republic has previously addressed this issue (Višňa, 2024).

The number of exempted pupils was also discussed in the 2016 CSI thematic report. In that year, an average of 1.2 exempted pupils per school was recorded at the first level (0.8 partially and 0.4 fully exempted) and an average of 2.4 at the second level (1.4 partially and 1 fully exempted). Consequently, it can be concluded that the findings of our investigation are in alignment with the conclusions of the aforementioned report. The investigation was conducted at the first level, a time when the number of exempted pupils remains relatively low. A more significant increase is observed in secondary schools (95% of secondary schools had exempted pupils in 2016, with an average of 8.7 partially exempted and 17.8 fully exempted per school), although these institutions were not the primary focus of our research.

As stated in the methodological recommendations of the CSI (Active School material and related document for self-evaluation), the importance of quality formative assessment of pupils in PE is recognised. The document for self-evaluation of schools commends the practice of "Recording and monitoring of data on the motor development of pupils is ensured on the basis of regular assessment of pupils, which is a regular part of Physical Education. This is then used to differentiate teaching methods ... The school provides parents with recommendations for student development if they express interest" (CSI 2023a, p. 32). It is recommended that such an assessment should not only include fitness testing, but also the most common functional disorders of the locomotor system. In the present survey, 59.3% of teachers reported that they monitor posture and muscle imbalances, while 39.6% only notice more severe cases. The findings of this study indicate that a substantial proportion of educators (89.9%) are committed to addressing these concerns, though to varying degrees. This observation underscores the necessity for a more comprehensive approach to address the underlying reasons for the observed disparities in attention.

The subsequent section of the questionnaire focused on the frequency with which teachers incorporate elements of corrective exercise into their practice. The results indicated that 32.6% of teachers regularly engage in corrective exercise, encompassing stretching and strengthening exercises, during each PE lesson. However, most teachers incorporate at least stretching exercises aimed at muscles with a tendency to shorten each PE lesson, with a third of them also including daily movement breaks in their lessons. It is acknowledged that the positive results may be influenced to some extent by the respondents' efforts to present themselves positively. 47.2% of teachers do stretching exercises with their students only occasionally. However, this is insufficient given the number of hours of PE, even if it were once a week. Strengthening exercises are included in PE lessons even less than stretching exercises. 64% of teachers in the South Bohemian Region include strengthening exercises in PE lessons only occasionally. A mere 32.6% incorporate strengthening exercises of muscles with a tendency to weaken every hour of PE. A mere 12.4% of teachers incorporate exercises to strengthen the deep stabilization system with pupils during each PE class, a figure that is particularly low given that research has shown that almost half of children

already exhibit posture problems by the time they enter the first grade (NIPH, 2016; Kratěnová et al., 2006; Kolisko, 2003; Šeráková, 2009). Furthermore, a fifth of the subjects interviewed reported a lack of awareness regarding the specific exercises recommended for enhancing the deep stabilization system function.

The majority of respondents (93.5%) acknowledged the importance of including corrective exercise, however, half of the teachers expressed uncertainty about their ability to compile appropriate exercises based on their knowledge, which may contribute to insufficient compensation.

A further investigation focused on graduates of the PE-oriented universities (Vařeková et al., 2021) revealed insufficient self-efficacy, i.e. subjectively low-rated competence to implement health-oriented exercise. The solution to this issue lies in the attention focused on undergraduate training, including internships, and the availability of quality regular in-service training for teachers. The CSI Thematic Report (2022) indicates that only 20% of PE teachers at the 1st level use further education of pedagogical staff (FEPS) focusing on physical education, with approximately 10% participating in seminars and conferences. A third of PE teachers at the 1st level stated that the offer of FEPS in the area of PE is insufficient.

In addition to structured physical education, the integration of brief movement activities into regular lessons plays an important role in the prevention of functional disorders of the musculoskeletal system. Carter et al. (2024) emphasise that implementing short movement breaks throughout the school day is not only feasible and cost-effective, but also beneficial in increasing pupils' physical activity, enhancing their attention and engagement, and supporting long-term health outcomes such as the prevention of childhood obesity. Despite these positive prospects, the findings of this study indicate that such breaks are often implemented in a limited and rather uniform way – typically involving simple stretching, hand relaxation exercises before writing, or recitation of poems with movement. While these strategies may help to interrupt prolonged sitting, they do not always offer a sufficient or targeted compensatory effect, particularly regarding posture correction. In the early stages of education, the inclusion of didactic games appears to be especially valuable – not only because they promote movement and position changes, but also due to their potential to increase motivation and deepen understanding of the learning content. It is therefore encouraging that a considerable number of teachers are already incorporating these forms of movement into their teaching practice.

The analysis of individual responses showed that the categorization of movement breaks was not affected by the number of seats in the classroom. In the questionnaire survey, some teachers identified insufficient time as the main reason for not implementing this activity. According to CSI (2023a), however, schools have a crucial responsibility to establish an organizational framework that supports the integration of movement into pupils' daily routines. Movement breaks serve as a necessary counterbalance to the one-sided mental and physical burden of children, and it is important for the teacher to be able to find the right moment to change the activity and thus influence the decreasing attention of the pupils and the deteriorated body posture (Nováček et al., 2001). An interesting result of the questionnaire survey was that three quarters of teachers use movement for learning during mathematics or Czech language lessons. These movement forms of teaching have been shown to enhance sub-

ject comprehension and student motivation, while also compensating for prolonged periods of sitting during lessons (Nováček et al., 2001).

In the context of the Active school programme, the CSI underscores the significance of the total volume, frequency, and intensity of physical activities in shaping the physical activity regime within educational institutions. The overarching objective is to foster an active student "who seeks out physical activities during the school day, including during breaks and in the afternoon. These activities should involve movement, such as stretching and walking, rather than sedentary behaviour" (CSI 2023a, Active School, p. 17). They further emphasize the importance of adhering to a movement regime during these breaks (Mužík & Vlček, 2010).

According to the respondents in our sample, pupils had the opportunity to be active during breaks in only 53.8% of schools, with the most frequently mentioned activities being ball games, table tennis, jumping shots or spending time on the school playground.

Regarding the use of outdoor educational opportunities, the data show that only 26.1% of teachers conduct outdoor activities with their pupils weekly, whereas 54.3% do so at least once a month.

Concurrently, a resounding majority of 96.7% of teachers reported that their institution provides favourable conditions for walking around the school, suggesting that the potential for outdoor education is not being fully exploited. This phenomenon may be attributed, at least in part, to the pedagogues' own attitudes and behaviours regarding physical activity and movement. Half of the teachers (50%) engage in active sports at least three times a week, while 16.3% participate in sports on an occasional basis and 8.7% engage in daily walks.

A recent analysis of teacher comments revealed that the most significant barriers to integrating physical activities into the curriculum are the lack of time and insufficient facilities (CSI, 2022). The prevalence of competing demands, such as fulfilling curriculum requirements and adapting to pupils' learning pace, was also identified as a major challenge. Furthermore, insufficient parental support and physical education teachers' reliance on unconvincing justifications were frequently cited as additional contributing factors. The school management's approach to physical activities during school breaks was also found to be a salient factor. Furthermore, some teachers highlighted the broader societal trend of a decline in physical activities within households, as well as the rising prevalence of children experiencing physical health challenges. This observation is corroborated by the findings of the CSI thematic report from 2022, which revealed that up to 22% of first-grade teachers perceive the school's facilities to be inadequate for teaching physical education, despite the presence of adequate equipment, such as balls and jump ropes.

CONCLUSION

The objective of the present study was to examine the extent to which and the manner in which teachers at the first level of elementary school in the South Bohemian region dedicate themselves to the prevention of posture disorders and muscle imbalances in their pupils. The results indicate that, although most teachers are aware of the importance of movement for the healthy development of children, the inclusion of corrective

exercise and movement activities during lessons is often insufficient. The prevailing constraints pertain to a paucity of time, space and opportunities within educational institutions, compounded by the competencies of teaching staff. The study further reveals that while many pedagogues employ learning through movement, approximately a third incorporate movement moments. However, it is imperative to enhance the pedagogues' expertise in the domain of corrective exercise to avert posture disorders and muscle imbalances, not solely in PE classes, but predominantly by integrating physical education moments into daily lessons. Given the rising prevalence of children experiencing mobility challenges, it is recommended that greater emphasis be placed on incorporating physical activities into both regular lessons and class periods.

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