A Typological Understanding of Medical Support in Sport – What Do We Know, and What's Next?

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Abstract

This article develops a typological understanding of medical support in sporting contexts. Based on the findings of a narrative literature review of social scientific studies, it outlines how medical support in sport can be usefully framed by four interrelated but conceptually distinct ideal-types. These include *affiliated*, *transient*, *independent*, and *pseudo* medical support. This understanding leads to the introduction of several avenues for further investigation, with an emphasis on exploring the boundaries and flexibility within different types of medical support through athletes' perspectives and experiences, the impact of internet-based pseudo 'medical' knowledge, and the need for research from without the Western/Global North setting to highlight differences in a currently under-researched area of the field. We welcome scholars to critically engage with our ideas so as to refine, test, and reconsider them in light of empirical observations.

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Introduction

The academic study of medical care and support in sport has seen much attention from within the social scientific disciplines, having been explored in diverse national and sporting contexts using various theoretical and methodological approaches. There are numerous and relatively consistent findings across this body of work, many of which we detail below (see Howe, 2004; Malcolm, 2017 and Waddington, 2012 for important overviews on the topic). In this paper, we advance this work by outlining a coherent typological understanding of how medical support in sport is most readily developed, delivered, and received - with a specific focus on the kinds of social relationships that constitute the provision of medical care in sport. The social scientific study of sport and medical care, which is largely built on contributions from the sociology of sport, has developed to such a point that it is now possible to see clear areas where empirical attention has not yet been sufficiently focused. We outline these in our discussion and provide guidance for scholars seeking to further advance academic knowledge in this direction.

For the purposes of this paper, a narrative literature review was undertaken focusing primarily on social scientific studies of medical care in sport. Academic texts were searched for via a combination of SCOPUS and Google Scholar databases, using combinations of keywords such as 'team doctor', 'team medic', 'sport practitioner', 'medical relationships', 'sport medicine', 'sport medic', 'sport clinician', and so on, including variations on terminology as appropriate. In addition, we included works that were not immediately found via these searches, but which appeared in reference lists of the papers and books that were identified as well as recommendations from colleagues. 203 academic texts were included in the literature review sample based on the criteria that they were a) substantively concerned with the provision of sports medicine and/or allied professional healthcare in sports contexts (and not, for instance, medical research about sport-related conditions), and b) featured at least some commentary on the nature of relationships between such care providers and the athletes they worked with.

Most of these texts were journal articles published in either sport and social science or sport medicine journals. They were analysed by the first author who produced an initial list of 32 characteristics that were features of relationships and interactions in this field. The first and last authors spent time considering and reconsidering a framework which captured overarching analytical and empirical features of the research to produce an understanding of four 'types' of care practices in sport. Building on this, all authors were involved in developing and refining the analysis and arguments that follow.

The goal of this paper is not to comprehensively summarise all findings of this literature review, and as such many interesting topics are either covered only briefly (e.g., conflicts of interest in medical care) or excluded in the interests of space (e.g., doctors' complicity in doping scandals). Rather, our focus is on elucidating what appear to be consistent and important features of the social dynamics of medical care delivery and support in sport. This enabled us to focus on analytically differentiating between types of medical provision and discuss some of the challenges that seem to be inherent within each one.

Many of the studies encountered during this review are included in what follows. We begin our analysis by providing a brief overview of 'ideal-types' as a way of contextualising the strengths and associated weaknesses of the work we present.

Ideal-Types

Max Weber (1949) introduced the concept of an 'ideal-type' as a heuristic device for categorising certain elements of social reality into logically precise constructs. According to Weber an ideal-type "is formed by the one-side *accentuation* of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent, concrete *individual* phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified *analytical construct*" (1949: 90, emphasis in original). In other words, an ideal-type is a way of accounting for certain important elements and characteristics of a given phenomenon, but should not be confused with 'matching' or objectively describing a specific thing or things. This way of working provides useful conceptual tools for developing an empirically and theoretically informed understanding of social scientific phenomena in a systematic way. As such, this is a way of conceptually grasping something that approximates reality by identifying and accentuating particular features of a given phenomenon.

The term 'ideal' is used for such analytical purposes and should not be accompanied with a value judgment as to the 'goodness' or 'rightness' of a given thing. In this respect, the meaning of the term might more accurately be understood as 'idea types' or 'types of ideas about things'. This grouping of ideas into logically, theoretically, and empirically informed cognitive structures should not be confused with trying to find objective representations of specific social phenomena. It is important, then, to remember that our ideas about things are not the things themselves – there is always a mediated separation between phenomena and the symbols we use to understand them. Along this line of thought, Weber goes on to described ideal-types as a form of utopia that "cannot be found anywhere in reality" (1949: 90). Instead, they exist as ideas that are transformed (in terms of their characterisation) "into a consistent ideal-construct by an accentuation of essential tendencies" (Weber, 1949: 91). An ideal-type can then serve as a conceptual tool which can help typify certain elements of reality through logical abstractions that emphasise key features of a given phenomenon.

This way of working provides a basis upon which a broad scholarly understanding of social life can be developed. Such understanding is drawn from observations which reduce and sometimes conflate the complexity and nuance that is inherent in the worlds we share with others. As such, creating 'ideal-types', or in the terminology we favour here a 'typology', must be understood as a useful step towards collating, structuring, and advancing knowledge, which should act as a springboard for subsequent enquiries and associated reconsiderations of concepts in line with empirical observations. Importantly, typologies are not the final word on a matter, but rather offer a useful starting or progression point in efforts to understand how social phenomena tend to manifest, highlighting fruitful avenues for further, more nuanced analysis. In this way, we take inspiration from Weber to develop an understanding of four broad types of medical support that we have observed within the literature on sport and medical care/practice. As a point of departure, we will consider Kotarba's (2001) preliminary conceptualisation of such work.

Kotarba's Conceptualisation of Sports Medicine as Occupational Healthcare – What Do We Know?

In one of the earlier sociological investigations of sports medicine, Kotarba (2001) proposes such a typology. Specifically, he considers the practice as an occupational healthcare system organised into three types*: elite, managed* and *primitive*. In this regard, he develops a structural and cultural account of medical care in sport that shows how the "style, tone and meaning of occupational health care delivery… are largely a function of the work culture" (Kotarba, 2001: 767) of competitive sport. This working culture is structured by the way healthcare systems and socio-economic relations, within society broadly and sports specifically,

are organised. In turn, this means that the quality and completeness of the healthcare provided in each type reflects the 'value' that is assigned to the 'worker' (in this case, athlete-patients) by the employer (e.g., sports clubs, organisations, promotions).

Elite occupational healthcare is provided to the most valuable and hard to replace workers in an organisation (Kotarba, 2001). The type of medical care they receive is the most expensive and is typically delivered by highly specialised medical personnel. *Managed* occupational healthcare is available to workers who are deemed 'typical' and are not of particular importance. Healthcare in this setting is often delivered and managed by a general practitioner who works for and reports to the organisation. *Primitive* occupational healthcare is offered to the least valuable and easily replaceable workers. Here there is no real effort to provide any type of optimised healthcare, as the goal is "to patch up the worker in an incidental manner – when care is available and when there is an immediate need for care" (Kotarba, 2001: 768). Healthcare is delivered by 'auxiliary' medical personnel (e.g., nurses and 'complementary' or alternative medicine specialists) who typically provide their services on a voluntary basis. Because of that, primitive healthcare is often seen as benevolence or charity.

Kotarba's ideas act as a conceptual setup for his richly detailed empirical discussions. But three key issues arise from Kotarba's (2001) typology. Firstly, it is based on a well-developed ethnographic project exploring rodeo and professional wrestling in America. This means that he is well placed to understand those specific sports worlds by building intimately familiar knowledge of the cultures, social relations, and normative values that dominate in such spaces. But he is less well placed to offer thoughts about the broader social 'landscape' of sports medicine and medical support in sport. As such, his illustrations are heavily influenced by the structure of American healthcare and the 'rugged individualism' that often dominates American sporting subcultures (especially rodeo). Therefore, his proposed "sociological model of sports medicine that conceptualizes it as occupational health care" (2001: 766) can more realistically be understood as a distinctive model of healthcare in certain American sporting subcultures.

Secondly, Kotarba's (2001) work suggests traditional and hierarchical notions of medical control and power, which does not take into account the 'medicalisation' thesis: that is, modern medicine increasingly takes a central role in (Western) society and is a significant institution of social control therein (Waddington, 2000). This process means that the medicalisation of 'ordinary' aspects of everyday life are "making medicine and the labels 'healthy' and 'ill' relevant to an ever-increasing part of human existence" (Zola, 1972: 487). Medicine and medical care are then centrally placed in the creation, development, and resolution of perceived social problems, and concurrently this has facilitated the spread of 'medical' knowledge among wider sections of the population. Ironically, this ascendancy of medicine involves the blurring of boundaries between expert knowledge (the exclusive domain of trained professionals) and lay knowledge (the general public's interpretations of health and illness). By not centralising such an understanding within his account, Kotarba misses a key organisational feature of contemporary sports medicine: that due to the increasing presence and significance of apparently medical knowledge circulating in society broadly, and within sports subcultures specifically (Malcolm, 2011), there are many occurrences when 'medical' advice and care are provided to athletes by people other than trained medical personnel (see AlHashmi and Matthews, 2022a, Atkinson, 2012, Charlesworth and Young, 2004 for examples).

Thirdly, while Kotarba (2001) further examines the specific social dynamics of primitive occupational healthcare through his ethnographic work in rodeo and wrestling, no similar empirical evidence was provided for the elite and managed models of healthcare. Indeed, Malcolm (2017: 103) argues that "Kotarba's belief in the existence of elite and/or managed occupational healthcare in professional sport is largely a matter of conjecture". Malcolm extends his critique of Kotarba's (2001) assessment of the

variations in occupational healthcare by evaluating studies of medical provision in sport. In this he specifically details how healthcare provision in English professional football and rugby union (both of which are amongst the wealthiest sports in the UK), which under Kotarba's depiction would logically fall under the 'elite' type, showed significant elements of managed and/or primitive occupational healthcare. These examples illustrate that even in the most competitively elite sports settings, wealth has a limited impact on the resources and quality of medical care delivered to athletes. Malcolm (2017) also argues that despite the increased medicalisation and the ever-growing presence of sports medicine specialists in those spaces, elite occupational healthcare still remains something of an exception in sport.

Towards a (Western) Typology of Medical Support in Sport

Considering the preceding discussions and following a review of studies published largely in the years following Kotarba's early offering, we propose a more comprehensive representation of the different types of medical support evidenced in academic literature, reviewed as noted above. It is important to note that, to our knowledge, all the work we examined focuses on social spaces which can fairly be defined as existing within the Global North and are dominated by a distinctly 'Western' version of sport. In such environments, structures, principles, and organisational features developed largely in Western Europe and North America shape and frame much of athletes' sporting life – we return to this point in the conclusion. Unlike Kotarba's (2001) hierarchy of medical care, our typology is not centrally organised around athletes' *levelness* (elite, pro, amateur), but instead is based on the forms, relationships, and structures that medical support itself takes, along with the characteristics of the people that provide it. Within this there is also a broad discussion of medical personnel's employment arrangements, as this often reflects the type of care they are able to offer and deliver, and hints at their possible interests and motivations in doing so. Considering these interlinked points can help identify various potential (or actual) problems in the delivery of medical care, highlighting relative strengths and weaknesses of various modes of provision, rather than simply presenting them in a static hierarchy where greater organisational coherence is assumed to correspond with 'better' standards of care.

Our typology thus consists of four interrelated but conceptually distinct ideal-types: *affiliated*, *transient*, *independent*, and *pseudo* medical support. The first type contains far more academic evidence in comparison to the other categories, because most social scientific research on medical relationships in sport contexts has been focused on this area. Thus, it makes for a logical starting point in our typology.

Affiliated Medical Support

This category includes any healthcare personnel that are involved in providing, managing and/or coordinating medical services for athletes that are 'affiliated' to a sports team or institution. They are often either part of an established, onsite medical team or work in dedicated medical centres run by sports organisations. This type of medical support is typically provided to athletes involved in high performance, professional sport (Boyd, 2007; Malcolm, 2006; Mountjoy, 2019; Waddington, 2002; Theberge, 2006) and collegiate sports (in American and North American settings) (Safai, 2003; 2004; Stockyard, 1997; Walk, 1997; 2004). For example, many national tennis federations have established both centralised and regional medical centres that provide medical care to elite and junior players (Pluim et al., 2007; Wood, 2006). Similarly, most high-performance athletes in Canada have access to sport medicine services in specialised training facilities located across the country (Theberge, 2008a; 2008b).

The relationship of medical personnel to these institutions (most of which have been evidenced in research in the UK context on rugby union and association football) range from ad-hoc arrangements to full-time employment (Howe, 2004; Malcolm, 2006; Stockyard, 1997; Waddington, 2002; Waddington, Roderick and Naik, 2001; Waddington and Roderick,2002). Such 'team physicians' come from a variety of subspecialties including orthopaedics, cardiology, dermatology, and the more recently established specialism of sports medicine (Mitten, 2001; Stockyard, 1997; Waddington, Roderick and Naik, 2001; Waddington and Roderick, 2002). However, many hold primary employment in general practice and are often hired by sports organisations on a part-time basis (Carter, 2009; Hanson, 2018; Malcolm, 2006; Malcolm and Sheard, 2002; Pluim et al., 2007). Some national organisations employ doctors to act as chief medical advisors (CMAs). CMAs are often responsible for coordinating the medical care and treatment plans for individual players, which involves close communication between the coaching staff and medical team. In some cases, they are also responsible for the appointment of other medical staff members (Theberge, 2008b; Wood, 2006).

In the early research on English professional association football, team doctors and various other practitioners tended to be appointed by committee members or club managers based on personal relations and/or their evident interest in sport or support for a local club (Carter, 2009; Waddington, Roderick and Naik, 2001; Waddington and Roderick, 2002). In these settings, relatively few doctors were compensated for their services, while some voluntarily worked as a favour for what they perceived to be 'their' club. As noted in this work, these factors contributed towards poor standards of care with respect to doctors' questionable sport-specific expertise, multiple conflicts of interest, and lack of meaningful oversight and accountability. Perhaps key to this was a sense that such club doctors' roles were more closely aligned with the needs and interests of football clubs, and not with those of the athletes ostensibly in their care, potentially leaving them with compromised medical autonomy (see Anderson and Jackson, 2013). As with much of what follows, athletes cognisant of such compromised relationships may have a difficult time trusting medical practitioners and as a result, avoid disclosing injuries to them or seeking their help (Waddington and Roderick, 2002).

Changes in this context have been reported by Malcolm and colleagues (2017) as part of a trend towards the professionalisation of medical support in British sport. Indeed, recent research shows how sporting directors in football now have key duties in response to employing and managing medical teams, indicative of more accountable and professionalised employment practices (Morton, 2023; Parnell et al., 2023; Strudwick, 2023). While this shift to formal contracts and remuneration has been positive in terms of providing job security and hopefully a more competent delivery of care, it does not necessarily shift the potential for such relationships to compromise the medical autonomy of practitioners – a theme that persists across many studies cited above. Evidence pointing to the high turnover of staff involved in sport (Morton, 2023; Parnell et al., 2023) might also indicate inconsistency in the treatment received by athletes in such contexts, while also being suggestive of unsustainable pressure being placed on medical and health professionals employed by sports organisations, whose overarching interest in competitive success cannot be ignored as a factor shaping medical care provision.

Finally, it is worth noting that the majority of the medical care in such settings seems to be provided by physiotherapists. These are typically employed on a full-time basis by sports clubs, and are present during training sessions and competitions (Malcolm, 2006; Malcolm and Scott, 2011; Malcolm and Sheard, 2002; Safai, 2003; 2004; Waddington and Roderick, 2002). In most cases, physiotherapists tend to work independently from club doctors, as their involvement in every step of the treatment process (e.g. prevention and management of injury), and the trusting relationships they have established with their athletes through an often-shared commitment to enhancing sporting performance through more regular contact and continuity of care, mean that they are often the main providers of healthcare. This not only

extends their occupational tasks, but in certain situations allows them to display considerable autonomy relative to doctors (see Malcolm, 2006 and McEwen and Taylor, 2010). Some club doctors acknowledge their respective skills and often deliberately deferred to physiotherapists for their sport-specific expertise (Scott and Malcolm, 2015; also see Malcolm, 2006 and Malcolm and Scott, 2011 for detailed discussions). Interestingly then, when physiotherapists evidently share a close orientation to the norms and ideals of elite sport with the athletes they treat, they become more central in the delivery of other types of medical support.

Transient Medical Support

This category includes medical personnel that are not formally affiliated to a sports organisation but provide medical support during sporting events. They may conduct pre- and/or post-medical evaluations of athletes or provide treatment during a game or competition in the case of injuries or ill health. This includes paramedical teams, medical stations (a makeshift facility, like a tent or table, that typically provides some degree of medical aid) or temporary clinics in marathons and at various sporting tournaments, and 'neutral' medics that try to detect potential concussions in contact sports (Hanson, 2018; Kotarba, 2001; Mountjoy, 2019). Such personnel are temporarily hired by event organisers or promoters, or sometimes volunteer within charitable programmes that offer their services for free to competitors. For example, Kotarba's (2001) ethnographic work with professional rodeo cowboys revealed that healthcare in rodeo events is provided by the 'Justin Heelers' (sponsored by the Justin Boot Company, as part of a public relations exercise), a charitable organisation that mainly consists of athletic trainers that work on a voluntary basis. Kotarba (2001) also evidenced this within professional wrestling, where emergency medical care is typically provided by current and former wrestlers that happen to have medical occupational backgrounds.

Interactions with these types of sports medics are mostly short-lived, rarely extending beyond the context of the sporting event or competition at which the medic works. Athletes may seek this type of medical care when needed, such as when marathon runners utilise the different types of medical care provided in medical stations during or after a race (Breslow et al., 2001; Tso and Kim, 2021), or they may be required to engage with it as a precursor to competing, such as with pre-fight medical checks in combat sports (Channon, Matthews and Hillier, 2020a). Due to the lack of continuity of care compared to affiliated medical support, there is typically less ability for athletes to develop long-term relationships with providers here. This limits the kind of support that can be provided, possibly decontextualising the provision of care for any ongoing conditions the athlete might have, while leaving fewer opportunities to build a trusting rapport between athletes and medical staff.

In some such contexts athletes even appear to have an antagonistic, untrusting relationship with these medics, especially in mandated pre-competition medical evaluations, which may be seen as a potential threat that could prevent athletes from participating. This is particularly evident in combat sport settings, where fighters (and/or their entourages) tend to hide or downplay any potentially serious medical problems, such as recent concussions, from medical personnel. Since their interactions are often shaped by the need to be passed as 'fit to fight', medical provision may be encountered as a direct barrier to realising the athlete's goals, leaving the relationship between medical staff and athletes potentially rife with conflict. Further, event organisers may also come into conflict with medical practitioners over mismatched priorities between ensuring athletes' safety and enabling the continuation of a competitive event (Authors; Channon, Matthews and Hillier, 2020a; 2020b; 2021). This differs pointedly from the potential (if not always actual) conflicts of interest inherent in the social dynamics of affiliated medical care (Anderson and Jackson, 2013), since transient medics are less likely to be institutionally complicit with the interests of sports organisers than those who are formally affiliated with them.

Faced with such potential resistance to their work, transient medical practitioners need to adopt strategies to build rapport, earn respect, or otherwise secure the power necessary to operate effectively in unfamiliar and possibly unwelcoming social contexts. This requires drawing on skill sets that extend beyond medical expertise in order to be taken seriously by clubs, coaches, event organisers, and athletes, and secure ongoing employment in the field. Interestingly, as is the case in 'unlicensed' combat sports, people without formal medical training and qualifications may consequently be able to pass themselves off as 'medics' thanks to their mastery of these tactics, which include demonstrating an attachment to or affinity with the sport in question (Kotarba, 2001), effective self-presentation through dress and equipment use, and skilled interaction with key stakeholders (Channon Matthews and Hillier, 2021). Although rarely reported in the literature, it is worth stressing that a poorly audited reliance on transient medical support leaves open the possibility for athletes to receive wholly inadequate care (Forbes et al. 2024), including from effective imposters masquerading as medical professionals in contexts where checks on their suitability and oversight of their work is almost entirely absent (Channon, Matthews and Hillier, 2020a).

Independent Medical Support

This category includes medics who work with athletes that do not have access to club or sport-affiliated medical support, or who require more specialised expertise than is on offer in this regard. Athletes in these situations may resort to visiting their general practitioners (GPs) for sport-specific medical needs. This is often the case in countries that offer free public healthcare such as the United Kingdom, Ireland, and Denmark (Charlesworth and Young, 2004; Liston et al., 2016; Pike, 2005; Thing, 2004). For example, Thing (2004) revealed that non-elite athletes and top players from individual professional sports clubs in Denmark turn to the public healthcare system for medical assistance. However, evidence shows that many athletes avoid this type of medical care and decry the incompetence of GPs in diagnosing and managing their sports injuries or illnesses (Allen-Collinson, 2003; 2005; Charlesworth and Young, 2004; Howe, 2004; Liston et al. 2006; Malcolm and Pullen, 2020; Pike, 2005). Considering this, doctors in such settings are often classed by athletes as outsiders due to their lack of apparent knowledge of, affinity for, or embodied experience within sport (Authors; Allen-Collinson and Hockey, 2001, 2007; Atkinson, 2012). This draws a neat parallel with the attitudes athletes may display towards transient medical providers noted above; if a practitioner is not evidently 'on-side' with the sport-specific interests of the athlete, then they are treated with suspicion and are likely to be ignored or avoided.

However, this category also includes medical personnel that are recommended by fellow athletes, coaches, or family members. These recommendations are usually made towards practitioners that are independent from clubs or teams but have a stated or reputational specialism in treating sports-related conditions. Athletes seem to be more likely to seek help from these sources compared to GPs because of the trusting relationships they have with the person recommending these services, or because they provide sport-specific medical care that will help them work around their injuries (Authors). This is especially the case if they know that these practitioners helped other athletes with similar problems (Kotarba, 1983; Liston et al., 2006; Malcolm, 2009; Pike, 2005). In other words, such practitioners are marked out as different from other medics given that they have strong 'insider' sporting credentials and as such, are more readily able to gain athletes' trust.

Independent medical provision thus reveals a crucial element of the provision of medical care in sport: that of athletes' agency. Research highlights that this is often used to secure treatments that may not align most clearly with the maintenance of good health. For instance, Pike's work on female rowers highlights how athletes went "actively 'shopping around'" for medical care (2005: 209), and in this way they were able to

find the practitioner that most likely aligned with their focus on quickly returning to athletic competition when injured, prioritising this kind of outcome over any that prescribed extended rest in service of better, more complete recovery. While independent from athletes' employers, such providers may have loose relationships with club-affiliated medical staff based on repeat referrals (Malcolm & Sheard, 2002). In these kinds of contexts, specialist independent medical practitioners might thus be incentivised to set themselves up in ways that enhance athletes' short-term return to play, rather than focusing on long-term mobility and health, in the interests of pleasing their client base and securing sporting credibility with both individual athletes and their clubs. With evidence of professional medical care increasingly shifting online (Corcoran et al., 2010; Diaz et al., 2002; Kimmerle et al., 2011; Miah and Rich, 2008), allowing for greater flexibility in choosing healthcare providers, we expect this will be an area of increasing importance in the future.

Pseudo Medical Support

Unlike the previous three categories, this category includes seeking and exchanging 'medical' advice among laypeople who typically do not hold medical qualifications. This can occur in person with family members, friends, coaches, teammates, and other sporting 'insiders', and/or in virtual contexts via various forms of social media. Athletes' use of pseudo medical expertise can be partially explained via the general underlying mistrust and dissatisfaction with medical personnel outlined in each section above, but is also likely based on convenience, as athletes who are not provided access to affiliated or transient medical support, and cannot afford independent healthcare providers, can readily consult with their coaches, other athletes and/or family members. In addition to consulting such sources of pseudo medical support, existing research suggests that many athletes make diagnoses themselves, based on their own online research or personal experiences (Gerbing and Theil, 2016; Howe, 2004; Kimmerle et al. 2012; Lupton, 2020; Malcolm, 2009; Pike, 2005; Roderick, 2006).

Indeed, evidence from multiple studies indicates that athletes tend to prefer 'medical' information that is experience-based, especially from seasoned lay 'experts' who have been through similar experiences to themselves. Echoing the potential for transient medical provision to draw on providers with questionable expertise thanks to a lack of adequate oversight, the formal, scientific basis of this knowledge tends not to hold particular importance to athletes, with emphasis placed instead on anecdotal evidence of a given treatment's efficacy as well as the sporting status of the person providing the advice (Authors; Bellander and Landqvist, 2020; Gerbing and Theil, 2016; Kimmerle et al. 2011). That is not to say that formal medical support is always rejected or supplanted by pseudo medical support in sporting contexts, but rather that the former is likely to be less congruent with athletes' overarching performance-related goals, which tend to take precedence in many (if not most) situations. Indeed, Malcolm argued that the subcultural knowledge and logic that dominate in such epistemic communities often provide "greater explanatory purchase rather than 'scientific' modes of thought" (2011: 292). In other words, it seems that some athletes prioritise seeking medical advice from lay experts because it offers clear practical value that they believe can be applied to maintaining and gaining in sport performance (Authors; Hardey, 1999; Kimmerle et al., 2012; Matthews, 2020).

A specific example of such lay expertise can be found in Atkinson's (2012) research. Writing of 'doctors without degrees', Atkinson highlights how triathletes valorized their own tried-and-tested, first-hand experience and knowledge, and that of other trusted athletes, over scientifically legitimated evidence. Indeed, medical professionals were seldom mentioned when discussing their meticulous preparation and recovery strategies, and when they did, they were positioned as "mere commodities" that could provide basic information upon which athletes could build more sophisticated ideas and practices (Atkinson, 2012: 276). The ways in which athletes tend to avoid advice from formal medical experts, positioned at various

points of this review as 'outsiders' to the subculture of sport, illustrates how 'pseudo' medical knowledge has considerable cultural capital in these contexts as an important alternative model for practice (see Authors, Allen-Collinson and Hockey 2001; 2007; Howe, 2004).

Aligning with this point, Safai (2003) argues that in the absence of club-affiliated medical support, athletes are more likely to engage in 'team-doctoring' – a term she used to describe athletes seeking medical support and advice from teammates and coaches. Such interactions might lead to usually well-intentioned 'medical' advice being either wrong, misinformed or lacking in important ways (AlHashmi and Matthews, 2022a; Hamer et al., 2021; Pike and Maguire, 2003). These lay people do not typically have formal medical expertise but are trusted over medical personnel due to their experiential knowledge in sport, and as such, the advice they provide often focuses on maintaining or returning to sporting performance rather than general maintenance of health (AlHashmi and Matthews, 2022a, 2022b). This is similar to Freidson's (1960: 377) "lay referral system" which describes an informal network of lay people that may influence an individual's attitude towards illness and formal healthcare. However, Freidson's (1960; 1970) work is focused on the challenges they present to medical personnel in relation to patient non-compliance and issues regarding power relations between doctors and patients, not necessarily the circulation and transfer of (medical) lay knowledge.

'Team-doctoring', as extended by AlHashmi and Matthews, seeks to account for "the process whereby apparent medical knowledge is (mis)understood, recommended, transferred, interpreted and developed within a somewhat coherent team" (2022a: 153). Drawing on theoretical and empirical details from medical sociology and the study of lay medicine, they use team-doctoring to frame how ideas about medicine and medical treatments might be shared in the absence of formally qualified personnel (2022a, 2022b). This work has been more recently extended by Forbes et al. (2024) where they particularly examined these processes in amateur women's sports. In this way, they revealed that athlete-to-athlete team-doctoring was not only a central organising feature of medical support in such settings, but that in certain cases – due to the lack of medical support during games and competitions – medical care and treatment was often deferred to teammates that happen to hold relevant medical knowledge and qualifications. These studies show how in 'team-doctoring' contexts, the social support of others (usually within 'the team') may reinforce the authority of such 'experts', creating a pseudo medical institution within the context of a sports club. And building on the well-developed body of research exploring pain, injury and risk in sport, a foundational premise of the preceding work discussed above is that within sporting spaces, especially where medical support is absent or lacking, we might reasonably expect to find coaches, athletes, and other sporting 'insiders', developing and passing on knowledge about how to mitigate, manage, and negotiate sport-related pain, injury and medical problems.

Concluding Remarks – What's Next?

In this paper, we have outlined a typological understanding of medical support in sporting contexts. The review of literature underpinning this typology reveals numerous persistent phenomena and highlights some key concerns relevant to the social scientific study of sports medicine. Mainly, and perhaps unsurprisingly, that such work is broadly shaped by the cultural and institutional prioritisation of sports performance, which in many cases may involve behaviours that run counter to medical advice centring on the maintenance, preservation and flourishing of athletes' health and wellbeing.

Alongside this, athletes, coaches and other sporting insiders may possess, or believe themselves to possess, 'specialist' experiential knowledge of sports and sport-related medical issues that 'outsider' medical

personnel do not. They may consequently mistrust certain medical staff, particularly so if they perceive them to be acting against their performance orientated interests and turn to others whose experience and advice they value more or with whom they share a closer affiliation. Exactly how medical staff experience and respond to these pressures depends on the nature of their involvement in sport, which our typology attempts to clarify. In this regard, we consider it to capture an important, although partial, framing of 'what we know' on this topic. As an extension to this work, our efforts also provide important insights into 'what's next?'. That is, based on the above discussion, we can highlight areas which we believe require further exploration and problems that still need to be considered.

Firstly, it is important to revisit our earlier discussion of Weber's framing of ideal-types. In this regard, the preceding analysis should not be taken as a static empirical account of all medical support connected to various sports worlds. The complex and multifarious nature of human groups and social life means such an undertaking would be impossible, largely unproductive and may lead scholars to misrepresent the social spaces they are investigating. And to echo some of our introductory comments, typologies must not be considered as the final word on a matter, rather they are academic tools which can foreshadow problems and areas of interest that must be reconsidered, refined, and sensitised in relation to data, to better understand how social phenomena and people's experiences emerge.

Rather, we have sought to construct an account of four broad and overlapping forms of medical support in sporting contexts. There are 'grey areas' and flexibility within and across the 'boundaries' between the types we have discussed. Indeed, it might be within such spaces that some of the more interesting future work is conducted. For example, people who we would define as 'transient' might be more or less 'affiliated' to certain organisations and may, in fact, work for them in different ways in different situations across time; such a process may lead to considerable and variable consequences for their practice, particularly around questions of subcultural legitimacy, or conflicting loyalties.

This could mean that they are able to build trusting relationships with the athletes they see with some degree of regularity, but it might also mean that they are more likely to find themselves in compromised and complicit relationships, adversely affecting their ability to treat patients. In a similar vein we expect it to be relatively common for athletes who hold medical qualifications to provide 'transient' and/or 'independent' medical support, while such athletes may also tend to be favoured as the source of 'pseudo' medical support from their teammates, possibly lending this kind of care a legitimacy it otherwise lacks (See Forbes et al. (2024) for a recent example on this topic).The overlapping nature of the categories in our typology may therefore prompt future research questions as colleagues seek to unpick how such complex arrangements might impact on the challenges and opportunities involved in providing medical care to athletes. Especially in cases sitting at the edges of what we have imagined the majority of extant research to reveal about this work.

Secondly, much of the research on affiliated medical support tends to focus on the ethical issues and tensions that sport medicine personnel face when practicing in the 'unonorthodox' medical settings represented by competitive sport. As discussed at several points within the paper, this centres largely on the overlapping conflicts medical personnel encounter when trying to find balance between their employers' and sports insiders' motivations to enhance sporting performance, with their professional responsibility towards their patients' health and wellbeing. Such a critical stance is important and has highlighted overlapping conflicts that can negatively impact athletes' short- and long-term health. In turn, this focus draws attention to the relative lack of literature relating to athletes' experiences of trying to navigate their way through seeking, accessing and negotiating independent medical support for their sport-related injuries and conditions (Forbes et al. 2024; Malcolm and Pullen, 2020; Pike, 2006; Thing, 2004).

While there is a wide body of literature that explores elements of this in relation to the sociology of pain and injury in sport, we think an explicit focus on how athletes seek out and choose their treatment options, their experience of gaining and using apparently medical knowledge, and how well informed they are about such processes, requires further detailing. As such we think there is a need to know more about how athletes understand, experience, and define ethical tensions circulating in unorthodox medical settings. This may help clarify the responsibilities that athletes assume of others involved in providing care in the various ways we have identified and generate situationally specific understandings of what constitutes ethical practice in different kinds of sports medicine.

Thirdly, it goes without saying that knowledge distributed via the internet – be it 'scientific' medical knowledge or pseudo medical self-help – is very easily accessible to many (Diaz et al., 2002; Miah and Rich, 2008). Yet this development is inevitably accompanied by problems around the quality of such information which can result in misunderstandings about health and the circulation of questionable and potentially harmful 'medical' advice. There is evidence that the access to such information has undermined hierarchies in expertise and diminished the traditional division between the consumers and producers of such information (Gerbing and Thiel, 2016; Kimmerle et al., 2012; Miah and Rich, 2008). As highlighted by our discussion of 'pseudo' medical support in sport, such processes might have positive and/or negative consequences for athletes' health and ill health.

More work is needed to explore the landscape and credibility of virtual knowledge exchange and medical support in sporting contexts. The ease of access to online information likely confuses the boundaries of our typology, built as it is on research supposing direct human communication and interaction as the conduit of medical care. Studies attempting to explore the extent to which athletes develop (and share) their own 'medical' knowledge and its intended practices via social media or other online spaces, as well as evaluate the quality of such information in specific cases, could help shed light on this relatively recent but dramatic shift in the landscape of medical expertise in sport.

Finally, as with much of academia, the vast majority of the work published on the topic under review here is Western and/or Global North in focus. Of course, this aligns with the traditional academic 'centre of gravity' in certain Western countries, but it also matches the historical and contemporary dominance of sport worlds by similar countries and regions. We expect that as developing nations continue to adopt the Western approach to performance sport, so will they also see similar problems with ill health in athletic populations. As a logical consequence we should expect the medicalisation of sport to continue spreading in the coming years. The paucity of research coming from countries who are more recent adoptees of the Western model for sport highlights an important area for future work. Of course, these spaces will have specific cultural and social issues which must be explored, understood and perhaps critiqued.

What we have outlined here in this typological review is something of a 'state of the art'. Readers will have clear guidance as to what we think is an important framing of the literature on medical support in sport, which we hope will give them confidence in approaching it and, more importantly, how to gain conceptual and analytical purchase to advance and develop this body of literature. Of course, we expect there are problems in our work, and we hope that colleagues see areas which require further exploration and theoretical development. It is clear to us how important this topic is for maintaining and enhancing athletes' current and future health and flourishing. We hope to have highlighted ways in which colleagues, scholarly or otherwise, working in this area, can contribute to building critical knowledge about how medical support in sport can be enhanced and development.

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