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Are we levelling the playing field? A qualitative case study of the awareness, uptake and relevance of the IOC consensus statements in two countries

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ABSTRACT

Objectives Research evidence is commonly compiled into expert-informed consensus guidelines intended to consolidate and distribute sports medicine knowledge. Between 2003 and 2018, 27 International Olympic Committee (IOC) consensus statements were produced. This study explored the policy and practice impact of the IOC Statements on athlete health and medical team management in two economically and contextually diverse countries.

Methods A qualitative case study design was adopted. Fourteen face-to-face interviews were conducted with purposively selected interviewees, seven participants from Australia (higher economic equality) and seven from South Africa (lower economic equality), representing their national medical commissions (doctors and physiotherapists of Olympic, Paralympic and Youth teams). A framework method was used to analyse interview transcripts and identify key themes.

Results Differences across resource settings were found, particularly in the perceived usefulness of the IOC Statements and their accessibility. Both settings were unsure about the purpose of the IOC Statements and their intended audience. However, both valued the existence of evidence-informed guidelines. In the Australian setting, there was less reliance on the resources developed by the IOC, preferring to use locally contextualised documents that are readily available.

Conclusion The IOC Statements are valuable evidence-informed resources that support translation of knowledge into clinical sports medicine practice. However, to be fully effective, they must be perceived as useful and relevant and should reach their target audiences with ready access. This study showed different contexts require different resources, levels of support and dissemination approaches. Future development and dissemination of IOC Statements should consider the perspectives and the diversity of contexts they are intended for.

INTRODUCTION

Through its Medical and Scientific Commission, the International Olympic Committee (IOC) has a stated goal to guide sports organisations in relation to the protection of athlete health.¹ One strategy adopted by the Commission has been to support the development and dissemination of sports medicine consensus statements (hereafter referred to as the IOC Statements). Between 2003 and 2018,

WHAT IS ALREADY KNOWN ON THIS TOPIC?

- ⇒ With the aim to guide sports organisation in the protection of athlete health, the International Olympic Committee supported the development of 27 sports medicine consensus statements during the period of 2003–2018.
- ⇒ These Statements are well-cited resources in the peer-review literature, particularly by authors from the USA, Canada, Australia, UK and Western Europe.

WHAT ARE THE NEW FINDINGS?

- ⇒ This study found that different contexts require different resources, levels of support and dissemination approaches. To reach their goal of athlete health protection, the Statements must be perceived as useful, relevant and accessible for intended target audiences.
- ⇒ Challenges were described as a lack of clear audience and purpose, along with timeliness as evidence is rapidly out of date. It was not always possible for the Statement recommendations to be applied due to limited resources and structures for the provision of best evidence-based healthcare.
- ⇒ Positives of the IOC Statements were seen in the association of the Olympic brand, with an assumption that the consensus statements are the pinnacle of knowledge, underpinned by the best expertise.

HOW MIGHT IT IMPACT ON CLINICAL PRACTICE IN THE FUTURE?

- ⇒ Authorship teams of future Statements should first agree on the specific purpose and intended target audience of the statement.
- ⇒ Topical and contentious issues that had clear guidance with accompanying clinical decision-making tools were most valued.
- ⇒ Strategies for dissemination in multiple formats, and uniformity in these resources (eg, clearly stated authorship, audience and purpose) to support wider use are recommended.

27 IOC Statements were published, covering a wide range of topics from the use of platelet-rich plasma to concussion management to youth athletic development.²



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Our earlier research used bibliometric citation analysis to assess the academic impact and reach of the IOC Statements, concluding that these statements are well-cited resources in the peer-reviewed literature.³ The study noted a predominance of named statement authors also being authors of papers that cited the IOC Statements, many of whom were from regions of higher economic means (eg, Northern America, Western Europe, Scandinavia, UK and Australia) compared with lower economic settings. This finding raised a question about the value and relevance of the IOC Statements to sports medicine practitioners from other parts of the world, especially in regions where economic strengths are lower, and, in turn, healthcare resourcing is challenging. Further, being based solely on citations in peer-reviewed journals, the previous analysis of the reach and impact of the IOC Statements provided an assessment of their academic impact only.³ Accordingly, that study was unable to determine whether the IOC Statements have had a practical impact on sports medicine practice outside of the more traditional academic settings.

The development of consensus and guideline documents to support clinical sport and exercise medicine practice, such as those developed by the IOC, requires substantial time, resources and contributions from recognised experts. Before further investment in the development and dissemination of such resources, it is imperative to understand whether they provide useful guidance for the protection of athlete health that can be actioned by targeting all sports settings, organisations and practitioners. This information is important to help determine the scope of future topics, research approaches and formats for dissemination. Therefore, this study was designed to explore the policy and practice impacts of the IOC Statements from the perspective of health professionals working with Olympic/Paralympic committees. The primary aim was to understand awareness and use of the IOC Statements by health professionals connected to the National Olympic/Paralympic Committees of their country. A secondary aim was to explore the perceived relevance of the information for two countries that are contextually and economically diverse.

METHODS

This paper reports the second stage of a comprehensive project to evaluate the broad impact of the IOC Statements on athlete health and well-being.

Equity, diversity and inclusion statement

The study addresses an issue of representation and clinical utility of the IOC consensus statements for two disparate socioeconomic settings (Australia and South Africa) and includes women and men as participants. Generalisability and limitations for geographically diverse settings are addressed in the discussion. The research team includes six women and three men who represent multiple disciplines, senior, mid-career and early-career investigators of different nationalities, currently working in five countries (Australia, New Zealand, Netherlands, South Africa and Canada).

Design and setting

An exploratory multiple case study design,⁴ with a pragmatic approach,^{5,6} was used. Case study research is a useful methodology to investigate complex issues within a bounded system (the case). In this way, case study research facilitates an in-depth understanding of behaviours, processes and practices within a certain context.^{5,6} A case study design was chosen, as a careful

Table 1 Snapshot of health, population and Olympic participation statistics for South Africa and Australia

	South Africa	Australia
Population 2021	60.0 million	25.7 million
GDP current US\$ 2021 per capita	6994	59 934
Health expenditure	9.11	9.91
Life expectancy at birth, total (years) 2020	64	83
Mortality rate, under 5 (per 1000 live births) 2020	32	4
Official languages spoken	11	1
2020 Tokyo Olympic Games participants	179 in 19 sports	478 in 30 sports
2020 Tokyo Olympic Games medals	3 (1 gold and 2 silver)	46 (17 gold, 7 silver and 22 bronze)

Source: <https://data.worldbank.org/?locations=ZA-AU>; www.teamsa.co.za/commission-details; www.olympics.com.au/the-aoc. GDP, gross domestic product.

consideration of contextual factors was deemed integral to gaining an understanding of the phenomenon under study.

The study was situated in a pragmatic paradigm, drawing from the most practical methods available to answer a specific research question.^{4,7} This approach facilitates a comprehensive understanding of a phenomenon or process from the perspectives of the people involved, with the goal of providing practical solutions to real-world problems and information that can be fed back to those involved in the development of the IOC Statements.^{4,7}

Two settings (ie, countries) with specifically different health and economic development levels were purposefully selected as cases. Based on feasibility and budgetary reasons, this study was restricted to the conduct of interviews in two settings linked to the location of the authorship team. Australia represented a setting with greater economic resources and health expenditure, while South Africa represented a setting with lower economic resources and notable health inequality. To understand the choice of these two settings and the possible influence on the results, key contextual differences, including economic and healthcare access issues, are summarised in table 1 (with more details also provided in online supplemental appendix 1).

Participants

Healthcare professionals (sports physicians and physiotherapists, both men and women) serving on a National Olympic, Paralympic or Youth Olympic Committee were identified and invited to participate in the study. Recruitment was facilitated by representatives from both the South African Sports Confederation and Olympic Committee (SASCOC) and the Australian Olympic Committee (AOC). In South Africa, a total of 10 participants were eligible and were contacted by the SASCOC representative and invited to participate, of which 7 agreed. In Australia, seven participants were recruited to match the South African sample number. The final sample included 14 interviewees, 7 from each country. As this was a small, select and potentially identifiable group based on their involvement in Olympic and Paralympic-level sport, demographic descriptions of the sample are not presented to protect the anonymity of participants.

Data collection

Semistructured, open-ended questions were developed to explore interviewees' perceptions of the IOC Statements through individualised face-to-face interviews. The questions and interview

flow were pilot tested with one South African sports physician not included in the main study. All interviews were conducted in each country over 2 weeks each in 2019. Interviews were conducted conveniently for interviewees, averaged between 40 min and 60 min and were audio-recorded. Two authors working in sports medicine research (post-PhD) were present at all interviews, with an experienced interviewer (MB) leading the discussion and a second researcher (LVF) supporting. After discussing interviewees' awareness of the IOC Statements, a list of the 27 IOC Statements topics published during 2003–2018 was shown to facilitate the discussion further and to give participants an idea of the topics covered by the IOC Statements, especially if the participant was not aware of all or some specific statements. A copy of the interview guide is included in online supplemental appendix 2.

Interview transcripts (the primary data source) were supplemented with a document analysis of organisational website information (IOC, AOC and SASCOC websites) and official policy documents sourced from these organisational websites. The goals of the document analysis were to (1) provide contextual information as well historical insight into these organisations; (2) to corroborate findings from the interviews and to (3) supplement information relevant to the study aim. The interviewees' references to specific website resources during the interviews were also reviewed to better understand interviewees' responses. These resources included those from the South African Sports Medicine Association, Sports Medicine Australia, Australian Institute of Sport, British Association of Sport and Exercise Medicine and Australasian College of Sport and Exercise Physicians websites, as well as academic journal websites including the *British Journal of Sports Medicine* and the *Journal of Orthopaedic and Sports Physical Therapy*.

Analysis

Interview recordings were transcribed verbatim and organised in NVivo V.11. The framework method was used to analyse the data.⁸ A defining feature of this method is the development of a matrix of rows (cases), columns (codes) and 'cells' of summarised data. This approach provided a structure into which the data were systematically reduced to facilitate analysis and comparisons by case and by code.⁸ Interviews were independently coded by two authors (MB and CB), and any discrepancies were discussed and resolved in an iterative manner until both researchers were satisfied that a comprehensive working analytical framework had been developed. Transcripts were indexed according to the framework and charted into a matrix that summarised the data by category. The document analysis was conducted alongside the analysis of the interview transcripts in an iterative manner. The process involved an initial, superficial examination of all acquired documentation, coding sections related to the study aims.⁹ These codes were entered in the framework matrix. As the analysis progressed, an in-depth examination and interpretation of the documents were conducted, and relevant information was entered into the matrix to further develop understanding. Individual case summaries were developed for each setting from the interview coding, and relevant information was obtained from the document review and field notes. The matrix for each case facilitated the recognition of patterns and themes across the data set. Three authors reviewed and discussed initial themes and subthemes (MB, CB and LVF) until final themes were agreed on. Each case was analysed separately, and convergence and divergence towards themes were examined. A cross-case analysis was conducted iteratively to identify patterns and differences

across the two settings. The final themes were reviewed by all researchers involved in data collection and analysis (MB, CB and LVF). This study focused on documenting the insights provided by the purposively selected interviewees (key informants) from a limited pool of eligible participants, rather than on reaching data saturation. Additional information related to rigour and trustworthiness of the study is contained in online supplemental appendix 2.

RESULTS

Four linked themes arose from the interviews: (1) contextual perceptions—setting the scene; (2) knowledge generation and identifying the custodians of knowledge; (3) dissemination, awareness and access pathways; and (4) consensus in practice. The overlapping nature of some of the key views expressed by interviews across themes adds weight to the importance of considering their implications. The key findings from the interviews are summarised visually in figure 1 and presented separately for each theme as follows.

Contextual perceptions: setting the scene

This theme describes the interviewees' perceptions of their local context and its influence on their athlete health management. This information is particularly important as it sets the scene around their perceptions and interactions with the IOC Statements.

South African interviewees' perceptions of their context were characterised by resource and organisational limitations, which restricted athletes' structured, continuous, coherent management (table 2, quote 1). Most interviewees identified a perceived lack of control and management opportunities with athletes in the periods between Olympic and Paralympic Games. This was emphasised especially for screening opportunities that were considered only possible in the period immediately before the Games. Consequently, interviewees felt that athletes were not always ready to participate in major events (ie, Olympic or Paralympic Games). There was often not enough time to fully manage the athletes in their preparation as they considered necessary. This was also linked to views about South Africa's inequitable healthcare system, affecting the care of athletes from lower socioeconomic backgrounds (table 2, quotes 2 and 3). Another expressed concern was that many sports federations in South Africa do not have an organised medical structure and are not always involved in athlete health in the periods between Games. This resulted in a perceived disconnect between the National Olympic Committee (NOC) and the federations and between individual coaches and athletes.

In contrast, the Australian context was characterised by multiple resources, including the availability of a range of human, financial and knowledge resources. These resources facilitated a highly structured system to manage athlete health (table 2, quotes 4 and 5). Sports medicine practitioners who have been consistently involved in specific sports for several years facilitated a sense of coherence with federations. However, it was noted that smaller sports, or federations with fewer resources, were likely to require more support (table 2, quote 6).

Knowledge generation and the custodians of knowledge

This theme describes interviewees' perceptions of who is, or who should be, responsible for and involved in developing and translating knowledge concerning different topics of athlete health, from day-to-day management to leadership of bigger societal issues. No interviewees identified the IOC as their first port



Figure 1 Summary of themes and subthemes identified from interviews. IOC, International Olympic Committee.

of call for knowledge around athlete health topics. Responses from interviewees in South Africa were characterised by limited awareness of the IOC's investment in the development of knowledge, including the IOC Statements (table 3, quotes 1 and 2). A common belief was that the IOC Statements are focused on Olympic/Paralympic-level athlete management only.

Some of the Australian interviewees also reflected the perspective that IOC Statements were focused on the care of elite athletes. However, they were also more direct in asserting that they did not necessarily consider the IOC to be the most relevant source for their day-to-day knowledge needs (table 3, quote 3). Instead, these interviewees felt that there already was an abundance of resources in Australia developed by local agencies. These resources were more valuable due to their direct relevance to their context (table 3, quote 4). While the specific information presented in the IOC Statements was not deemed critical for the day-to-day management of athletes' health, the bigger picture of topical coverage and strategy of the IOC was raised. Taking a key role to address broad and potentially contentious issues was a particular leadership opportunity for the IOC (table 3, quotes 5–8).

In both settings, it was identified that the IOC as custodian of the statements created a sense of reassurance of best practice, with the IOC regarded as an authoritative source with access to leading experts in the field (table 3, quotes 8–10). However, for some participants in the Australian setting, a sense of mistrust relating to the independence of authors, or accuracy of knowledge presented in the statements, was evident (table 3, quote 11 and 12).

The need for diverse representation among authors was a consistent theme in both settings, though more strongly presented by the South African interviewees (table 3, quotes 13 and 14). This meant the inclusion of authors from different genders, ethnicities, countries, skillsets and levels of experience. The inclusion of athletes in the process of developing knowledge was also considered important (table 3, quote 14).

Dissemination, awareness and access pathways

This theme describes how the IOC Statements are seen to be shared and accessed. Specifically, the interviewees describe their awareness of different topics covered and any barriers or enablers to accessing the IOC Statements.

Table 2 Substantiating quotes from interviews with Olympic stakeholders in Australia and South Africa on 'contextual perceptions—setting the scene'

South Africa—considered by interviewees as being characterised by resource constraints and inequitable healthcare		
1	I think what's difficult is that there is not a lot of continuity amongst the medical fraternity. So, the structure isn't sophisticated enough to be able to allow ongoing sharing of information and for - there isn't a structure of progression, really.	South African interviewee 4
2	In South Africa, like I'll contest that not everyone has got access to the same level and quality of care, which comprises some athletes in terms of their performance or their general health and this is even sort of at your top competing athletes. So, for me it's all about accessibility and making that healthcare accessible and sports performance. Because we're not just talking about like basic healthcare, we're talking about also what's going to distinguish our athletes to the next athletes, so making that quality of service and care available to all athletes or equally accessible.	South African interviewee 1
3	The concerns would be the access to medical care because I see certain elite athletes that get the base care, and then you see also other obviously very talented, because they're on the team, that have not been exposed or referred or like that. Then also with the screening, the identification of where the screening is going to take place, it's a different quality of screening and a different way of evaluating the ECGs (electrocardiograms) or following up who is having blood tests and who is not having blood tests.	South African interviewee 3
Australia—considered by interviewees to be an efficient, existing system and resources for most major sports		
4	Well, each team - for example, I look after the Australian [removed for confidentiality] team, so I'm seeing them almost every day. So, there's someone who looks after them pretty much all the time. So, each team will have their own doctor and group support staff.	Australian interviewee 1
5	I will work with the sports that I am involved with, and we have a network of providers, both medical, physio and soft tissue around the country. We would all be emailing back and forward and making phone calls. If it's a sport that I'm not involved with but will be coming to the Olympic Games, what we do...is start liaising with the high-performance managers and the healthcare providers for those sports.	Australian interviewee 3
6	But in smaller sports, where they don't have that - the resources to do that, I think that they're ones that probably adopt the IOC - a lot of the IOC consensus statements as policy.	Australian interviewee 4

There was no formal dissemination pathway to share the IOC Statements from the IOC to the NOC described by any participant. There was recognition that sharing the IOC Statements should be the role of the IOC, the NOC or other national professional sports medicine agencies. Yet equally, practitioners felt it was their own professional responsibility (whether as a committee member, physician, physiotherapist or other) to keep abreast of new and relevant information.

For the most part, the interviewees expressed a limited awareness of the IOC Statements and the scope of topics covered (table 4, quotes 1–4). Interviewees felt that their awareness of specific IOC Statements depended on the topic's relevance in relation to their direct knowledge requirements or the type of conditions they were treating at that point in time (table 4, quotes 5 and 6). There was generally stronger awareness of IOC Statements covering contentious or topical issues such as concussion (table 4, quotes 7 and 8).

There was a reported abundance of knowledge resources to choose from in the Australian setting, with no restrictions to their access. Thus, the main challenge raised was prioritising knowledge gains, within the limited time available. Interviewees felt that having access to so many resources also meant they were potentially less likely to come across the IOC Statements (table 4, quotes 9 and 10). Alongside awareness of the IOC Statements, there were challenges navigating access, whether through an internet search or a specific search of the IOC website (table 4, quote 11). Generally, the IOC Statements were found by chance rather than by searching for them specifically. Once found, interviewees were not always clear that the publications were linked to the IOC specifically (table 4, quote 12).

In South Africa, perceived access barriers were strongly linked to the lack of a university/institutional affiliation that allowed a wide journal library or general (financial) difficulties accessing medical journal content (table 4, quote 13). South African interviewees were supportive of the need to drive awareness of these statements so that they could be better used. South African interviewees also felt a responsibility to know about and share these statements with colleagues both within South Africa and also in other African countries (table 4, quotes 14–16).

Positive examples of dissemination and access were also presented, whereby professional networks and communication

among peers played a notable role. Interviewees with a recognised leadership position (inside or outside of the Olympic programme) were most aware of the current literature, including the IOC Statements. These leaders were generous with their colleagues and shared resources at meetings, through email and social media platforms (table 4, quotes 17–19).

Consensus in practice

This theme describes beliefs about the real-world application of the IOC Statements. Barriers and facilitators relating to the use of the IOC Statements reflected two major subthemes: the perceived value or benefit of the IOC Statements (table 5A) and their relevance for the intended audience impacting their usability (table 5B).

The IOC Statements were perceived to be 'levelling the playing field' by setting a minimum standard of care and removing ambiguity across settings (table 5A, quotes 1 and 2). The convenience of summarising best evidence, collated by experts, was noted (table 5A, quotes 3 and 4). This provided a sense of reassurance, especially when dealing with contentious or complex issues (table 5A, quotes 5 and 6). Similarly, interviewees felt that the impact was more tangible for topical IOC Statements. These IOC Statements changed how interviewees manage certain conditions, particularly topics linked to higher risk/fear, such as concussion (table 5A, quotes 5–9). Australian interviewees identified more value and need for these statements in low-income countries and smaller sports/federations (table 5A, quotes 10 and 11).

In general, interviewees in both settings were unsure about the overall impact of the IOC Statements on athlete health. In general, insufficient awareness of the IOC Statements was perceived to have hampered any potential influence on athlete health (table 5A quotes 11–14).

Relevance of the topic for interviewees' current needs was positioned against time constraints to read everything (table 5B, quotes 15 and 18). This included clinical and practical relevance, whether the knowledge could be adapted to the interviewees' context or if it was in line with their interest/background (table 5B, quotes 16–21). With relevance came a strong preference for the IOC Statements, particularly their conclusions,

Table 3 Substantiating quotes from interviews with Olympic stakeholders in Australia and South Africa to the theme of 'knowledge generation and the custodians of knowledge'

IOC is not necessarily first port of call for knowledge		
1	I don't think that they go onto the IOC website and seek information there, because one of the things here in this country is that not everybody is aspiring to go to Olympic Games as the doctor...	South African interviewee 5
2	I mean, the fact that I don't know that those were on the IOC website is an important point because if they're all there, it would be so easy for people, but people don't know. Yeah. I think also, I don't think enough people know that the IOC does research and plays that role in it. I don't think that they know that they have that scientific part to them. That's important, yeah...	South African interviewee 4
3	I think a lot of people probably don't see the IOC as relevant in a day-to-day clinical practice. I don't think clinical practitioners would see the IOC as being relevant to the day-to-day clinical practice. I think if you ask the average clinician in 25 words or less what do you think of the IOC, they'd be thinking about oh, putting on games, running that anti-doping, that's about it...	Australian interviewee 6
4	The other resource is the Australian Institute of Sport, which has lots of stuff on the site. So whenever, if I ever have to make statements about nutrition or cutting weight, or whatever, I tend to look to their website, because that's been fairly well researched. That's probably the main resources I use.	Australian interviewee 7
The role of the IOC in high-level or contentious issues		
5	Is there a role? Yes, I think there is. I think, especially the IOC, because if they're above sports and you're not going to get caught up in issues around soccer or issues around professional basketball or issues around professional football, AFL in that sense or rugby, then you know you've got that aspect of integrity to say look, we're taking a broader view and we're just thinking about athletes as athletes, men, women, transgender. We're just going to think about health and welfare of athletes. So, these are the issues that happen now."	Australian interviewee 6
6	I think the IOC Medical Commission should seek to be to lead world sport in defining...in providing some clarity and providing resources on issues which are topical for athlete health and integrity matters in sport. A lot of medical issues...I mean, pretty much all of these you could say have an integrity angle on them. Because they're about the care of the athlete and so medical integrity is very important and I think if the IOC can't lead, who else can?	Australian interviewee 5
7	Yeah, I don't know. It's a funny one what they're trying to achieve with the statements? I mean mental health in elite athletes, that's very relevant for going to an Olympics. Sex reassignment in sport's becoming topical. It's curious to me why they've picked non-contact ACL injury in the female athlete out of 20. I mean I get the broader policy, overall policy ones... But then they've gone really narrow in some other things. You would think that it's more a broader thing somehow. For example, like with the transgender, that sort of consensus statement is probably one that the IOC needs to be a leader in that sort of thing, absolutely, because everyone else will take the lead. So that would be an example of one that. Whereas non-contact ACL injury, it's a bit of a nuts-and-bolts thing. What the IOC says probably doesn't affect what I'm going to do...	Australian interviewee 1
Trusting the IOC brand		
8	I also think, you know, involved in a couple of sports there, that you - if you say that that's IOC sort of best practice, it helps you introduce things in your own sport.	Australian interviewee 4
9	It's seen as the pinnacle, and it's seen as the best. The association then follows that if you've got people, if the IOC are happy to put their name to a panel of people, it would then follow that those panel of people would be well skilled and well educated in that particular topic just by association. I'd like to think genuinely they are, but even without delving into their background you sort of go, oh, well the IOC has put their name to this, they wouldn't just have anyone off the street contributing to it. Yeah, just again, because of the brand.	Australian interviewee 3
10	I presumed that because it was an IOC Consensus Statement that it would be good quality, yeah.	South African interviewee 4
11	I think it's not as if Olympic sport should be held up there as a shining light because I think there's a lot of practices around the politics and even the way Olympics is pursued in Australia. There is brand association with an IOC Consensus Statement, but I think there's probably a certain sense that it may even lack a little bit of independence really. I don't know...there may be a certain message that the IOC wants to get out there and it may not be necessarily agreed with across the board.	Australian interviewee 2
12	As I said, I don't agree with all things... I think that 2015 paper on diverse gender inclusion or whatever it's called - I would say I'm not sure really that it aligns with the best science available. It seems to - that particular statement, I would say, looks like a political solution rather than a scientific solution to a complex problem.	Australian interviewee 5
Seeking diversity and inclusion of the athlete voice		
13	So firstly, you need to make sure that you've got diversity of skills and experience round the table because that's going to inform how accessible they are... So, I think diversity is really important and also then in terms of setting, diversity of settings, so some of them again are not relevant in different countries or contexts. So, you might never be able to please everyone but there needs to be a recognition that this might not be relevant in this particular context, and you won't know that if you don't have somebody sitting around the table who comes from that specific context. Then there's also just diversity of everything else, so gender, and race and geographic locations, all of that, because that all adds to what comes out in the consensus statements. I'll also say diversity of experience. So, what you tend to have in all of these is you have all of the professors that have been in the game for like 35 years and they're all sitting around the table reproducing these Consensus Statements but clinically...So one has to assume that the athlete is in some way involved in this process, whether it's them who have identified the problem, or having a conversation with the athletes as you come up with these Consensus Statements as well. I'm not necessarily saying that they must be publishers or co-authors but that it's relevant to the person who is the end user and ultimately the athlete is the end user.	South African interviewee 1
14	I'm a South African and probably our culture... the issue of traditional medicine, it's big, it's a challenge It's a sensitive subject as well, it goes with belief and...how we react is important...So it should be addressed by Africans, because we are - and there's so much secrecy about it as well.	South African interviewee 2
IOC, International Olympic Committee.		

to have a clear and practical nature to support practitioners in evidence-based practice (table 5B, quotes 23 and 24). It was also noted that all consensus statements could become outdated, not just those from the IOC (table 5B, quote 25). Consistently and strongly noted in both settings was the lack of clarity on who the intended audience for each IOC Statement was (table 5B, quote 26–29). In South Africa specifically, there was a perception that

more value is placed on consensus statements by those who were academically inclined (table 5B, quote 26).

DISCUSSION

Evidence-based resources, exemplified by the IOC Statements, are potentially valuable tools for translating knowledge into practice.¹⁰ As an internationally focused organisation leading

Table 4 Substantiating quotes from interviews with Olympic stakeholders in Australia and South Africa to the theme of 'dissemination, awareness and access'

Generally limited awareness		
1	Yeah, this is tough... because you're supposed to know about these things... I don't think we know it actually exists...	South African interviewee 6
2	I don't actually know exactly where they're published. I would imagine in a sports medicine journal. I think that they are available, I think I have seen them available at the Games. I think that when you go to the information counters and things you can get those Statements there, the ones that have already been published.	South African interviewee 4
3	I don't know a lot about the IOC medical statements, to be honest.	Australian interviewee 1
4	Really, I hadn't considered it, didn't realise they existed and certainly haven't been presented with any Consensus Statements. We don't see what we don't look for. If we don't know it's there, then we don't go looking for it. If nobody brings it to our attention...	Australian interviewee 3
Awareness depends on the topic relevance at the time, treating population or topical issues		
5	The rest would have been when I was doing research on a topic. So, if I was looking up- the female athlete triad, or things like that, then I would come across the IOC Consensus Statement. Those - really, that's mainly where it would come up. On my own independent research. Then I would read up. I didn't really - read very much around the topics that I am not presented with.	South African interviewee 7
6	So, I suppose my attention focuses on the ones that are relevant to that population that I treat. Like recently I gave a talk on (<i>topic removed for confidentiality</i>) and so I'm aware that there's one that's there because obviously when I was researching in preparation for that then I stumbled upon it.	South African interviewee 1
7	Probably it waxes and wanes depending on... so I think 'heat' would be a really interesting one, you know, leading into Tokyo and then that might peter out a bit. There's been a lot of publicity about transgender and a lot of sports developing transgender policies with the rise of female professional sports in Australia. I think that one's a really - and I've listened - the MJA's (author insert: <i>Medical Journal of Australia</i>) got a good transgender podcast from the children's hospital down there and things too. I think things go through waves according to what's happening a bit in the media a bit.	Australian interviewee 4
8	Many of them I've never seen, either. Yeah. I know the concussion ones; we know those quite well.	South African interviewee 6
A wealth of resources and limited time influences awareness		
9	But equally our SMA have got statements in that regard. Our college, the ACSEP (author insert: Australasian College of Sport and Exercise Physicians), has got statements in that regard. British, oh, BASEM (author insert: British Association of Sport and Exercise Medicine) is the British group. There's so many. As I said, you're competing against a lot of others...	Australian interviewee 2
10	I haven't looked into it to be honest, so I don't think if I'm going to prepare something or give a talk on something or whatever, I don't think oh, I must get the IOC. I will go to the literature and do a Google search in Google Scholar. If it comes up on there, of course.	Australian interviewee 6
Difficulties with search strategy, accessibility or IOC branding		
11	I thought I saw on the website about 10 - was off the top of my head roughly, but I'm not sure if they are all available on the website. Maybe I looked in the wrong spot? But again, if there's that many, they should be - clearly one of the things is they should be accessible and visible and easy searchable. I didn't see any other - I'm wondering where they all are? But again, things are only useful if they're accessible.	Australian interviewee 5
12	You get Statements about cardiac abnormalities and ECG screening and these sorts of things. But whether or not that was an IOC Statement or a Statement from other colleges, I'm not sure. So, the IOC Statements don't stand out from other ones particularly.	Australian interviewee 1
13	For me it's a problem because I'm not necessarily affiliated to the university and it's actually - it's quite hard to get information easily, where you're not paying a fortune. I rely them - then on them to get give me any information and they pass on quite a bit. If they come across stuff, they'll pass it on to me. But for me, I think information access is one of my problems, to be honest, of getting up to date stuff because I don't have access to everything.	South African interviewee 7
Personal responsibility to disseminate and enhance access for others		
14	...I blame myself after I've been ignorant... Have I ever thought about sharing with other people, sharing with athletes? No, I didn't until today, so I blame myself.	South African interviewee 2
15	It's ethically disturbing to me to know - it would disturb my sleep to know that these things are not getting to doctors who are going to work with our athletes. It's worrying. It's extremely worrying, and we also - if I look at Africa, because we probably would be more advanced in South Africa than the rest of Africa, and then I'm even more worried about them... when I randomly meet doctors from Africa at conferences, they're so desperate for knowledge.	South African interviewee 3
16	People need to take up the challenge themselves. Look, I mean, fortunately I have been in the system for a while so it's part of my thinking to do it, but I'm not going to go around - well, I go to federations here and I'm hoping that the federations provincially will disseminate that up.	South African interviewee 5
Professional networks and sports medicine platforms as facilitators of awareness and access		
17	Some of our colleagues who are doing part-time sports but are closely linked to universities... we've got our colleagues who are studying and as soon as they see something interesting, they post it on the group. So, for now, if I don't go and search for myself, we get information from the WhatsApp group.	South African interviewee 2
18	The way I read them now is I follow BJSM on my Twitter feed and so I can - I'm aware of when new consensus statements get released	Australian interviewee 5
19	I follow BJSM on Twitter and through SASMA as well... because then I will get sent them specifically, read them, and then distribute them to my networks if relevant, I mean BJSM has been very good in positioning the statements and the talk that happens around it from a social media point of view, and also with some of them and I'm just trying to think which ones if I mean this is true, things like infographics make it a lot more accessible to the person on the street and even just in terms of translating the message.	South African interviewee 1

BJSM, *British Journal of Sports Medicine*; IOC, International Olympic Committee; SASMA, South African Sports Medicine Association; SMA, Sports Medicine Australia.

guidance for sport and exercise medicine worldwide, it is important that resources developed by the IOC are relevant and accessible to all potential users. This paper presents an interview-based case study of members (doctors and physiotherapists) of the AOC and SASCOC in relation to their awareness and use of the IOC Statements, as well as their views about the relevance and impact of these statements for

their athletes' health needs. This study was unique in that it explored the awareness, uptake, relevance and perceived impact of the IOC Statements on athlete health and medical team management, from sports medicine practitioners in contextually diverse international settings. The findings are intended to inform future resource development and dissemination by the IOC to ensure this information exchange is most

Table 5 Substantiating quotes from interviews with Olympic stakeholders in Australia and South Africa relating to the theme of 'consensus in practice' (A) for value or benefit of the statements and (B) for relevance, audience and usability of the statements

A		
Valuable as tool to level the playing field		
1	Because often, sports physicians are not on the same page. They're not current, so you can't speak the same language, because they're not updated yet, and the time to update with a colleague, there isn't always that time. So, at the Olympics, it was nice, because when we have these meetings where all the medical come together, they put it up there, and doctor reads it. Then it's familiar to all of us, and I think they gave us a book of handouts and stuff. Because there's too many personal opinions. That is just - it should be science. It should be facts or a consensus.	South African interviewee 3
2	I mean if they've got the information then it would follow that they would share the information. I mean it's the greater good. You could then consider that all the countries are on a level playing field as well. Because if the IOC has a concussion policy or a concussion statement and then Australia get it and New Zealand get it, but America don't and South Africa don't, well then that's, you know, so I think if the information is there at least making each of the national federations aware that it's there and that it's accessible, I think that follows and that's logical.	Australian interviewee 3
Convenience and reassurance of having expertly collated evidence, especially for contentious topics		
3	Yes, I think the benefit is that - I mean there's a group of experts who have come together to apply their minds, to how best to approach a specific problem, and therefore if you agree that there's a problem and you agree to the approach there's a certain comfort and confidence that clinically you're also subscribing to best practice. Also, that somebody has actually done the work for you in understanding and justifying that course of action.	South African interviewee 1
4	So, if I know it's there and I've got a question on an athlete that - with mental health. I've got an issue, now I can quickly go and have a look, because I think a consensus is so intense and there's so much research, they actually do the research for you, which is really brilliant.	South African interviewee 6
5	I think it gives you reassurance and especially maybe when you're dealing into more the complicated decisions. Certainly, the cardiac stuff, the ECGs, and the monitoring of the athletes, I find it quite reassuring when I know that this is what's generally out there and this is what's accepted, and this is how you go about it. I find it reassuring and it helps me because I work very much alone.	South African interviewee 7
6	I think everyone's fearful of - there's not evidence out there in concussion. But I think there's sort of safety in numbers in you like. We've - most sports think if that they're going by the international guidelines in that particular - management of that particular condition, then they're not leaving themselves open to, you know, litigation and other issues down the track. Because even though we don't know about neurodegenerative diseases and what the sequelae of concussion is long-term, we have a feeling that if you're doing what's best practice at the time as determined by a panel of experts, then that's good enough.	Australian interviewee 4
Impact more tangible in highly topical statements		
7	I mean this group has certainly directed how we manage concussion so these kinds of statements and the fact that they're updated regularly, and they bring out new management tools for us to work with, I think those are continually evolving how we practice in relation to concussion. I think, as I said, I found the RED-5 (Relative energy deficiency in sport) and disordered eating stuff helpful, but I think with so much of my day-to-day practice I'm using information acquired across a whole spectrum really.	Australian interviewee 2
8	Facilitator: For instance the concussion consensus statement, do you find... Interviewee: We use that (Concussion CS) black and white... because the rugby enforces it so much.	South African interviewee 3
9	It would be hard to say whether or not they have had impact I think, unless you were actually evaluating it. I think that they've at least created an awareness around concussion. That's the one that's probably changed the most over these, you know, three incarnations of it. I think that one is the one that would probably be best known out in the community...	Australian interviewee 4
Valuable for those who do not have as many resources		
10	For countries that are developing those skills and trying to develop the practitioners, to be able to reference these articles and get their students to read those resources I think is great. But I think for us they're only a small part of a massive wealth of information.	Australian interviewee 2
11	Particularly I think they're probably most beneficial for small sports that don't have the infrastructure to do their own stuff around those things. So, for instance, in rugby league, we spent a lot of money looking at concussion and we do it in line with other contact sports in Australia primarily so that we've got some consistency across that. But in smaller sports, where they don't have that - the resources to do that, I think that they're ones that probably adopt the IOC - a lot of the IOC Statements as policy.	Australian interviewee 4
Extent of dissemination affects utility and potential impact		
12	The 2016 Concussion Statement on Concussion, the Berlin Statement, is a good document for clinicians but what I would say is, if you were talking about what's good for the community, I would say, how many people who are not, you know, pretty specialist doctors or physiotherapists or others, have actually read that position statement? How many people in the community have read that position statement and understood it? I would say not many. Whereas the easily digestible, downloadable resources for people in the community on concussion from that Berlin Statement, I don't think that it's anywhere. It's a manuscript in a journal.	Australian interviewee 5
13	So clearly then we haven't succeeded in delivering the message because the problem still exists and so to a large extent it's preventable.	South African interviewee 1
14	Yeah, so, I can't say if they've had any impact, but I think that in some of them, the information has been disseminated and it'll remain to be seen whether it has actually impacted health of athletes.	Australian interviewee 4
B		
15	You know, what I would say the way I use them is it probably depends on what's happening in my world at the moment. The most recent one that I looked at in the last fortnight was one on supplements because you may be aware, we had an Australian athlete who failed a drug test and so supplements, you know, they go up and down. Usually, they go up when there's a crisis.	Australian interviewee 5
16	I think maybe half of them are going to be relevant to your clinical practice. So, I think that, for example, sex reassignment in sport, I'm not going to read that one because it's just not relevant to my practice and I just don't have time. So, while it might be very interesting and thought provoking, in all honesty I've got 100 things to do, so that's not one. Whereas some of the others might be more - concussion in sport, okay, I'd better read that one. Pregnancy in the elite athlete, I don't see pregnant women, so that's probably down the order a bit. So, while it'd be great if you had the time to read them all, and your intention is, well, I'll get around to that, but the reality is often you don't.	Australian interviewee 1

Continued

Table 5 Continued

17	I would be selective in what I'm going to read that is relevant to me or not. I don't have the time to read all of them, so I will go and pick what's relevant to me, and I think it's going to be relevant to my sport or relevant to - for example, you get a patient with RED-S. So, I would like to go and see what is the management plan, not the consensus but out there. But I think people will be picky about what they read, whether it's relevant for them or not, and for me, I come back to being practical. For me, I think I will actually skip medical advice that about connective tissue and injuries in sport, because it's like why did it happen? But I'm more interested in how do I treat and prevent, number one - prevent something and treat something. I'm keen on prevention, so how do you prevent stuff coming up before a game? How do I prevent illness? How do I prevent stuff happening, and then if it does happen, what is the best way, evidence-based way of treating it?	South African interviewee 6
18	I reckon the first one that really I got into was the eating disorders one I reckon. It was just because at that stage it seemed to be regarded as the go to article at that stage and that would be maybe 4 years ago, 5 years ago, I read the first one. I think there might have been an update since then... I used it as a conduit to getting these kids back into sport. I thought well, I need something that's going to direct my, you know, an evidence-based way of directing how I manage these kids. I think it's probably in areas that we don't have good policy ourselves, and areas that are relevant to our population and athletes.	Australian interviewee 2 Australian interviewee 4
Context and the extent of adaptability		
19	This is what the book tells you, there is my guidelines, there's a Consensus Statement. I threw all that out the window to apply it on the day at the time. As much as these are guidelines and they are Statements, Consensus Statements, I think you can bend the rules to a certain extent, depending on circumstances. It's individualised for you, for you and for me, you know?	South African interviewee 5
20	We actually try and apply them to the best of our abilities. As you know, with certain criteria and certain - it's a combination of first world standards and third world standards. That's - and then it's resources - resources based. Resources as in - for example, here in the country, with - our model is totally different.	South African interviewee 5
21	I guess you're dealing with a population of people that have been in the field for probably 20 years, the guys who get to go to an Olympic Games. You're probably not going to develop your practice around a single protocol, it will be stuff that you've evolved over years.	Australian interviewee 2
22	I think they're - yeah, no. I do. It's not that they're not relevant to Australia. They're just not as relevant to me, I'd say... But I think the topics overall are good ones... A lot of the things we do are probably not evidenced-based. As long as they're doing no harm and you've tried all the evidence-based options first, I don't see a problem with that. That's, I think, in all sports medicine, when you're at the professional level or the elite level, people want that - not just the cutting edge - but they want to be able to perform at important events and that doesn't always lend itself to good evidence-based medicine.	Australian interviewee 4
Issues of clarity, providing clear guidance and being up to date		
23	My criticism of previous Concussion Statements would be that they - because there's no clear-cut evidence - and evidence one way or the other - they don't want to say something that's not purely evidence-based. But that's - the community needs guidance. They need clear - they need clarity.	Australian interviewee 5
24	Some really don't come up with any conclusion much at the end and it's often because the evidence is too - or there's not enough evidence out there for the consensus - for the topic they're attempting to obtain a consensus for. But I think it gives you a very good overview of the literature in that area. So that even if there is no clear conclusion, you're aware that, you know, there's no specific direction you should have been going in. Again, a lot of them aren't specific for treatment, they're just sort of outlining the issue. It wouldn't have any - I suppose in that instance, no practical advice. A lot of the Consensus Statements don't have a lot of practical advice.	Australian interviewee 4
25	See (interviewee is pointing to one of IOC statement topics), that's old too, that's been well and truly - that needs an update, I think.	Australian interviewee 6
Uncertainty around the target audience		
26	I think you'll probably value the Consensus Statements if you're more academically inclined to be very honest, I think. So, I'm trying to think back on all of them and how practically or clinically relevant they are because that's what counts right.	South African interviewee 1
27	I think the question is, what is the IOC Consensus Statements for? Is it like when you travel with a team, or is it like the build-up in travel? Is it just normal athlete health? What is the role of a consensus? It would be nice just to read about it and when I treat athletes, but if I'm - that's why I say, what is the reason for a consensus? What is the main focus of a Consensus Statement? Is it about treatment of a condition? That's my question to you. What's the reason for the IOC Consensus?	South African interviewee 6
28	Well, who are they aimed at? I mean I think you need to just be clear. Is it aimed at the athletes, is it aimed at the clinician, or is it aimed at the coach, or is it aimed at everybody? Because I think depending on who it's aimed at that should inform how you position it... Because it's really long and practically speaking I know people don't read these but not this one at least. So, then it would be important for me to highlight (the main points).	South African interviewee 1
29	There should never be a position statement, in my opinion, from the IOC that doesn't have a one-page infographic which is targeted at athletes, which takes all this complex and wonderful information from these 30, extremely talented doctors and physiotherapists and others, but condenses it into a one-page infographic that is meaningful for athletes. Because if we're not doing that, I think it can be pointless. It can sit in a nice journal, and it can sit on a nice website, but never be seen by an athlete.	Australian interviewee 5
IOC, International Olympic Committee.		

relevant and accessible to the widest possible international community's needs.

Audience and purpose

The most stated view during the interviews was a perceived lack of clarity as to the purpose of the IOC Statements. This was commonly framed through questions from participants such as 'who is the intended audience?' and 'what is the intention of the statements?'. These findings highlight a potential disconnect between the intended goal of the IOC Statements and stakeholders' perceptions of them in both settings. This disconnect was also evident in interviewees' questioning who should be responsible for (and involved in) the generation of knowledge,

the content of this knowledge and the intended audience for its dissemination. Many participants asked about involvement of athletes in the selection of topics and forming of recommendations. Such findings resonate with other studies that have raised the importance of athletes' inclusion and their voice in the decisions that eventually affect them.¹¹⁻¹⁴

Application of the knowledge from the IOC Statements was also a space of confusion. Many interviewees considered the target of knowledge as Olympic/Paralympic athletes only. While elite athletes are the main focus of some topics, such as mental health,¹⁵ others address a broader range of 'athletes' with findings of relevance to, for example specifically in youth sports participants¹⁶ or to health in general populations.¹⁷

For their ongoing success, it will be important that discussion about the larger purpose behind, and target groups for, the IOC Statements is addressed by the IOC.

Knowledge needs

It was notable that in both settings, interviewees did not consider the IOC Statements as a first source when looking for information on athlete health. This is despite these participants being active stakeholders in the Olympic movement in their service to the NOCs. This finding suggests limited awareness of the IOC Statements as well as reflecting the discrepant views on the role of IOC in knowledge generation. Interviewees from Australia were less likely to look to the IOC for information, particularly on topics with rapidly changing or highly specific knowledge, such as management of knee injuries or asthma. This was because of the existing high-quality and region-specific resources already available to them, as has been previously reported.¹⁸ These localised resources are favoured because of their direct relevance and application. For these practitioners, a bigger challenge was stated to be navigating the vast information available in a time-efficient way to identify what is of most use to them.¹⁸ With specific knowledge needs already met, Australian interviewees stressed that the role of the IOC should lean more towards issues that are complex or need a big-picture view. Examples provided reflected integrity, ethics and policy needs across sport such as athlete inclusion and drug control. It must also be noted that within the Australian setting, a sense of mistrust in relation to the accuracy of knowledge or independence of consensus statement authors was reported. Future research should explore the underlying beliefs connected to these perceptions and the potential changes needed in the consensus statement process, for trust to be enhanced.

In contrast to the aforementioned data, South African participants placed higher value on IOC Statement availability with a strong desire to have information on both specific clinical topics and wider issues. This value was further reflected in the desire to share information broadly with colleagues across Africa. The IOC Statements have good potential to fill this need for sport and exercise medicine professionals for this purpose. However, perhaps implicitly, the IOC Statements have adopted a one-size-fits-all approach. Thus, recommendations within tend to reflect a best-case scenario with content and advice that are most useful for, and more readily actionable by, users from higher-resource settings. This application of findings has potentially occurred because of the dominant representation in authorship from the USA, Canada, Switzerland, Australia, the UK and Scandinavian countries.³ Importantly, the findings of our study have shown that the knowledge needs, as well as the actionable recommendations, are quite different even within the two countries of focus and the narrow field of sports medicine.

The contrasting findings in knowledge needs between the two case countries investigated, as well as general confusion on the purpose of the statements, suggests a need to include a wider group of stakeholders when determining topics to address, and ensuring a clear purpose and audience are identified in early stages of the IOC Statement development.

General lack of awareness and access

While recognising the value of the IOC Statements, without knowledge of their existence, the clinical guidance contained within cannot be adopted or used, no matter how relevant it is. Sharing of knowledge is an important component of knowledge management (the process of creating, sharing and distributing

knowledge).^{19–21} The development of future statements and associated dissemination plans should explore the different requirements of diverse contexts in relation to knowledge availability more generally and specifically for those settings. This exploration should also give careful consideration to how knowledge can best be transferred between organisations (such as the IOC and Sports Medicine Commission (SMC)) within NOC and SMC. Finally, there is also a need for wider diffusion to individual stakeholders in the different settings and contexts.^{21 22} Many interviewees stressed the value of receiving information about the statements via their colleagues and peers, making use of WhatsApp (social platform) groups to share relevant research and resources. This tended to be ad hoc and dependent on existing professional networks. Establishing dissemination plans that clearly articulate the intended end users and target groups is critical for this to be a success.

Strengths and limitations

All interviewees were experienced sports and exercise medicine professionals affiliated with their Olympic/Paralympic/Youth Olympic committees in their respective countries. Despite this homogeneity, the findings reaffirmed the importance of context for knowledge translation^{23 24} and the importance of its consideration in both the development and dissemination of knowledge. It is not known if the views expressed by the interviewees from both South Africa and Australia are more broadly representative of those from other countries. Characterisation by resource level (eg, low, middle and high) does not necessarily reflect resource equity.²⁵ Specifically, it should be recognised that South Africa is characterised by *inequality*, and only a proportion of the population benefits from economic prosperity and excellent healthcare access, including athletes in certain sports. In this sense, South Africa is comparatively well resourced in relation to many other countries of the African continent and globally. We recognise a need to assess the transferability of the study findings with a larger group of IOC stakeholders and healthcare practitioners, by more diverse authorship teams, in other sport contexts across the world.

CONCLUSION

Despite gaps in awareness, and a lack of clarity on purpose and intended audience, participants reported the IOC Statements had value for 'levelling the playing field' in terms of knowledge (especially in low-resource settings) and in providing reassurance for management of complex or contentious issues (for all settings). The statements reporting on issues of a contentious or topical nature were best known and perceived to have more impact on practice and policy. There is considerable opportunity to improve the IOC Statements through greater integration of end-user perspectives, as well as the diversity of contexts they represent. This includes prioritising the codevelopment of context-sensitive knowledge translation and dissemination plans in different settings. The unique leadership role of the IOC in sports medicine should be explored further so that future resources can be impactful and fit for purpose in all parts of the world. Considering the views and experiences of a wider group of stakeholders and settings than was the case in this study will be necessary for this.

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Competing interests Several authors have been contributors to the published IOC Statements referred to in this paper. CE coauthored the following statements: concussion and the developing youth athlete. WD coauthored the following statements: pain management in the elite athlete. WD and MS coauthored the prevention and management of chronic disease and the molecular basis of connective tissue and muscle injuries in sport. MS coauthored the following statements: periodic health evaluation of elite athletes, use of platelet-rich plasma in sports medicine and health consequences of a saturated sports calendar (parts 1 and 2).

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