Bridging Tradition and Integrity: Policy Perspectives on Traditional Pharmacopoeia in Sport

Geneva Graduate Institute
Master's in International and Development Studies
MINT317: Applied Research Project

Danique Looymans & Emily Meissner

A research project conducted in cooperation with the
UNESCO International Convention against Doping in Sport
under the supervision of Prof. Dr. Carole Presern

May 7, 2026
Word Count: 8,814

Executive Summary

The growing use of traditional pharmacopoeia among athletes presents an emerging governance challenge that existing anti-doping frameworks were not designed to address. While UNESCO's Guidelines on Traditional Pharmacopoeia in the Context of Sport Values, Ethics and Integrity represent a significant normative advance, the transition from international guidance to national policy implementation remains incomplete. This paper contributes to that process by presenting a comparative policy analysis of two State Parties within the UNESCO region Asia and the Pacific, Australia and China, and offering evidence-based recommendations to support Member States in strengthening their national frameworks ahead of the eleventh Conference of the Parties (COP11) in 2027.

The two case studies were selected to reflect meaningful intra-regional diversity. Australia maintains a well-developed sport integrity system aligned with the World Anti-Doping Code, yet Indigenous Bush Medicine (BM) remains largely absent from both national health regulation and anti-doping governance. No published research examines BM's pharmacological properties in relation to doping compliance, no regulatory classification exists, and First Nations knowledge is insufficiently represented within Sport Integrity Australia's advisory infrastructure, especially in anti-doping. The result is the exclusion of First Nations knowledge, particularly relating to BM, through institutional inaction. This raises serious concerns regarding epistemic injustice and disproportionate compliance risks for Indigenous athletes. China presents a contrasting case: Traditional Chinese Medicine (TCM) is formally recognised under the 2017 Law on Traditional Chinese Medicine, is comprehensively regulated by the Chinese Pharmacopoeia, and is routinely integrated into elite sports medicine. Yet the institutions responsible for TCM governance and those responsible for anti-doping enforcement operate in parallel rather than through coordinated

frameworks, leaving athletes without systematic safeguards against inadvertent doping through herbal preparations.

A structured gap analysis across the domains of integrity, health, and anti-doping standards reveals that both countries, despite their structural differences, converge on a common failure to provide athletes with the institutional support needed for informed compliance. Under the World Anti-Doping Code's strict liability principle, this absence disproportionately affects athletes from communities where traditional pharmacopoeia plays a central role in health.

Recommendations are organised around the Ottawa Charter's framework of Promotion, Prevention, and Protection, and situated within Dahlgren and Whitehead's social determinants model to ensure systemic rather than individualised responses. For Australia, priority actions include commissioning ethically grounded, community-partnered research on BM, integrating First Nations expertise into relevant advisory bodies, and establishing formal regulatory assessment pathways within existing governance structures. For China, key recommendations include developing sport-specific TCM screening protocols, establishing inter-agency coordination mechanisms that link health and anti-doping authorities, and translating existing scientific research into binding guidance for athletes.

This paper argues that protecting athletes who use traditional pharmacopoeia requires intervention at the structural level: not simply improved individual awareness. As the Conference of the Parties convenes for its eleventh session, this research offers a timely contribution to the operationalisation of UNESCO's Guidelines, demonstrating both the nature of the gaps that persist at the national level and the policy pathways available to close them.

Table of Contents

Introduction

The intersection between traditional pharmacopoeia and sport integrity has become an increasingly important topic within global sports governance, public health, and regulatory policy. Traditional medicine systems, rooted in indigenous practices, natural substances, and cultural knowledge, remain widely used globally, including among athletes. During the COVID-19 pandemic in particular, reliance on herbal and traditional remedies increased significantly, exposing regulatory uncertainties and gaps in quality control, safety assessment, and health communication. Recognising these emerging challenges, the Secretariat of the International Convention against Doping in Sport launched regional ministerial dialogues in 2021, revealing a substantial need for coherent regulatory frameworks, knowledge-sharing, and international cooperation. These findings prompted the development of UNESCO's *Guidelines on Traditional Pharmacopoeia in the Context of Sport Values, Ethics and Integrity* and the establishment of a Global Task Force comprising specialists from more than twenty countries (UNESCO, 2021; UNESCO, 2023).

Although traditional pharmacopoeia has been the subject of considerable scientific and ethnomedical research, its relevance in sports, particularly regarding performance enhancement, doping risks, and athlete protection, has received relatively limited attention. Historically, doping regulation has focused predominantly on synthetic pharmaceuticals, ergogenic aids, and modern biomedical substances identified in the World Anti-Doping Agency (WADA)’s Prohibited List and related technical documents. The Convention, adopted in 2005, harmonised global anti-doping standards by binding States Parties to align their domestic laws and policies with the WADA Code, Annex I (the Prohibited List), and Annex II (Therapeutic Use Exemptions, TUE) (International Convention, 2005; UNESCO, 2014). While comprehensive with respect to prohibited substances and doping control procedures, the Convention does not explicitly address herbal, plant-based, or culturally

rooted traditional remedies, despite their widespread use, cultural significance, and potential for contamination or inadvertent doping.

The emergence of traditional pharmacopoeia as a governance issue, therefore, represents a new frontier for sport integrity. The expansion of global markets for herbal products, dietary supplements, and traditional medicines, collectively forming part of what the World Health Organisation (WHO) calls Traditional, Complementary and Integrative Medicine (TCIM), increases the likelihood that athletes may consume products with unclear labelling, unregulated herbal ingredients, or hidden pharmacologically active compounds. WHO's 2019 report documents that 170 Member States reported use of traditional medicine, and many have introduced national laws or regulations to govern such practices (World Health Organization, 2019). A 2021 analysis of 66 commercially available sports-nutrition supplements found that 38 per cent contained undeclared doping substances, including stimulants and anabolic agents (Duiven et al., 2021). These findings underscore the need for stronger national regulatory oversight, greater risk awareness among athletes, and harmonised policies that reflect both public health and sport integrity values.

UNESCO's recent work addresses this gap by providing the first international normative framework specifically devoted to traditional pharmacopoeia in relation to sport values, ethics, and integrity. Beginning with the Arab Regional Task Force pilot initiative in 2021, and strengthened through COP9 Resolution 9CP/21, the Guidelines aim to promote responsible use, safety, transparency, and culturally sensitive regulation. The accompanying digital platform supports Member States through data sharing, expert materials, and examples of good practice (Alhosani et al., 2025). However, as emphasised in COP8 and COP9 working documents, the transition from expert-led analysis to concrete public policy remains incomplete. The next critical step is translating global guidelines into national policies that address local needs, cultural practices, and sport governance infrastructure.

Scope of the Research

This research contributes to that process by conducting a policy landscape analysis of two State Parties, Australia and China, within the UNESCO region of Asia and the Pacific. Australia exemplifies a country with strong sports integrity but limited integration of traditional pharmacopoeia into health and sport policies, whereas China has integrated traditional pharmacopoeia into its public health system but lacks integration into sport policies. Together, they provide a rich comparative foundation for exploring how traditional pharmacopoeia is currently governed in relation to sport across the region, including identifying responsible national agencies and existing legal and regulatory frameworks. The analysis focuses on policy and governance rather than pharmacological properties or health effects, and, consistent with the scope of UNESCO's research, is limited to natural plants rather than supplements more broadly.

Understanding these national landscapes is essential to identify gaps, including insufficient quality control, inconsistent classification of herbal products, limited athlete awareness, poor coordination between health and sport authorities, and cultural blind spots in anti-doping risk assessments, all of which pose risks to athletes' health and the integrity of sport.

Research Questions

The research questions address both descriptive and normative dimensions: What national policy frameworks currently exist on traditional pharmacopoeia in sports? What are the key integrity, health, and anti-doping challenges? And how can UNESCO's Guidelines inspire or strengthen national regulatory frameworks to address these challenges? By offering evidence-based recommendations, this paper aims to support States Parties, sport organisations, and the broader anti-doping community in developing coherent, culturally informed, and ethically grounded policy responses.

Ultimately, integrating traditional pharmacopoeia into sport integrity frameworks is not only about regulating substances; it is about protecting athletes, respecting cultural practices, promoting public health, and ensuring fairness in competition. As UNESCO marks two decades of the Convention's implementation, this research provides an important contribution to understanding and shaping that evolution.

Background

Traditional pharmacopoeia is historically rich and globally significant, sitting at the intersection of culture, health governance, and political systems. Over the past two decades, and especially following the COVID-19 pandemic, scholarly interest in traditional medical systems has increased substantially, spanning public health, regulatory science, ethnopharmacology, cultural heritage studies, and sport integrity research. This section synthesises key contributions to understanding traditional pharmacopoeia and its relationship to sport, with particular emphasis on historical foundations, contemporary regulatory challenges, and the governance gaps that emerge at the intersection of traditional medicine and anti-doping policy.

Historical and Conceptual Foundations of Traditional Pharmacopoeia

Traditional pharmacopoeia has roots in the medical heritage of many civilisations. Classical medical texts such as the Shennong Bencao Jing in China, the Charaka Samhita and Sushruta Samhita in India, Greco-Arabic medical literature, and Indigenous healing systems across Africa, the Caribbean, and the Americas demonstrate long-standing documentation of medicinal preparations (Kiple & Ornelas, 2000; Unschuld, 1986). These systems were developed through empirical observation, intergenerational transmission, and cosmological or spiritual frameworks that shaped culturally distinct understandings of health and illness (Waldram, 2020). Australian Indigenous Bush Medicine (BM) is one of the oldest continuously practised medical traditions on the plane (Gall et al., 2025).

The term traditional pharmacopoeia encompasses a plurality of medical systems, including Ayurveda, TCM, Unani, and Kampo, each grounded in distinct theories of the body and healing (Langwick, 2011). Ethnobotanical research has confirmed that many traditional preparations contain bioactive compounds validated by biomedical research (Fabricant & Farnsworth, 2001), yet many remedies remain understudied, particularly those belonging to

Indigenous communities in settler-colonial contexts, where the marginalisation of traditional knowledge by dominant biomedical frameworks has impeded systematic scientific inquiry (Gall et al., 2025; Canuto et al., 2021).

Throughout the twentieth century, the global spread of Western biomedicine often marginalised traditional medicine: a process conceptualised by scholars as epistemic injustice, the systematic exclusion of non-Western knowledge systems from institutional recognition and governance (Fricker, 2007; Mignolo & Walsh, 2018). More recent global health policy shifts, most notably through the WHO Traditional Medicine Strategy, have sought to reverse this trend by renewing recognition of traditional pharmacopoeia as a core component of culturally grounded health systems (World Health Organization, 2013, 2019).

Contemporary Global Use and Public Health Significance

Recent scholarship confirms widespread and growing reliance on traditional pharmacopoeias worldwide. According to the WHO (2023), traditional and complementary medicine (T&CM) constitutes a primary or secondary form of healthcare for a significant proportion of the population in many low- and middle-income countries. This continued reliance is associated with affordability, accessibility, cultural identity, holistic orientations to healing, and increased global consumer interest in natural products (Payyappallimana, 2010). The WHO (2025) states that the majority of its Member States reported that 40 to 90 per cent of their populations use traditional medicine. This statistic illustrates that traditional pharmacopoeia is not a marginal phenomenon but a mainstream health practice embedded in the daily lives of diverse populations.

The COVID-19 pandemic further intensified public engagement with traditional remedies, while also exposing misinformation, unregulated markets, and safety risks associated with inappropriate use (Ang et al., 2020; Zhao et al., 2020). Despite growing policy attention, regulatory frameworks remain highly varied: some countries integrate

traditional medicine fully into national health systems, others classify herbal products as dietary supplements, and others maintain minimal oversight (Tilburt & Kaptchuk, 2008; Wójcikowski et al., 2012).

Traditional Pharmacopoeia and Sports

The use of herbal substances in sport has increased significantly over recent decades (Garthe & Maughan, 2018; Sellami et al., 2018). Herbs, derived from various parts of plants, including leaves, barks, berries, roots, gums, seeds, stems, and flowers, contain naturally occurring phytochemicals that are said to provide health and performance benefits (Williams, 2006; Garcia et al., 2022). These substances are marketed to athletes for a variety of purposes, including increasing energy, inducing fat burn, enhancing muscle growth and body mass, and producing other physiological or metabolic responses beneficial to exercise performance (Herbold et al., 2004; Williams, 2006). Athletes are among the heaviest users of complementary and alternative medicine, and unlike non-athletes, may use such remedies not only for prevention or rehabilitation from injury, but also for performance enhancement (Koh et al., 2012).

Despite widespread use, herbal substances are not subject to the same rigorous testing standards as pharmaceuticals, and many have not yet been demonstrated to be safe or effective under regulatory frameworks such as those of the U.S. Food and Drug Administration (Garthe & Maughan, 2018; Ai, 2016). A significant risk in this area is the widespread misconception among athletes that the natural origin of herbal substances automatically ensures their safety. This assumption has proven false, as active constituents in herbal products can interact with medications or cause adverse effects when consumed in inappropriate doses (Garcia et al., 2022). Furthermore, some herbal plants contain substances listed on the WADA Prohibited List, and natural supplement products can be contaminated

with prohibited substances, resulting in inadvertent doping violations (Garthe & Maughan, 2018; Martínez-Sanz et al., 2017).

These risks are compounded by poor information quality. Garcia et al. (2022) found that websites generally fail to provide adequate guidance on herbal supplement use. However, it is via this channel that many athletes search for information. According to Kasper et al. (2020), 73 per cent of rugby players sourced cannabidiol information online and only 4 per cent consulted a professional. In Australia specifically, the situation is compounded by a near-complete absence of research: no published studies examine the doping effects of BM or its use among athletes (Gall et al., 2025). UNESCO's Guidelines begin to address this by categorising traditional substances of the Arab region into definite, potential, and inconclusive doping effects (Alhosani et al., 2023), with the scope expanded in 2025 to cover all six UNESCO regions (Alhosani et al., 2025).

Regulatory Frameworks and Standardisation Challenges

Research consistently illustrates a fragmented global regulatory landscape. Standardisation of manufacturing and ingredient quality remains uneven (Jalil & Heinrich, 2025), classification ambiguity complicates enforcement (Ekor, 2014), and weak pharmacovigilance systems create safety uncertainty (Gurley et al., 2015). Contamination poses direct risks to the integrity of sport: a 2021 analysis found that 38 per cent of commercial sports nutrition supplements contained undeclared doping substances (Duiven et al., 2021), and even a single contaminated capsule can lead to a positive anti-doping test (Geyer et al., 2004). Several TCM plant sources have been found to contain higenamine, a substance on the WADA Prohibited List since 2017 (Kozhuharov et al., 2022; Chang et al., 2024), underscoring the need for harmonised policies across public health and sport integrity.

Traditional Pharmacopoeia and Anti-Doping Governance

Although traditional medicine has been widely studied, its connection to sport integrity remains largely underexplored. Athletes across Africa, South America, Asia, and Indigenous communities in North America use herbal tonics and traditional preparations for endurance, recovery, and mental focus (Shaik et al., 2023; Ozioma et al., 2019): uses that are culturally normative but create vulnerability to inadvertent doping (Baume et al., 2006; Martínez-Sanz et al., 2017). Athletes often do not disclose such use to medical staff, compounding the risk (Koh et al., 2012).

Key governance gaps include limited inter-agency coordination, insufficient testing of traditional remedies, and a lack of culturally adapted education (Backhouse et al., 2021). Under the World Anti-Doping Code's strict liability principle, inadvertent doping through traditional herbal preparations can still result in sanctions (World Anti-Doping Agency, 2024), creating a structural tension in which athletes from communities where traditional pharmacopoeia plays a central health role face disproportionate compliance risks, as neither their medicines nor their knowledge systems are systematically integrated into anti-doping frameworks.

Methodology

The purpose of this section is to describe how the research for this paper is designed, conducted, and justified to explore how UNESCO's *Guidelines on Traditional Pharmacopoeia in the context of Sport Values, Ethics and Integrity* can inform and strengthen national policy frameworks on traditional medicine and sport integrity. The study adopts a qualitative approach characterised by a qualitative comparative policy analysis of selected country case studies. The design is outlined with respect to sampling, data collection, analytical procedures, ethical considerations, and limitations. The outcome of this research will be a written report, subdivided into three sections corresponding to the three research questions identified in the introduction: Country case study research, comparative analysis of gaps, and informed recommendations.

Qualitative Comparative Policy Analysis of Country Case Studies

This paper is built on the qualitative policy analysis of country case studies, which involved desk research and a literature review to map and analyse existing national legal and regulatory policies related to traditional pharmacopoeia in the context of sport. Two state parties within the UNESCO region Asia and the Pacific have been purposely selected to identify a sample with intra-regional diversity. The countries selected for this comparative regional sample are Australia and China.

The policy analysis first focused on each country individually. This research was guided by the following questions:

- What is the traditional pharmacopoeia in the country?
- What are the national agencies responsible for the regulation and oversight of anti-doping or traditional pharmacopoeia in an anti-doping context?
- What anti-doping policies currently exist in the country to regulate traditional pharmacopoeia?

- What other policies exist that regulate traditional pharmacopoeia outside of an anti-doping context, but may still impact sports, athletes, or doping?

The sources used for this research included a range of country-specific policy and legal documents related to traditional pharmacopoeia and sport. Insights from academic articles and reports on traditional pharmacopoeia and sport integrity have also been reviewed.

The insights discovered in this case study research were then analysed comparatively to identify key regulatory gaps and challenges. A policy mapping matrix was constructed to systematically compare national regulatory frameworks across three domains: integrity, health, and anti-doping standards. A written report then further summarised the identified gaps.

Identifying existing gaps was essential to provide context-sensitive recommendations that offer practical guidance to the State Parties on how they can adapt and benefit from UNESCO's Guidelines. Overall, this methodological approach enabled us to translate the Global Task Force's scientific findings into practical, actionable national policy frameworks that address current gaps in integrity, health, and anti-doping standards.

Limitations

It is important to note that resource constraints, including limited researcher capacity and a defined project timeline, shaped the feasibility of achieving our sample size. While a larger sample might provide broader insights into the region of Asia and the Pacific, the selected number of countries is sufficient to enable an effective intra-regional comparison between two contrasting, unique case studies that still fit within the scope of this study.

Personal language constraints also influenced the selection of the case studies, as only literature and documents available in English, German, Dutch, and Spanish could be reviewed most effectively by our research team. Therefore, Chinese literature and policies had to be translated using Microsoft Copilot, and could not be verified by a native speaker.

This language constraint likely also limited the range of Chinese material reviewed, as a search conducted primarily in English may have excluded certain sources.

Case Study Results

Australia

Traditional Pharmacopoeia in Australia

Traditional pharmacopoeia in Australia, commonly referred to as Bush Medicine (BM), is deeply rooted in the cultural practices and ecological knowledge of Indigenous Australians–the Aboriginal and Torres Strait Islander peoples, also described as First Nations communities. BM encompasses a wide range of native botanicals, including medicinal plants and food-based remedies, as well as a broader healing system that incorporates traditional healers, ceremonial and spiritual practices, and a deep connection to the land (Gall et al., 2025). This knowledge has been transmitted through generations of traditional healers, over thousands of years (Pharmaceutical Society of Australia, 2022). BM is the oldest continually practised medicine on the planet, and prior to colonisation, it was the primary health care practice in Australia. Today, the extent to which BM is used varies across Australian communities and is commonly used alongside Western health care (Pharmaceutical Society of Australia, 2022).

In addition to BM, Australia hosts a diverse landscape of T&CM systems, including TCM, chiropractic, naturopathy, and Ayurveda (Bhuyan et al., 2022). Particularly, Ayurveda has been associated with performance-enhancing practices in sport (Steel et al., 2017). According to a nationwide study from 2005, 68.9 per cent of Australians reported using T&CM in the previous 12 months for health maintenance, disease prevention, or nutritional supplementation (Xue et al., 2007). Among Indigenous populations, a study in Queensland reported that 18.7 per cent use BM and complementary medicine for cancer care, including 2.8 per cent relying exclusively on Indigenous therapy for treatment (Adams et al., 2015).

Despite this documented use, the evidence base on the use of BM remains limited, particularly in contemporary and sport-specific contexts (World Health Organization, 2019).

Much of the available data is dated, and there is a notable absence of recent, systematic research examining the pharmacological properties, safety profiles, or potential performance-related effects of BM. Furthermore, no publicly available studies have specifically evaluated the use of BM among athletes or its implications within anti-doping frameworks. The Pharmaceutical Society of Australia (2022) has highlighted this gap, noting that the limited information available on the chemical composition of BM raises concerns about potential interactions with other medications that could harm health rather than promote it.

Agencies Responsible

In 1990, Australia became one of the first countries to establish a dedicated sports anti-doping agency, the Australian Sports Drug Agency, which later evolved into the Australian Sports Anti-Doping Authority (ASADA) and, in 2020, became Sport Integrity Australia (SIA). SIA is the national anti-doping organisation responsible for creating and implementing anti-doping policies in Australia, including the National Anti-Doping Scheme. The organisation's regulations align with the World Anti-Doping Code, ensuring compliance with government obligations under the UNESCO International Convention against Doping in Sport (Australian National Audit Office, 2025). However, SIA's responsibilities extend beyond anti-doping to encompass the prevention and response to broader threats to the integrity of sport, such as competition manipulation, betting-related corruption, unethical conduct, and other practices that may undermine the fairness and credibility of sport.

SIA is supported by several specialised advisory bodies and committees. While some of these bodies contribute to anti-doping oversight, there is limited evidence of their engagement with indigenous knowledge systems or BM. For instance, the Sport Sector Advisory Group on Education is responsible for shaping the development of educational resources and programmes related to sports integrity; however, the group does not include

representatives from First Nations backgrounds (Australian National Audit Office, 2025, p. 25). This raises concern because, although the committee is responsible for 'identifying potential gaps' in educational programmes, underrepresentation may result in BM and indigenous perspectives being overlooked (Sport Integrity Australia, 2026a). In contrast, the Australian Sports Drug Medical Advisory Committee (ASDMAC), which oversees Therapeutic Use Exemptions (TUEs) and provides expert advice on anti-doping and athlete safety, requires diverse membership, including representation from individuals with a First Nations background (Australian National Audit Office, 2025, pp. 24-25). Such diversity creates better opportunities for BM and indigenous knowledge to be appropriately considered in relevant decision-making processes.

The Culture and Safety Advisory Committee within SIA brings together independent experts and provides an important platform for voices from diverse backgrounds, also including people from Aboriginal and Torres Strait Islander communities (Australian National Audit Office, 2025, p. 25). However, the primary focus of this committee is to strengthen prevention and protection strategies to address racism and discrimination in sport, rather than to provide knowledge on BM in an anti-doping context (Sport Integrity Australia, 2026a). Additionally, SIA provides no information on its website regarding BM. The organisation does maintain a webpage dedicated to First Nations people, which introduces Richie Allan, the Cultural Director of the Traditional Owners Aboriginal Corporation (TOAC). His role is described as helping to educate and advise SIA on how to connect and contribute to reconciliation (Sport Integrity Australia, 2026b). Nevertheless, a review of his professional background indicates that he does not possess specific expertise on BM or anti-doping. This suggests that the collaboration is oriented towards social and cultural engagement rather than towards scientific or research-based contributions to anti-doping policy development (TOAC, 2026).

Current Policies

Australia maintains a highly developed and robust anti-doping framework, supported by well-established regulatory bodies and evidence-based practices. Within this strong system, however, the integration of traditional pharmacopoeia, such as BM, remains an emerging and relatively underexplored area. Current literature and publicly available policy frameworks provide limited evidence regarding the formal use, regulation, or scientific evaluation of BM within sports.

This does not indicate a rejection of traditional practices; rather, it reflects a gap in structured research, regulatory categorisation, and formal assessment pathways. For instance, there is no distinct regulatory classification specifically for Indigenous pharmacopoeia within the Therapeutic Goods Administration (TGA), and SIA has not yet publicly incorporated BM into dedicated evaluation or monitoring pathways. Similarly, no publicly identified WADA guidance specific to Australian Indigenous remedies was found.

In practice, this means BM largely exists outside formal anti-doping structures. It is neither formally prohibited nor actively promoted, studied, or protected. As a result, athletes face uncertainty regarding the composition, safety, and compliance status of traditional remedies, particularly in the absence of validated testing mechanisms or institutional guidance. Therefore, to avoid an unintended ban or suspension, athletes' only options are to self-exclude or to use BM only outside of a performance context. Thereby, Australia practices *de facto* exclusion without formal prohibition.

From a policy perspective, this approach can be interpreted in two ways. On one hand, it may be seen as a precautionary model that prioritises athlete safety and the integrity of sport through policies grounded in well-validated scientific evidence. Thus, sport integrity is maintained by treating understudied traditional pharmacopoeia as an unmanaged risk, resulting in its practical absence from elite sport rather than its formal prohibition. On the

other hand, this approach can be heavily criticised as being culturally exclusive. Australia's integrity frameworks privilege knowledge that is already legible, thereby strengthening colonial epistemologies without explicit coercion. This highlights an opportunity for future development that recognises Australia's rich Indigenous heritage and advances inclusive research frameworks that explore traditional knowledge systems within an anti-doping context.

Encouragingly, as athletes' interest in traditional medicine grows globally, there is increasing recognition of the need to explore this interface more systematically. This presents a valuable opportunity for Australia to lead in developing culturally informed, evidence-based approaches that integrate traditional pharmacopoeia into sport in a safe, ethical, and scientifically robust manner.

Other Policies Outside of a Sports Context

While not specific to sport, Australia has established regulatory and legal frameworks governing T&CM. The Therapeutic Goods Act 1989, administered by the Therapeutic Goods Administration (TGA), together with the Australian Register of Therapeutic Goods (ARTG), and the regulatory role of the Australian Quarantine and Inspection Service (AQIS), form the core national system overseeing the importation, manufacturing, supply, and advertisement of T&CM in Australia. AQIS, in collaboration with Australian Customs, regulates raw herbs and individual herbal extracts dispensed by practitioners, while the TGA applies a risk-based, three-tiered classification system to regulate manufactured T&CM products (Bhuyan et al., 2022).

Existing analyses of these frameworks indicate that regulatory attention has largely focused on traditional pharmacopoeia introduced from overseas—such as TCM, naturopathy, chiropractic, and Ayurveda—while comparatively limited consideration has been given to Indigenous BM (Bhuyan et al., 2022). This reflects a broader orientation of current systems

toward imported and commercially manufactured products, with less formal inclusion of locally rooted, community-based traditional practices.

Australia has been described as having a “mixed-level recognition” of T&CM, whereby certain practices are formally recognised and regulated, while others remain outside structured policy frameworks despite ongoing community use (Park & Canaway, 2019). This suggests that engagement with T&CM is, in some cases, driven by individual and cultural preferences rather than systematic integration into the national healthcare system.

More broadly, structured pathways for the safe integration of T&CM, particularly BM, remain limited not only in sport but also within the wider healthcare context. A policy analysis by Gall et al. (2025), which reviewed 52 national health policies, found that only nine made a reference to BM. Even within these, mentions were often superficial and did not provide any detailed guidance on safety protocols, dosing information, or regulatory standards. For example, while the National Medicines Policy of 2022 acknowledges traditional pharmacopoeia from Aboriginal and Torres Strait Islander people, these practices have not yet been operationalised within the national healthcare system. This reflects the broader structure of the Australian health care system, which is grounded in biomedical models of care. Within this context, cultural medicines, including BM, are absent from policies that guide practice. Consequently, there remains a limited consolidated evidence base regarding the clinical effects—both beneficial and adverse—of BM. This leaves health professionals with limited access to validated information and guidance on potential drug-BM interactions, safety monitoring, or ways to incorporate BM practices into patient care (Gall et al., 2025).

There was only a single exception highlighted by Gall et al. (2025), this being the Pharmaceutical Society of Australia (PSA) pharmacist guidelines. The guidelines urge pharmacists to record their patients’ use of cultural medicine and to consider potential

interactions with other prescribed medicines. They also promote culturally responsive care by advising practitioners to engage with patients' health beliefs, including whether their understanding of wellness, illness, and treatment is connected to BM (Gall et al., 2025). While this represents a positive step toward greater awareness and inclusion, it remains a targeted initiative rather than a system-wide framework.

Overall, BM is not fully embedded within Australia's mainstream healthcare structures, including Medicare, the TGA, or national pharmacopoeias. This reflects an evolving area characterised by a slowly developing evidence base and increasing recognition of Indigenous knowledge systems. Continued research, policy development, and culturally informed regulatory approaches will be important to support clearer guidance on the benefits, risks, and appropriate use of BM. Notably, this broader context parallels the situation observed in sport, where similar opportunities exist to advance understanding and responsible integration of traditional pharmacopoeia.

China

Traditional Pharmacopoeia in China

Traditional pharmacopoeia in China is primarily represented by Traditional Chinese Medicine (TCM), a comprehensive medical system that has developed over more than two millennia. TCM includes herbal medicines, acupuncture, moxibustion, massage (tuina), dietary therapy, and other practices grounded in classical Chinese medical theory. Unlike many countries where traditional pharmacopoeia exists outside formal healthcare systems, TCM is institutionally integrated into China's national health framework and is recognised by the state as a core component of the country's medical system (Li et al., 2020).

This institutional recognition is reflected in the Law of the People's Republic of China on Traditional Chinese Medicine, adopted in 2017, which formally establishes TCM as an 'important component of the healthcare system' (People's Republic of China, 2017). The law

mandates government support for the preservation, development, and integration of TCM alongside Western biomedicine (People's Republic of China, 2017). As a result, TCM is not treated as an alternative or complementary medicine in China, but rather as a parallel and coequal medical system embedded in national health policy (Hu et al., 2021). TCM also plays a role in physical rehabilitation, injury treatment, and athlete recovery. In elite sport environments, particularly within national training centres, TCM practices such as acupuncture, herbal therapy, and manual treatments are commonly incorporated into sports medicine programmes. These practices are often used to support injury recovery, reduce fatigue, and assist musculoskeletal conditioning (Lin et al., 2022).

Despite this widespread institutional presence, there is limited publicly available research examining the specific use of TCM among elite athletes or the potential anti-doping risks associated with traditional herbal preparations. Some herbal substances used in TCM may contain naturally occurring compounds that fall within categories of substances restricted by international anti-doping regulations (Chang et al., 2024; International Testing Agency, n.d.). However, comprehensive studies examining the doping risks of specific pharmacopoeial formulations remain limited (Tomlinson et al., 2013).

This creates a similar challenge to that observed in other jurisdictions: while the traditional pharmacopoeia itself is formally recognised and regulated, the specific intersection between traditional medicine and sport integrity has not been comprehensively studied.

Agencies Responsible

Several government institutions are responsible for regulating TCM and its relationship to healthcare and sport governance in China. The primary authority overseeing TCM policy is the National Administration of Traditional Chinese Medicine (NATCM), which operates under the National Health Commission. NATCM is responsible for developing national strategies for TCM education, clinical practice, and the preservation of traditional medical

knowledge (Li et al., 2020). Although NATCM does not directly regulate sport, its policies shape the broader healthcare environment in which athletes receive treatment.

The pharmaceutical regulation of TCM products is overseen by the National Medical Products Administration (NMPA). The NMPA supervises the approval, manufacturing, and quality control of medicinal products, including herbal medicines. Many TCM products must comply with national pharmaceutical standards and Good Manufacturing Practice (GMP) regulations (National Medical Products Administration, 2019).

Within the sporting context, elite athlete health management falls under the authority of the General Administration of Sport of China (GASC). Sports medicine centres operating under this institution commonly integrate TCM practices into athlete care and rehabilitation programmes (Lin et al., 2022). However, there is no specific regulatory framework governing the use of TCM in elite sport.

Anti-doping governance is administered by the China Anti-Doping Agency (CHINADA), which implements the World Anti-Doping Code within China. CHINADA is responsible for testing, education, and compliance with international anti-doping standards (China Anti-Doping Agency, n.d.). Under these regulations, athletes are subject to the strict liability principle, meaning they are responsible for any prohibited substance detected in their body, regardless of its source, including substances contained within traditional herbal preparations (World Anti-Doping Agency, 2024).

Although CHINADA operates within the same national governance environment as the institutions that regulate TCM, there is limited evidence of formal coordination mechanisms specifically addressing the risks associated with the traditional pharmacopoeia in sport (Tan et al., 2020; Yang et al., 2022).

Current Policies

China does not have specific national legislation regulating the use of traditional pharmacopoeia in sport. Instead, TCM practices are permitted within athlete medical care as part of the broader healthcare system. This means that the use of herbal medicine, acupuncture, and other traditional treatments in athlete rehabilitation and recovery is largely governed by standard medical practice rather than sport-specific regulatory frameworks (Li et al., 2022).

However, athletes remain fully subject to international anti-doping rules. The Anti-Doping Regulations of the People's Republic of China implement the World Anti-Doping Code domestically and establish strict liability for doping violations (China Anti-Doping Agency, n.d.). As a result, the use of TCM does not provide any exemption from anti-doping rules. If a herbal medicine contains a substance listed on the WADA Prohibited List, the athlete may face sanctions regardless of whether the substance originated from a traditional remedy (World Anti-Doping Agency, 2024; International Testing Agency, n.d.).

This regulatory structure creates a potential governance gap. While TCM is widely used and supported within healthcare institutions, there is no national policy specifically evaluating pharmacopoeial formulas for compliance with anti-doping regulations. Additionally, there is no formal system that certifies herbal preparations as safe for athlete use under anti-doping standards (Chang et al., 2024).

In practice, risk management often occurs through institutional medical oversight within elite sport programmes rather than through national policy. Medical professionals working with athletes may consult anti-doping resources or conduct laboratory testing when necessary. However, this approach remains procedural rather than codified in law (Tan et al., 2020; Li et al., 2022)

Other Policies Outside of a Sports Context

China's regulatory framework for traditional pharmacopoeia is highly developed outside the sporting context. The most significant legal instrument is the Law of the People's Republic of China on Traditional Chinese Medicine (2017), which formally institutionalises TCM within the national healthcare system. The law establishes government responsibilities for the protection, development, and integration of TCM services across hospitals and community health facilities (People's Republic of China, 2017).

Pharmaceutical standards are defined through the Chinese Pharmacopoeia, the official national compendium of medicinal substances. This includes detailed monographs that specify the identity, purity, preparation, and testing requirements for thousands of medicinal materials and compound formulations used in TCM (National Medical Products Administration, 2020; Wang et al., 2021).

Manufacturers of TCM products must comply with regulatory oversight from the National Medical Products Administration and adhere to the Good Manufacturing Practice standards. These regulations govern the cultivation, processing, and distribution of herbal materials, including requirements related to pesticide control, quality testing, and traceability (National Medical Products Administration, 2019; Hu et al., 2021).

Another significant feature of China's system is the integration of TCM services into the national health insurance framework. Many TCM treatments, including herbal prescriptions and acupuncture, are covered under public medical insurance schemes (Li et al., 2020). This integration encourages widespread use and reinforces the legitimacy of traditional medicine within mainstream healthcare.

However, while these policies demonstrate strong institutional support for traditional pharmacopoeia in healthcare and pharmaceutical regulation, they do not specifically address the anti-doping implications of TCM use in sport. As a result, the regulatory systems

governing traditional medicine and sport integrity largely operate in parallel rather than through coordinated frameworks (Tan et al., 2020; Li et al., 2022).

Regulatory Gap Analysis

This section examines the policy gaps between Australia and China across three domains: integrity, health, and anti-doping standards, as summarised in Table 1. When examining existing literature, policy, and legal documents on BM in Australia, it becomes evident that this traditional pharmacopoeia is significantly under-researched and, as a result, absent from regulatory, legal, and policy frameworks in both the sports and broader national health contexts. Gall et al. (2025) argue that this absence reflects a lack of national leadership, raising concerns about safety, as there is no information to guide practitioners and inform patients, including athletes, about the risks and benefits of BM.

While sport integrity is overall strong in Australia, there is no recognition of BM within sport and health systems. The country thereby exemplifies systemic exclusion rather than integration of traditional pharmacopoeia, raising ethical concerns about epistemic injustice, cultural erasure, and power dynamics in knowledge validation. This exclusion is self-reinforcing: without Indigenous representation in responsible agencies such as the Sport Sector Advisory Group on Education, an entire body of traditional knowledge remains unstudied and unaddressed, despite the principle that an athlete's first experience with anti-doping should be through education rather than doping control (World Anti-Doping Agency, 2021).

China presents a markedly different governance landscape. TCM is comprehensively embedded within national health governance through the 2017 Law on Traditional Chinese Medicine, which formally recognises TCM as a central component of the healthcare system and mandates state support for its preservation, development, and clinical application alongside modern biomedicine (People's Republic of China, 2017; Li et al., 2020). Unlike Australia, where BM exists largely outside formal medical regulation (Gall et al., 2025; Bhuyan et al., 2022), China has institutionalised TCM through dedicated agencies,

professional licensing systems, and pharmaceutical regulation, with standards codified in the Chinese Pharmacopoeia and enforced by the NMPA (National Medical Products Administration, 2019; Wang et al., 2021).

Despite this strong institutional foundation, the Chinese framework does not explicitly address the use of TCM within elite sport. While TCM therapies are frequently used in athlete treatment and rehabilitation under the General Administration of Sport of China (Lin et al., 2022), no legal provision governs how traditional pharmacopoeial substances should be evaluated under anti-doping rules, and no formal mechanism ensures that prescribed herbal formulations are systematically screened for WADA-prohibited substances (Chang et al., 2024; International Testing Agency, n.d.). A further governance challenge arises from fragmentation between health regulators and sport integrity bodies: TCM policy falls under NATCM and the NMPA, while anti-doping enforcement is carried out by CHINADA, and these systems operate largely in parallel without a coordinated framework (Tan et al., 2020; Li et al., 2022). Although Chinese researchers have increasingly engaged in WADA-linked studies on herbal contamination (Chang et al., 2024; Kozhuharov et al., 2022), these scientific efforts have not yet translated into binding policy or athlete guidance.

Compared with Australia, China therefore presents a paradox. Australia faces governance gaps due to a lack of engagement with Indigenous traditional medicine within health and sport regulatory systems, which results in limited research, oversight, and athlete guidance (Gall et al., 2025; Australian National Audit Office, 2025). China, by contrast, possesses a highly developed system for regulating and promoting traditional pharmacopoeia (Li et al., 2020; Hu et al., 2021), but the integration of TCM into sport occurs largely through institutional practice rather than formalised sport policy (Tan et al., 2020; Li et al., 2022). The result is a different type of regulatory vulnerability: rather than a policy vacuum, China experiences a coordination gap between well-developed health regulation and anti-doping

governance (Backhouse et al., 2021). Addressing this disconnect would require clearer mechanisms that link TCM prescriptions, pharmacopoeial regulation, and sport integrity oversight (Wang et al., 2021; National Medical Products Administration, 2020) to ensure that athletes can benefit from traditional therapeutic practices without compromising compliance with international anti-doping standards (World Anti-Doping Agency, 2024).

Table 1: Overview of Gaps in Policies between Australia and China

Gap Categories	**Australia**	**China**
Integrity	Since there is no openly accessible research on BM, substances that may have a doping effect but are not regulated create loopholes for athletes with indigenous BM knowledge. This may threaten the integrity of competitive sport practice in Australia. However, it is important to note that this loophole was not created intentionally, and non-indigenous athletes are not actively prohibited from learning about BM. However, uneven access to knowledge could still be considered an integrity gap.	Although extensive research exists on TCM, national legislation such as the Law of the People's Republic of China on Traditional Chinese Medicine does not address the use of traditional pharmacopoeia in sport. The framework regulates TCM exclusively within the healthcare system and does not explicitly link it to sport integrity obligations. This separation creates a potential regulatory loophole, in which TCM may be used therapeutically in athlete treatment without transparent oversight of its implications for competitive fairness.
	A lack of indigenous representation and knowledge incorporated in the agencies responsible for integrity and anti-doping in Australian sport creates an integrity gap. This exclusion and underrepresentation devalues an entire population and body of knowledge. Indigenous athletes should receive the same tailored support as other Australian athletes, including scientific research on Indigenous BM to ensure their safety in sports.	Governance fragmentation exists between traditional medicine regulators and sport integrity authorities. Institutions such as the National Administration of Traditional Chinese Medicine regulate TCM, while the China Anti-Doping Agency enforces anti-doping rules. However, there is no integrated governance framework coordinating these bodies. This lack of coordination can create transparency gaps and regulatory blind spots at the intersection of athlete treatment, traditional medicine use, and sport integrity oversight.
		TCM may be used within elite sport programmes, particularly under the authority of the General Administration of Sport of China, yet no athlete-specific legal provisions govern the evaluation or approval of traditional pharmacopoeial formulations used in sport. This absence of codified oversight mechanisms may lead to inconsistent institutional practices, potentially affecting fairness and the equal enforcement of sport integrity standards.

Health	Since there is no research on BM, let alone its possible doping effects, athletes are unable to know if the BM they consume contains constituents prohibited by WADA. This poses a health risk, as there is no scientific evidence on the benefits or harms of BM, or on its effects on the human body, particularly in a sports context. Additionally, this lack of research hinders the design of sufficient education programs to teach athletes about the effects of BM and how it should or should not be used in sports.	TCM is extensively researched and regulated within the broader healthcare system, including through the Chinese Pharmacopoeia, which establishes quality and safety standards for herbal substances. However, these standards are primarily designed for therapeutic safety in the general population rather than for athlete-specific risk management, particularly regarding substances that may affect physiological performance or interact with anti-doping regulations.
	Even outside of a sports context, there is a general inconsistency in the integration of BM into the national healthcare system. This creates a health gap for all Australians since no support can be given to those who prefer or even rely on BM.	Although TCM is integrated into the national healthcare system and covered by public insurance schemes, its use in elite sports medicine is inconsistently monitored. Medical practitioners may prescribe pharmacopoeial substances without systematic screening for potential doping-related risks or interactions with high-performance training environments, creating potential risks to athlete health and informed medical decision-making.
	The absence of regulations governing BM poses a significant health risk for athletes, as they may be exposed to contaminants and other hazards that affect the quality, production, and distribution of the BM they consume.	Herbal medicines may contain naturally occurring bioactive compounds or contaminants, particularly in complex multi-herb formulations. Although the National Medical Products Administration regulates manufacturing quality, these controls are not specifically designed to detect compounds relevant to anti-doping compliance, potentially exposing athletes to unintended pharmacological risks or contamination.
Anti-Doping Standards	The lack of support personnel with knowledge on BM and a lack of clarity about the regulation of BM create a significant gap in Australia's anti-doping standards. Additionally, since there is no evidence that SIA or WADA are investing any attention or research in BM, there appears to be no interest in closing this gap despite the integrity and health risks this poses.	Although China participates in WADA-linked scientific research examining herbal substances and contamination risks, these research initiatives have not yet translated into binding anti-doping guidelines governing the use of TCM in sport. As a result, scientific awareness exists, but it is not fully integrated into regulatory frameworks or athlete education programs.
	SIA's approach of non-engagement with the unvalidated knowledge system of BM poses a significant anti-doping standard gap since it allows athletes to consume substances with a possible doping effect that have not yet been identified and regulated by national or international anti-doping agencies.	China formally adheres to the World Anti-Doping Code and conducts testing through the China Anti-Doping Agency (CHINADA). However, traditional pharmacopoeia is not systematically incorporated into anti-doping policy frameworks. TCM is regulated as a medicine under healthcare law, while anti-doping governance focuses on detecting prohibited substances rather than regulating the

		inputs athletes consume, leaving potential uncertainty regarding herbal preparations.
		Despite increasing awareness of the risks of herbal contamination, there is no mandatory certification system to verify that TCM formulations used by athletes are free of substances on the WADA Prohibited List. Without such pre-use verification mechanisms, athletes may face the risk of inadvertent doping, relying largely on individual medical judgment or institutional discretion rather than on standardised anti-doping safeguards.

Recommendations

The gap analysis reveals two structurally distinct governance failures that UNESCO's Guidelines are uniquely positioned to address: systemic absence in countries where traditional pharmacopoeia lacks institutional recognition, and institutional disconnection in countries where health and sport integrity governance operate without coordination. Despite their differences, both types of failure converge on the same outcome: athletes are left without adequate protection.

A recurring theme across both case studies is the inadequacy of approaches that place responsibility exclusively on the individual athlete. Under the World Anti-Doping Code's strict liability principle, athletes bear full responsibility for any prohibited substance detected in their bodies, regardless of its source (World Anti-Doping Agency, 2024). Yet the systemic conditions necessary to support informed compliance are frequently absent: no research base, no regulatory classification, no culturally adapted education, and no institutional coordination (Backhouse et al., 2021). Framing this as a failure of individual athletes misattributes the problem.

Dahlgren and Whitehead's social determinants of health model offers a more accurate diagnostic lens (Dahlgren & Whitehead, 1991). As shown in Figure 1, individual health behaviours are shaped by concentric layers of social and institutional influence. In Australia, the failure is concentrated in the intermediate layers: the absence of research, regulatory classification, and community-level health infrastructure means First Nations athletes lack the systemic support others take for granted (Gall et al., 2025; Canuto et al., 2021). In China, the failure lies at the outermost structural layer: the conditions for safe TCM use exist in principle but do not connect to the sport integrity system, so the protection they should afford never reaches the individual athlete (Tan et al., 2020; Li et al., 2022).

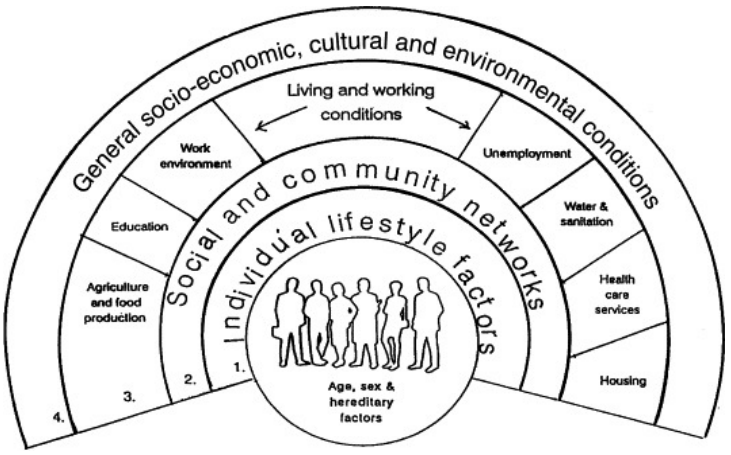

Figure 1: Dahlgren-Whitehead Rainbow Model of Public Health (Dahlgren-Whitehead, 1991).

The recommendations below are therefore organised around the Ottawa Charter's tripartite framework of *Promotion, Prevention, and Protection* (World Health Organization, 1986), which maps directly onto these layers: *Promotion* addresses the community and knowledge layer; *Prevention* addresses living and working conditions; and *Protection* addresses structural and governance reform. UNESCO's Guidelines serve as the normative anchor throughout (Alhosani et al., 2023; Alhosani et al., 2025). Table 2 provides an overview of recommendations by level of policy integration.

Table 2: Policy Recommendations by National Governance Typology

Dimension	**Type A: Low Integration** ***Countries where the traditional pharmacopoeia is under-researched and absent from formal regulatory frameworks***	**Type B: High Integration, Low Coordination** ***Countries where traditional pharmacopoeia is institutionally embedded in healthcare but disconnected from sport integrity governance***
Integrity	Establish dedicated working groups within national anti-doping organisations, inclusive of traditional medicine experts and relevant community representatives.	Create formal inter-agency coordination mechanisms linking health authorities and anti-doping bodies to close governance fragmentation.
Education	Co-design culturally informed athlete education materials with relevant communities; ensure representative diversity within sport integrity advisory bodies.	Translate existing scientific knowledge on traditional pharmacopoeia into targeted athlete-facing guidance; integrate anti-doping risk awareness into sports medicine programmes.
Health	Commission community-partnered pharmacological research into understudied traditional substances, conducted within ethical frameworks respecting community data sovereignty.	Develop athlete-specific risk screening protocols that go beyond general population safety standards to account for performance and doping-related implications.
Anti-Doping Standards	Develop formal regulatory assessment and classification pathways for the traditional pharmacopoeia within existing national frameworks.	Establish mandatory or recommended certification mechanisms verifying that traditional pharmacopoeial formulations used by athletes are free of WADA-prohibited substances.
Data & Evidence	Build national databases documenting traditional pharmacopoeia use among athletes to establish a foundational evidence base.	Expand existing pharmacopoeial databases to include sport-specific doping risk classifications, and share findings through UNESCO's digital platform.
Overarching Priority	Close the research-recognition gap before broader policy integration becomes possible.	Close the coordination gap between well-developed health regulation and anti-doping governance.
Institutional Mapping & Coordination	As a foundational first step, national governments should conduct a formal mapping exercise to identify all bodies with responsibility for traditional pharmacopoeia and anti-doping governance, clarify their respective mandates, and assess where jurisdictional gaps or overlaps exist. Without this baseline, coordination mechanisms cannot be meaningfully designed or implemented.	Although responsible institutions are clearly identified, formal coordination between them on sport-specific questions is absent. Governments should establish a dedicated inter-agency working group with an explicit mandate to address traditional pharmacopoeia in sport, drawing on UNESCO's Guidelines as a normative reference for its scope and objectives.

Note on Implementation

The recommendations above are not equally feasible and should be pursued in sequence, reflecting the Dahlgren & Whitehead model (1991). The following priority order is suggested:

- **First:** Conduct institutional mapping to identify responsible bodies and clarify mandates. This is a prerequisite for all coordination-based recommendations and requires no new legislative authority.
- **Second:** Invest in research and evidence generation. Without a foundational evidence base, education programmes, regulatory classifications, and certification mechanisms cannot be designed.
- **Third:** Develop and deliver culturally informed athlete education. This can, for country type B, start in parallel with step 2. However, for country type A, a basis in research should be done first.
- **Fourth:** Establish sport-specific screening and certification mechanisms. These require inter-agency collaboration and an existing evidence base, and therefore follow from the steps above.
- **Fifth:** Reform regulatory and governance frameworks; formal legislative or structural change is the most resource-intensive intervention and should be informed by the evidence and coordination mechanisms built in earlier steps.

Promotion: Culturally Informed Education and Awareness

The first pillar concerns health promotion: shifting the conditions that shape how individuals and communities understand and engage with health practices (World Health Organization, 1986). In the context of traditional pharmacopoeia and sport, this translates into the need for culturally informed anti-doping education that reaches athletes through the social networks and institutional channels they actually inhabit (World Anti-Doping Agency, 2021).

Education is the most important area for development in both Australia and China. Only through education will awareness about the risks of traditional pharmacopoeia increase in sporting communities. It is essential to protect athletes and the integrity of sports, both nationally and globally.

For Australia, the most urgent promotional gap is the lack of First Nations knowledge within SIA's educational infrastructure. The Sport Sector Advisory Group on Education, responsible for identifying gaps in education programmes, currently includes no representatives from First Nations backgrounds (Australian National Audit Office, 2025). This structural absence means that BM is effectively invisible to the very body in charge of designing anti-doping education; a clear illustration of how the intermediate layers of influence identified by Dahlgren and Whitehead (1991) can fail specific communities even within a well-resourced national system. In line with UNESCO's emphasis on culturally sensitive communication, SIA should develop targeted educational resources on the potential risks and uncertainties associated with the use of BM in elite sport (Alhosani et al., 2023; Alhosani et al., 2025). Crucially, these materials should be co-developed with First Nations communities and relevant experts, rather than designed externally and imposed (Morton Ninomiya et al., 2024). Athlete education should acknowledge uncertainty honestly, framing it as a reason for further inquiry rather than blanket avoidance.

For China, the promotional priority is different: substantial scientific knowledge already exists on the pharmacological properties of TCM substances, including their potential interactions with anti-doping regulations, but this knowledge has not been effectively translated into athlete-facing educational materials (Chang et al., 2024; Kozhuharov et al., 2022). Returning to the Dahlgren and Whitehead (1991) model, the gap here is not at the knowledge-generation layer but at the layer connecting institutional knowledge to individual behaviour. CHINADA's existing education infrastructure should therefore be leveraged to

develop targeted guidance for athletes and support personnel on the risks of inadvertent doping through herbal preparations (World Anti-Doping Agency, 2021). This is particularly important given that TCM is routinely integrated into elite sports medicine programmes under the General Administration of Sport of China, yet athletes may not be systematically informed of the anti-doping implications of the treatments they receive (Lin et al., 2022).

Prevention: Research, Risk Assessment, and Evidence Generation

Prevention, in the public health sense, concerns reducing the onset of harm. In Dahlgren and Whitehead's (1991) framework, this corresponds to the living and working conditions layer: the concrete institutional environment in which athletes train, receive medical care, and make decisions about substance use. Preventive interventions operate at two levels: generating the scientific evidence base necessary to identify risks and developing institutional mechanisms to screen for them before athletes are exposed.

For Australia, the foundational preventive intervention is investment in research. As Gall et al. (2025) document, there are currently no published studies examining the pharmacological properties of BM in relation to anti-doping compliance, nor are there any studies investigating its use among athletes. This is not merely a technical gap; it is a structural condition that renders meaningful athlete education, regulatory classification, and institutional guidance impossible. SIA, in partnership with relevant health research bodies and First Nations communities who hold knowledge of BM, should commission systematic research into the chemical composition, bioactive compounds, and potential performance-related properties of commonly used BM. Critically, such research must be conducted within ethical frameworks that respect Indigenous data sovereignty and ensure that communities retain control over their knowledge (Morton Ninomiya et al., 2024). Without this evidence base, the other layers of intervention identified in this section cannot be built.

For China, prevention requires a different kind of intervention: the development of systematic pre-use screening protocols for TCM formulations used in elite sport. While the Chinese Pharmacopoeia establishes rigorous quality and safety standards for herbal substances, these standards are designed for the general population and are not calibrated to detect compounds relevant to anti-doping compliance (National Medical Products Administration, 2020; Wang et al., 2021). Given that WADA-linked research has already demonstrated that several TCM plant sources contain naturally occurring prohibited substances, there is sufficient scientific basis to begin developing a sport-specific screening protocol (Chang et al., 2024; Kozhuharov et al., 2022). This would involve collaboration between the National Medical Products Administration, NATCM, and CHINADA, and could draw on China's existing participation in WADA-linked research as a foundation (Li et al., 2020; China Anti-Doping Agency, n.d.). A recommended or mandatory certification mechanism would substantially reduce the current risk of inadvertent doping and close the living-conditions-layer gap identified by the rainbow model (Dahlgren & Whitehead, 1991).

Protection: Institutional Safeguards and Regulatory Pathways

The third pillar concerns protection: the structural and policy conditions that either shield individuals from harm or expose them to it. In Dahlgren and Whitehead's (1991) outermost layer, sport governance frameworks, regulatory systems, and international normative instruments all play a role in determining whether athletes from communities that use traditional pharmacopoeia can participate in elite sport without disproportionate compliance risk. In both case studies, institutional fragmentation is the central failure mode at this layer.

For Australia, protection requires developing formal regulatory pathways for the assessment and potential recognition of BM within existing governance structures. Currently, the TGA's risk-based classification system applies primarily to imported or commercially

manufactured T&CM products (Bhuyan et al., 2022). Indigenous BM falls outside this system not because it has been assessed and found unsuitable, but because the mechanisms to assess it do not exist; a regulatory silence that, as the background and results section of this paper argues, reflects a deeper epistemic injustice in which knowledge systems that have not been validated through Western biomedical frameworks are excluded from institutional recognition by default (Fricker, 2007; Mignolo and Walsh, 2018). Developing such mechanisms would not only protect athletes from the de facto exclusion they currently face but would constitute a meaningful step towards decolonising sport governance (Canuto et al., 2021). In the immediate term, SIA should establish a dedicated working group on traditional pharmacopoeia, inclusive of First Nations health and pharmacological experts, to advise on how BM can be progressively integrated into anti-doping risk assessment frameworks (Australian National Audit Office, 2025). The Australian Sports Drug Medical Advisory Committee (ASDMAC)'s existing requirement for First Nations representation provides a model that could be extended to other relevant bodies (Australian National Audit Office, 2025).

For China, protection requires closing the coordination gap between institutions that currently operate in parallel. TCM policy, pharmaceutical regulation, and anti-doping enforcement are managed by distinct agencies, with limited formal interaction on sport-specific questions (Tan et al., 2020; Li et al., 2022). This fragmentation means that even when individual institutions are well-resourced and scientifically engaged, the structural layer of the Dahlgren and Whitehead (1991) model fails to provide coherent protection for athletes. Addressing this would require establishing a joint inter-agency coordination mechanism. UNESCO's Guidelines provide a ready-made international reference for the mandate and scope of such a mechanism (Alhosani et al., 2023; Alhosani et al., 2025), and China's existing

scientific engagement with WADA offers a strong foundation for coordinated policy (Chang et al., 2024).

However, to implement athlete protection, countries must first understand the extent to which traditional pharmacopoeia is used by their populations and athletes. To build such a database, which, particularly in Australia, is still missing (Gall et al., 2025), future research by UNESCO and its partners should go into developing an electronic system that allows physicians to document the traditional pharmacopoeia use of their patients. Building such a global and national database can help to better inform educational programmes, athlete protection, and future directions of scientific research (Alhosani et al., 2025).

Across both case studies, the combined application of the Dahlgren and Whitehead (1991) model and the Ottawa Charter's three Ps reveals that the governance failures identified in this paper are not incidental but structural: they arise from the same systemic conditions that produce health inequity more broadly, and they require intervention at multiple levels simultaneously (World Health Organization, 1986). No single policy instrument will be sufficient. Rather, what is needed is a coherent, layered approach in which education, evidence generation, and institutional reform are pursued together, with UNESCO's Guidelines providing the normative thread that connects them (Alhosani et al., 2023; Alhosani et al., 2025).

The findings of this paper speak directly to the implementation agenda of UNESCO's *Guidelines on Traditional Pharmacopoeia in the Context of Sport Values, Ethics and Integrity*. The two case studies demonstrate that the normative framework established by the Guidelines has not yet translated into coherent national policy in either country examined. This points to a clear role for UNESCO as a facilitator of implementation: supporting Member States in conducting national policy landscape analyses of the kind presented here, providing technical assistance for the development of culturally informed education

programmes, and encouraging the establishment of inter-agency coordination mechanisms through which health and sport integrity authorities can engage on traditional pharmacopoeia risks. The digital platform accompanying the Guidelines offers a ready infrastructure for knowledge-sharing across Member States. As the Conference of the Parties convenes for its eleventh session, this paper recommends that UNESCO consider developing a structured implementation support framework that allows Member States to self-assess their governance landscape and identify priority actions aligned with their national context (Alhosani et al., 2023; Alhosani et al., 2025).

Conclusion

The intersection between traditional pharmacopoeia and sport integrity is becoming an increasingly important issue within global sport governance, public health, and integrity policy. While traditional medicine systems are deeply embedded in global health practices, including among athletes, their implications for sports performance, health, and anti-doping compliance remain significantly understudied. This disconnect creates a structural vulnerability that exposes athletes to health risks and the possibility of inadvertent doping, as they lack knowledge, guidance, and institutional support.

The establishment of the Global Task Force under the International Convention against Doping in Sport, and the publication of UNESCO's *Guidelines on Traditional Pharmacopoeia in the Context of Sport Values, Ethics and Integrity,* represent the first step in addressing this gap. By conducting research into the composition and potential doping effects of understudied traditional substances, the Task Force helped build a much-needed evidence base and raised awareness internationally. However, as this paper has highlighted, further efforts are required to translate these developments into effective national policy frameworks.

Through a comparative policy analysis of Australia and China, two contrasting case studies within the UNESCO region Asia and the Pacific, this paper has highlighted their differing regulatory approaches and the existing gaps at the intersection of traditional pharmacopoeia, health, sport integrity, and anti-doping standards. In Australia, systemic exclusion and under-recognition of Indigenous BM result in a lack of research and guidance for athletes. In China, by contrast, traditional pharmacopoeia is institutionally embedded within the healthcare system; however, its relationship to anti-doping governance remains insufficiently coordinated. Despite their differences, both cases converge on a common conclusion: existing frameworks fail to adequately account for the realities of traditional

pharmacopoeia use in sport, thereby undermining athlete protection, public health, and the integrity of competitions.

As UNESCO marks two decades of the Convention's implementation, the governance failures identified here are not exceptional cases but indicative of broader structural conditions that many Member States are likely to share. Bridging the gap between international guidance and national action is the central implementation challenge ahead of COP11 in 2027, and one that UNESCO, through its facilitation role, technical assistance capacity, and digital knowledge-sharing platform, is uniquely positioned to address. Ultimately, doing so requires coordinated regulatory frameworks across health and sport sectors, culturally informed research, and a commitment to approaches that protect athletes, respect cultural practices, and ensure fairness in sport.

References

Adams, J., Valery, P. C., Sibbritt, D., Bernardes, C. M., Broom, A., & Garvey, G. (2015). Use of traditional indigenous medicine and complementary medicine among Indigenous cancer patients in Queensland, Australia. *Integrative Cancer Therapies, 14*(4), 359–365. https://doi.org/10.1177/1534735415583555

Adams, V. (2002). Randomized controlled crime. *Social Studies of Science, 32*, 659–690. https://doi.org/10.1177/030631270203200503

Ai, T. (Ed.). (2016). *Medicinal flora of China* (Vol. 3). Peking University Medical Press.

Alhosani, A., et al. (2023). *Guidelines on traditional pharmacopoeia in the context of sport values, ethics, and integrity*. UNESCO Anti-Doping Convention.

Alhosani, A., et al. (2025). *COP-10 working document: Guidelines on traditional pharmacopoeia in the context of sport values, ethics, and integrity*. UNESCO Anti-Doping Convention.

Ang, L., Song, E., Lee, H. W., & Lee, M. S. (2020). Herbal medicine for the treatment of Coronavirus Disease 2019 (COVID-19): A systematic review and meta-analysis of randomized controlled trials. *Journal of Clinical Medicine, 9*(5), 1583. https://doi.org/10.3390/jcm9051583

Australian National Audit Office. (2025). *Sport Integrity Australia's management of the National Anti-Doping Scheme* (Auditor-General Report 2024–2025). https://www.anao.gov.au/sites/default/files/2025-03/Auditor-General_Report_2024-25_27.pdf

Backhouse, S. H., Griffiths, C., & McKenna, J. (2021). Tackling doping in sport: A call for policy coherence. *British Journal of Sports Medicine 2018, 52,* 1485-1486 https://doi.org/10.1136/bjsports-2016-097169

Baume, N., Mahler, N., Kamber, M., Mangin, P., & Saugy, M. (2006). Research of stimulants and anabolic steroids in dietary supplements. *Scandinavian Journal of Medicine & Science in Sports, 16*(1), 41–48. https://doi.org/10.1111/j.1600-0838.2005.00442.x

Bhuyan, D. J., Dissanayake, I. H., Jaye, K., & Chang, D. (2022). Traditional and complementary medicine in Australia: Clinical practice, research, education, and regulation. *International Journal of Ayurveda Research, 3*(1), 16–29. https://doi.org/10.4103/ijar.ijar_4_22

Canuto, K., Doolan, I., & Wilson, A. (2021). Decolonizing Indigenous health: Generating a productive dialogue to eliminate rheumatic heart disease in Australia. *Social Science & Medicine, 276*, 113849. https://doi.org/10.1016/j.socscimed.2021.113849

China Anti-Doping Agency. (n.d.). *Code implementation (2019–2021)*. https://www.chinada.cn/en/contents/132/471.html

China Anti-Doping Agency. (n.d.). *Official website*. https://www.chinada.cn/en/

Coghlan, M., Maker, G., Crighton, E. (2015). Combined DNA, toxicological and heavy metal analyses of traditional Chinese medicine preparations. *Scientific Reports*. https://www.nature.com/articles/srep17475

Dahlgren, G., & Whitehead, M. (1991). *Policies and strategies to promote social equity in health*. Institute for Future Studies.

Duiven, E., van Loon, L. J. C., Spruijt, L., Koert, W., & de Hon, O. M. (2021). Undeclared doping substances are highly prevalent in commercial sports nutrition supplements. *Journal of Sports Science and Medicine, 20*(2), 328–338. https://doi.org/10.52082/jssm.2021.328

Ekor, M. (2014). The growing use of herbal medicines: Issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in Pharmacology, 4*, 177. https://doi.org/10.3389/fphar.2013.00177

Fabricant, D. S., & Farnsworth, N. R. (2001). The value of plants used in traditional medicine for drug discovery. *Environmental Health Perspectives, 109*(Suppl. 1), 69–75. https://doi.org/10.1289/ehp.01109s169

Fricker, M. (2007). *Epistemic injustice: Power and the ethics of knowing*. Oxford University Press.

Gall, A., Stephens, M., Gall, Z., Armour, D., Hewlett, N., Kennedy, M., Sainty, T., Hulme, A., Wardle, J., Campbell, M., Gall, A. T., Furlong, A., & Anderson, K. (2025). First Peoples' cultural medicines: A review of Australian health policies using an Indigenous critical discourse analysis approach. *First Nations Health and Wellbeing – The Lowitja Journal, 3*. https://doi.org/10.1016/j.fnhli.2025.100046

Garcia, J. F., Arribalzaga, S., Díez, R., Lopez, C., Fernandez, M. N., Garcia, J. J., Diez, M. J., Seco-Calvo, J., Sierra, M., & Sahagún, A. M. (2022). Herbs as an active ingredient in sport: Availability and information on the internet. *Nutrients, 14*(13). https://doi.org/10.3390/nu14132764

Garthe, I., & Maughan, R. J. (2018). Athletes and supplements: Prevalence and perspectives. *International Journal of Sport Nutrition and Exercise Metabolism, 28*(2), 126–138. https://doi.org/10.1123/ijsnem.2017-0429

Geyer, H., Parr, M. K., Mareck, U., Reinhart, U., Schrader, Y., & Schänzer, W. (2004). Analysis of non-hormonal nutritional supplements for anabolic-androgenic steroids – results of an international study. *International Journal of Sports Medicine, 25*(2), 124–129. https://doi.org/10.1055/s-2004-819955

Gurley, B. J., Steelman, S. C., & Thomas, S. L. (2015). Multi-ingredient, caffeine-containing dietary supplements: History, safety, and efficacy. *Clinical Therapeutics, 37*(2), 275–301. https://doi.org/10.1016/j.clinthera.2014.08.012

Herbold, N., Visconti, B., Frates, S., & Bandini, L. (2004). Traditional and nontraditional supplement use by collegiate female varsity athletes. *International Journal of Sport Nutrition and Exercise Metabolism, 14*(5), 586–593. https://doi.org/10.1123/ijsnem.14.5.586

Hu, Y., Zhang, Y., & Wang, S. (2021). The regulation of Chinese medicine in China. *Longhua Chinese Medicine*. https://lcm.amegroups.org/article/view/7115/html

International Convention against Doping in Sport. (2005). *Concluded by UNESCO, entered into force in 2007* (Annex I: Prohibited List; Annex II: Standards for Therapeutic Use Exemptions). https://www.unesco.org/en/convention-against-doping-sport

International Testing Agency. (n.d.). *Supplements and traditional Chinese medicine*. https://ita.sport/athlete-hub/supplements/

Jalil, B., & Heinrich, M. (2025). Pharmaceutical quality of herbal medicinal products and dietary supplements – a case study with oral solid formulations containing *Lavandula* species. *European Journal of Pharmaceutical Sciences, 208*, 107042. https://doi.org/10.1016/j.ejps.2025.107042

Kasper, A. M., Sparks, S. A., Hooks, M., Skeer, M., Webb, B., Nia, H., Morton, J. P., & Close, G. L. (2020). High prevalence of cannabidiol use within male professional rugby union and league players: A quest for pain relief and enhanced recovery. *International Journal of Sport Nutrition and Exercise Metabolism, 30*(5), 315–322. https://doi.org/10.1123/ijsnem.2020-0151

Kiple, K. F., & Ornelas, K. C. (2000). *The Cambridge world history of food*. Cambridge University Press. https://doi.org/10.1017/CHOL9780521402149

Koh, B., Freeman, L., & Zaslawski, C. (2012). Alternative medicine and doping in sports. *Australasian Medical Journal, 5*(1), 18–25. https://doi.org/10.4066/AMJ.20121079

Kozhuharov, V. R., Ivanov, K., & Ivanova, S. (2022). Higenamine in plants as a source of unintentional doping. *Plants, 11*(3). https://doi.org/10.3390/plants11030354

Langwick, S. A. (2011). *Bodies, politics, and African healing*. Indiana University Press.

Li, X., Huang, J., & Chen, Z. (2020). Current policies and measures on the development of traditional Chinese medicine in China. *International Journal of Environmental Research and Public Health, 17*(18). https://pmc.ncbi.nlm.nih.gov/articles/PMC7480280/

Li, Y., Sam, M. P., & Zheng, J. (2022). Anti-doping in China: An analysis of policy implementation processes. *Sport Management Review, 25*(2), 360–381. https://www.tandfonline.com/doi/full/10.1080/14413523.2021.1917247

Lin, Z., Chen, Y., Wu, J., & Liu, T. (2022). Application of traditional Chinese therapy in sports medicine. *Sports Med Health Sci, 3*(1), 11–20. https://pmc.ncbi.nlm.nih.gov/articles/PMC9219272/

Lin, Y.A & Hsu, M.C. (2024). Determination of doping higenamine in Chinese herbal medicines. *Journal of Pharmaceutical and Biomedical Analysis*. https://www.sciencedirect.com/science/article/abs/pii/S0731708524002280

Martínez-Sanz, J. M., Sospedra, I., Ortiz, C. M., Baladía, E., Gil-Izquierdo, A., & Ortiz-Moncada, R. (2017). Intended or unintended doping? A review of the presence of doping substances in dietary supplements used in sports. *Nutrients, 9*(10), 1093. https://doi.org/10.3390/nu9101093

Mignolo, W. D., & Walsh, C. E. (2018). *On decoloniality: Concepts, analytics, praxis*. Duke University Press.

Morton Ninomiya, M. E., Deleary, N., Burns MacKay, L., Dogba, M. J., Firestone, M., Smylie, J., & Loppie, C. (2024). Indigenous sovereignty in research and epistemic justice: Truth telling through research. *Global Public Health, 19*(1). https://doi.org/10.1080/17441692.2024.2436436

National Medical Products Administration. (2019). *Chinese Pharmacopoeia Commission*. https://english.nmpa.gov.cn/2019-07/19/c_389168.htm

National Medical Products Administration. (2020). *Announcement on the 2020 edition of the Chinese Pharmacopoeia*. https://english.nmpa.gov.cn/2020-07/03/c_538689.htm

Ozioma, E.-O., & Okaka, A. (2019). Herbal medicines in African traditional medicine. https://doi.org/10.5772/intechopen.80348

Payyappallimana, U. (2010). Role of traditional medicine in primary health care: An overview of perspectives and challenges. *Yokohama Journal of Social Sciences, 14*(6), 57–77.

Park, Y. L., & Canaway, R. (2019). Integrating traditional and complementary medicine with national healthcare systems for universal health coverage in Asia and the Western Pacific. *Health Systems & Reform, 5*(1), 24–31. https://doi.org/10.1080/23288604.2018.1539058

People's Republic of China. (2017). *Law of the People's Republic of China on traditional Chinese medicine*. https://www.ciplawyer.com/articles/136869.html

Pharmaceutical Society of Australia. (2022). *Guidelines for pharmacists supporting Aboriginal and Torres Strait Islander peoples with medicines management*.

https://my.psa.org.au/s/article/Providing-Pharmacy-Services-to-Aboriginal-and-Torres-Strait-Islander-People

Sellami, M., Slimeni, O., Pokrywka, A., Kuvačić, G., Hayes, L. D., Milic, M., & Padulo, J. (2018). Herbal medicine for sports: A review. *Journal of the International Society of Sports Nutrition, 15*(1). https://doi.org/10.1186/s12970-018-0218-y

Shaik, M. I., Hamdi, I. H., & Sarbon, N. M. (2023). A comprehensive review on traditional herbal drinks: Physicochemical, phytochemicals and pharmacology properties. *Food Chemistry Advances, 3*, 100460. https://doi.org/10.1016/j.focha.2023.100460

Sport Integrity Australia. (2026a). *Advisory groups & council*. https://www.sportintegrity.gov.au/about-us/advisory-groups

Sport Integrity Australia. (2026b). *First Nations*. https://www.sportintegrity.gov.au/communities/first-nations

Star, S. (2023). The quest for harmonization in anti-doping: An Indian perspective. *The International Sports Law Journal, 23*, 44–63. https://doi.org/10.1007/s40318-022-00220-7

Steel, A., Sibbritt, D., Schloss, J., Wardle, J., Leach, M., & Diezel, H., et al. (2017). An overview of the Practitioner Research and Collaboration Initiative (PRACI): A practice-based research network for complementary medicine. *BMC Complementary and Alternative Medicine, 17*(1), 87. https://doi.org/10.1186/s12906-017-1609-3

Tan, T. C., Bairner, A., & Chen, Y. (2020). Managing compliance with the World Anti-Doping Code: China's strategies and their implications. *International Review for the Sociology of Sport*. https://journals.sagepub.com/doi/abs/10.1177/1012690218805402

Tilburt, J. C., & Kaptchuk, T. J. (2008). Herbal medicine research and global health: An ethical analysis. *Bulletin of the World Health Organization, 86*(8), 594–599. https://doi.org/10.2471/blt.07.042820

TOAC. (2026). *Our Mob*. Traditional Owners Aboriginal Corporation. https://toac.com.au/about/

UNESCO. (2014). *Amendments to the Annexes to the International Convention against Doping in Sport*. https://www.unesco.org/en/convention-against-doping-sport/governance

UNESCO. (2021). *Resolutions of the eighth session of the Conference of Parties to the International Convention against Doping in Sport* (ICDS/8CP/Doc.19). https://unesdoc.unesco.org/ark:/48223/pf0000369509

UNESCO. (2023). *Resolutions of the ninth session of the Conference of Parties to the International Convention against Doping in Sport* (ICDS/9CP/Doc.21). https://unesdoc.unesco.org/ark:/48223/pf0000389126

Unschuld, P. (1986). *Medicine in China: A history*. University of California Press.

Waldram, J. (2020). *Indigenous healing traditions*. University of Manitoba Press.

Xu X, Xu H, Shang Y, Zhu R, Hong X, Song Z, Yang Z. (2021). Development of the general chapters of the Chinese Pharmacopoeia 2020 edition. *Journal of Pharmaceutical Analysis*. https://pmc.ncbi.nlm.nih.gov/articles/PMC8424356/

Williams, M. (2006). Dietary supplements and sports performance: Herbals. *Journal of the International Society of Sports Nutrition, 3*(1). https://doi.org/10.1186/1550-2783-3-1-1

Wójcikowski, K., Johnson, D. W., & Grant, D. (2012). Regulatory approaches to herbal medicines. *Phytotherapy Research, 26*(9), 1446–1452.

World Anti-Doping Agency. (2021). *International standard for education*. https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/international-standard-education-ise

World Anti-Doping Agency. (2024). *The prohibited list*. https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/prohibited-list

World Health Organization. (1986). *Ottawa Charter for Health Promotion*. WHO. https://www.who.int/publications/i/item/ottawa-charter-for-health-promotion

World Health Organization. (2013). *WHO traditional medicine strategy 2014-2023*. WHO. https://www.who.int/publications/i/item/9789241506096

World Health Organization. (2019). *WHO global report on traditional and complementary medicine 2019*. https://www.who.int/publications/i/item/978924151536

World Health Organization. (2023). *Traditional, complementary and integrative medicine*. WHO.

World Health Organization. (2025). *Traditional medicine use is now a global reality: WHO*. https://www.ungeneva.org/en/news-media/news/2025/12/113852/traditional-medicine-use-now-global-reality-who?utm_

Xue, C. C., Zhang, A. L., Lin, V., Da Costa, C., & Story, D. F. (2007). Complementary and alternative medicine use in Australia: A national population-based survey. *Journal of Alternative and Complementary Medicine, 13*(6), 643–650. https://doi.org/10.1089/acm.2006.6355

Yang, K., Dimeo, P., & Winand, M. (2022). Anti-doping in China: an analysis of the policy implementation processes through stakeholders' perspectives. *Sport Management Review*, 25(2), 360–381. https://doi.org/10.1080/14413523.2021.1917247

Zhao, J., et al. (2020). Safety concerns of herbal medicines during COVID-19. *Journal of Integrative Medicine, 18*(3), 214–216.