The shifting landscape of kinesiology in Italy: A call for epistemological re-evaluation and curricular reform

Il mutevole panorama della kinesiologia in Italia: Una richiesta di rivalutazione epistemologica e di riforma curriculare

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ABSTRACT

The paper examines the challenges hindering the development and professionalization of kinesiology (Sport and Exercise Sciences) in Italy, focusing on legislative inconsistencies, curricular variability, and a biomedical research bias. Through mixed-methods analysis of legislative documents, academic curricula, and research outputs, the study analyse significant disparities in ECTS credit distribution across Italian degree programs (L-22, LM-67, LM-68), leading to fragmented graduate competencies. Additionally, a dominant focus on biomedical research neglects critical areas like motor control, sport pedagogy, and inclusive exercise design, limiting interdisciplinary engagement. Comparative analysis highlights misalignment with international standards in education and research. The paper advocates for curricular standardization, broader epistemological integration of social and behavioural sciences, and structural reforms to foster interdisciplinary collaboration. By aligning with global frameworks and addressing institutional fragmentation, Italy can enhance kinesiology's role in public health, athletic performance, and equitable access to physical activity.

Il contributo esamina le sfide che ostacolano lo sviluppo e la professionalizzazione della chinesiologia (Scienze motorie e dell'esercizio fisico) in Italia, concentrandosi su incoerenze legislative, variabilità curricolare e un orientamento predominante della ricerca verso l'ambito biomedico. Attraverso un'analisi con approccio misto di documenti legislativi, curricula accademici e produzioni scientifiche, lo studio mette in luce significative disparità nella distribuzione dei crediti formativi (CFU) all'interno dei corsi di laurea italiani (L-22, LM-67, LM-68), che determinano una frammentazione delle competenze dei laureati. Inoltre, l'enfasi dominante sulla ricerca biomedica trascura ambiti cruciali come il controllo motorio, la pedagogia dello sport e la progettazione inclusiva dell'esercizio fisico, limitando il potenziale di integrazione interdisciplinare. L'analisi comparativa evidenzia uno scollamento rispetto agli standard internazionali sia sul piano formativo che della ricerca. Il lavoro propone l'adozione di curricoli più standardizzati, un'integrazione epistemologica più ampia delle scienze sociali e comportamentali, nonché riforme strutturali volte a promuovere la collaborazione interdisciplinare. Allineandosi ai quadri di riferimento internazionali e affrontando la frammentazione istituzionale, l'Italia potrebbe rafforzare il ruolo della chinesiologia nella promozione della salute pubblica, nella performance sportiva e nell'accesso equo alla pratica motoria.

KEYWORDS
Kinesiology, Curricular Reform, Biomedical Research Bias, Professionalisation, International Standards
Kinesiologia, Riforma curriculare, Pregiudizi nella ricerca biomedica, Professionalizzazione, Standard internazionali

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1. Introduction

The scientific study of human movement, spanning kinesiology, exercise science, biomechanics, motor control, and sport psychology, plays an indispensable role in enhancing health, well-being, and physical performance across the lifespan (Cereda, 2023, p. 22). From mitigating sedentary lifestyles and chronic disease risks to optimising athletic training and rehabilitation, this multidisciplinary field translates insights into tangible societal benefits. Yet, its academic and professional contours vary markedly worldwide, shaped by cultural traditions, institutional frameworks, and legislative priorities In the United States, kinesiology programs generally contain a wide range of subjects, including exercise science, biomechanics, motor control, sports psychology, and physical education. This offers a unique opportunity for in-depth research and creates space for evidence-based techniques (Knudson, 2021). Kinesiology programs in Canada are known for their clinical background, with graduates pursuing a career in rehabilitation and health promotion. The discipline is closely linked to the health sciences (Canadian Kinesiology Alliance, 2025).

In Europe, this field is commonly called "Sport Science" or "Human Movement Science" (Champely et al., 2017). In Germany, *Sportwissenschaft* is known for creating a strong emphasis on sports performance and the coaching aspect of physical movement (Moustakas et al., 2021). Australian universities are known for offering kinesiology under the heading of "Exercise and Sport Science", while focusing on both clinical applications and high-performance athletics (Bruce et al., 2022).

The status of the field is determined by the regulatory framework of governing kinesiology across various regions and jurisdictions. In certain provinces, such as Ontario, kinesiology is considered a regulated health profession, where practitioners must obtain licensure (Kinesiology Act, 2007; Canadian Kinesiology Alliance, 2025). In the United States, while there is no federal regulation, some states enforce specific licensure requirements for kinesiologists or exercise physiologists (Liguori & American College of Sports Medicine, 2022). Italy's journey in human movement sciences reflects dynamic evolution. Legislative reforms, such as the 2021 recognition of kinesiologists (Gazzetta Ufficiale, 2021), mark progress in professionalisation. However, this advancement coexists with unresolved tensions (Cereda, 2023, pp. 15-17). The field, termed Scienze Motorie e Sportive (Sport and Exercise Sciences), grapples with fragmented identity, inconsistent curricula, and a research landscape skewed towards biomedicine. These issues threaten its efficacy and international relevance. This paper examines how legislative ambiguities, curricular variability, and biomedical bias impede kinesiology's development in Italy, advocating for reforms to align the discipline with global standards. Globally, kinesiology's strength lies in its interdisciplinary ethos. North American programs, for instance, blend anatomical, physiological, and psychosocial foundations before specialisation (Hoffman, 2014). Such cohesion ensures graduates possess versatile competencies, from clinical rehabilitation to public health promotion. Conversely, Italy's academic framework reveals stark disparities. Degree programs (L-22, LM-67, LM-68) exhibit erratic European Credit Transfer System (ECTS) allocations across core domains—sport/physical activity, biomedicine, and psychopedagogy (D'Isanto et al., 2022). One university might prioritise biomechanics, another sport pedagogy, yielding graduates with uneven skill sets. This variability undermines professional coherence, leaving employers uncertain of competencies and hindering public trust. Compounding this, Italy's research output in Movement, Exercise, and Sport Sciences (MEaSS) disproportionately favours biomedical enquiries—physiological mechanisms, clinical outcomes—over motor control, inclusive exercise design, or sport pedagogy (D'Isanto et al., 2024). While biomedicine attracts funding and infrastructure (Moses et al., 2015), this "biomedical drift" narrows the field's epistemological scope. Critical areas, such as adapting physical activity for marginalised populations or addressing psychological barriers to exercise, remain underexplored. Such neglect limits kinesiology's capacity to address Italy's public health challenges, including rising sedentarism and health inequities. Structural rigidities exacerbate these issues. Italy's academic classification system, which segregates disciplines into distinct sectors (e.g., medical sciences vs. pedagogical sciences), fractures kinesiology's inherently interdisciplinary nature (Gazzetta Ufficiale, 2015). Despite recent consolidations into Scientific-Disciplinary Groups (SDGs), historical fragmentation persists, stifling collaboration and innovation. Consequently, Italian researchers struggle to compete for international grants or engage fully in global dialogues (Cruickshank et al., 2020). These challenges converge into a pressing question: How can Italy reconcile legislative, curricular, and research disparities to forge a kinesiology paradigm that is both nationally coherent and globally competitive? This paper argues that addressing these issues demands a tripartite strategy: standardising curricula to ensure balanced ECTS distribution, broadening research priorities beyond biomedicine, and realigning institutional structures with international frameworks. By doing so, Italy can elevate kinesiology's role in public health, athletic excellence, and social equity. The following sections contextualise these challenges through mixed-methods analysis, examining legislative documents, curricula, and research outputs. Comparative insights from the US, Canada, and Australia inform recommendations for curricular harmonisation, interdisciplinary collaboration, and epistemological renewal. Ultimately, this paper seeks to catalyse policy discussions that transcend fragmentation, fostering a kinesiology discipline capable of meeting Italy's evolving societal needs while contributing to global advancements in human movement science.

2. Materials and Methods

This paper employs a mixed-methods approach to examine the interplay between legislative frameworks, curricular structures, and research priorities within the field of kinesiology in Italy. First, a document analysis was conducted, involving the review of legislative

acts pertaining to the kinesiologist profession (e.g., Gazzetta Ufficiale) and curricular documents (e.g., program syllabi) from the Italian universities offering degrees in Sport and Exercise Sciences (L-22, LM-67, LM-68). These documents were examined for inconsistencies in professional standards, variations in ECTS credit distribution across training domains (sport/physical activity, biomedicine, psychopedagogy), and alignment with international educational frameworks. Second, to evaluate research priorities, existing research was synthesized to assess the distribution of research publications across different domains within Movement, Exercise, and Sport Sciences (MEaSS) in Italy. The analysis focused on identifying the extent of biomedical research emphasis relative to other critical areas such as motor control, sport psychology, and inclusive exercise design. These methods facilitate a comprehensive understanding of the challenges and opportunities facing kinesiology in Italy, as well as the reforms needed to align the field with international standards and best practices.

3. Results

The recent decision to officially recognise kinesiologists in Italy through new laws is a big step forward for the field of movement science (Gazzetta Ufficiale, 2021). These new laws mean that only those who've graduated from specific Sport and Exercise Science programs (L-22, LM-67, and LM-68) can actually call themselves kinesiologists, which finally defines what the profession is all about and who's qualified to join its ranks. It is therefore necessary to examine the content of these programs to ensure that graduates acquire the requisite knowledge, competencies, and ethical awareness to perform their professional duties effectively.

One of the biggest concerns that's emerged from recent research is the inconsistent way European Credit Transfer System (ECTS) credits are being handed out across different training areas (like sport/physical activity, biomedicine, and psychology) within these Sport and Exercise Science degrees. The ECTS system is supposed to be a way of standardising academic achievements across Europe, making it easier for students to move around and have their qualifications recognised (European Commission, 2024). So, how these credits are distributed tells you what's being emphasised and what level of knowledge graduates are expected to have.

D'Isanto et al. (2022) did an analysis of how ECTS credits are distributed across these Italian Sport and Exercise Science programs (the L-22, LM-67, and LM-68 ones again), and they found a lot of variability in how credits were allocated to those three key training areas (D'Isanto et al., 2022). And that raises some serious questions: Are all graduates getting a well-rounded education that truly prepares them for the responsibilities of being a kinesiologist? These inconsistencies could leave students unprepared for certain jobs, damage the credibility of the profession as a whole, and ultimately erode public trust.

While the findings of D'Isanto provide a valuable point of departure, it is essential to contextualize this variability through comparison with international standards in kinesiology education. For example, in North America, kinesiology programs tend to build a broad foundation in sciences like anatomy and physiology, in addition to behavioural sciences (psychology, sociology) and movement sciences (biomechanics, motor control). After that, students can specialise in areas like exercise physiology, rehabilitation, or sport psychology (Hoffman, 2014; Liguori & American College of Sports Medicine, 2021). This raises the critical question of whether the allocation of ECTS credits within Italian programs compromises the breadth and depth of training when compared to international benchmarks.

D'Isanto and their colleagues really dug into those degree programs and found that some were all about sport and physical activity, while others were way more focused on the biomedical or psychological side of things. This could mean that graduates are coming out with pretty different skills and knowledge gaps, which could make it tough for them to meet the varied needs of their clients or patients. Think about it: someone who's amazing at biomechanics and exercise physiology might not have the people skills to help a couch potato actually stick to a new exercise routine. This makes you wonder if these programs are really preparing graduates for all the different roles kinesiologists are expected to fill.

In a clinic, kinesiologists need to be rockstars in biomechanics, exercise physiology, and motor control so they can figure out movement problems and design effective rehab programs (Kisner et al., 2017). On the other hand, if you're working in public health, you need to know your stuff when it comes to behaviour science, health promotion, and program evaluation to create and run effective physical activity programs (Kohl et al., 2020). The fact that ECTS credits are all over the place suggests that Italian programs might not be consistently giving graduates all the necessary skills across these areas.

Why is this happening? It could be because each university has its own history and priorities, or that different people just have different ideas about what a kinesiologist is supposed to do. A more thorough examination of Italy's accreditation processes is warranted, particularly in relation to the mechanisms employed to ensure educational quality. Are there clear, consistent, national standards for kinesiology education, and are they being enforced properly? Comparative analysis with systems adopted in other countries—such as the Commission on Accreditation of Allied Health Education Programs (CAAHEP) in the United States—may offer valuable insights for enhancing the effectiveness of quality assurance mechanisms within the national context.

Now, here's another thing to worry about: the kind of research that's coming out of the Movement, Exercise, and Sport Sciences (MEaSS) field in Italy. D'Isanto et al. (2024) found that there's a real overemphasis on the biomedical side, which suggests that research is mostly focused on things like physiological mechanisms and the health outcomes of human movement. That's fine, but it might be coming at the expense of other important areas. This "biomedical drift" raises some serious questions about the balance and scientific identity of kinesiology in Italy.

A truly comprehensive kinesiology program

should bring together ideas from biomechanics, motor control, sport pedagogy, and other related fields (Knudson, 2024). If these areas aren't getting enough attention in Italian research, it could limit the ability to understand all the complex factors that influence human movement and physical activity. The fact that biomedical research seems to be dominating also raises some fundamental questions about the philosophy behind MEaSS in Italy. A well-defined epistemological framework is essential for directing research, shaping the education of future professionals, and demonstrating the unique contributions of the field to the broader scientific community. Excessive concentration of research in a single area can hinder the development of a comprehensive understanding of the subject, potentially resulting in a distorted perspective of the field as a whole.

The over-representation of biomedical research within MEaSS in Italy may be attributed to several factors, including funding priorities, research infrastructure, and prevailing academic culture. Biomedical research often attracts substantial funding from government agencies and private organisations due to its perceived significance for public health and disease prevention (Moses et al., 2015). Moreover, researchers in this domain typically have access to specialised equipment, laboratories, and clinical populations, resources that may be less readily available to scholars in other areas of MEaSS. Consequently, academic institutions may prioritise biomedical research, leading to a disproportionate concentration of scientific output in this field.

The dominance of biomedical research within MEaSS in Italy may also be reinforced by the structure and organisation of the national academic system. The current framework, which categorises knowledge into distinct academic scientific disciplines (Gazzetta Ufficiale, 2000, 2015), may not fully accommodate or support the inherently interdisciplinary nature of kinesiology. This structural rigidity potentially hinders collaboration across disciplines and limits the pursuit of research questions that transcend traditional academic boundaries.

An ongoing challenge concerns the classification and recognition of scientific disciplines within the Italian academic system. The academic field of Physical Exercise and Sport Sciences (PESS) has long struggled to establish a unified identity within the national framework for organising scientific knowledge (Raiola et al., 2025). This framework, established by the Italian National University Council (CUN), organises academic disciplines into scientific areas, academic recruitment fields (ARFs), and academic disciplines (ADs) across 14 distinct sectors. The formal recognition of PESS as an independent discipline dates back to 2000 (Gazzetta Ufficiale, 2000), when two Ads — "Methods and Teaching of Motor Activities" (M-EDF/01) and "Methods and Teaching of Sports Activities" (M-EDF/02)— were introduced following the provisions of Legislative Decree No. 178 of 8 May 1998 (Gazzetta Ufficiale, 1998).

A subsequent reorganisation took place with Ministerial Decree (DM) No. 336 of 29 July 2011 (Gazzetta Ufficiale, 2011), which consolidated the existing ADs into nine ARFs. This classification was further refined by DM No. 885 of 30 October 2015 (Gazzetta Ufficiale, 2015), which reduced the structure to two ARFs. Following deliberations on 5 July 2017, the CUN recommended that the Ministry of University and Research (MUR) reposition the two ADs of PESS within Area 6 (Medical Sciences) to better align with the restructured framework (CUN, 2017). However, the MUR's subsequent allocation placed scholars across two separate CUN areas —Area 6 (Medical Sciences) and Area 11 (Historical, Philosophical, Pedagogical, and Psychological Sciences)— as recorded in the CINECA database. This decision fragmented the discipline, even though the M-EDF codes remained unchanged. The fragmentation of PESS began in earnest with the 2011 restructuring, which initially established nine ARFs before being narrowed in 2015 to two distinct fields: Physical Training and Sports Sciences (code 06/N2) and Methodologies of Teaching, Special Education, and Educational Research (code 11/D2). In its general opinion No. 22 of 7 May 2018, the CUN observed that successive regulatory modifications had led to inconsistent interpretations of disciplinary classifications, originally designed for different purposes (CUN, 2018). Acknowledging these challenges, the CUN has consistently advocated for a reorganisation of scientific knowledge within ADs, arguing that prior frameworks overemphasised quantitative evaluation metrics at the expense of fostering interdisciplinary, culturally informed, and scientifically coherent academic relationships. In response —and in accordance with Law No. 79 of 30 June 2022 (Gazzetta Ufficiale, 2022)— the CUN proposed the formation of Scientific-Disciplinary Groups (SDGs) and a revision of ADs during its session on 22 March 2023 (CUN, 2023). Further refinements in subsequent sessions (26 July 2023 and 20 December 2023) culminated in the establishment of a unified SDG for PESS. This reorganisation aims not only to address the discipline's internal fragmentation but also to integrate its academic focus on education, health, sport, and well-being into an internationally competitive framework. This restructuring aligns with European Union directives under the National Recovery and Resilience Plan, ensuring that Italy's classification of teaching and research adheres to global standards. By consolidating core research domains within the newly established SDGs, the MUR seeks to harmonise aspects of teaching, research, and academic recruitment that were previously distributed across multiple ADs and ARFs.

To bridge the gap between teaching and research and to support the recruitment of university professors, the CUN -during its session on 28 September 2016- identified 2,600 keywords aligned with international research domain standards (CUN, 2016). These were categorised into fixed keywords, which are uniformly applicable within specific academic disciplines (ADs), and mobile keywords, which reflect individual thematic research interests. With the issuance of DM No. 639 on 2 May 2024 (Gazzetta Ufficiale, 2024), the two ADs of PESS were consolidated into a single Scientific-Disciplinary Group (SDG) within Area 6 (Medical Sciences), designated as "Physical Exercise and Sport Sciences" (code 06/MEDF-01), with the ADs now classified as MEDF-01/A and MEDF-01/B.

The overemphasis on the biomedical domain remains a significant concern, as it may detract from essential research on the core principles of kinesiology.

Key areas such as pedagogy (focused on the most effective methods for teaching movement skills and promoting physical activity adoption), biomechanics (which analyses movement patterns to optimise performance and prevent injury), motor control (which investigates the neural mechanisms underlying movement coordination and skill acquisition) (Knudson, 2023; Schmidt & Lee, 2011), and sport psychology must not be neglected. Without appropriate psychological support and techniques, athletes may face challenges such as depression, stress, and performance-related issues (Gould & Hodge, 1996). Moreover, the absence of expertise in these areas could undermine the overall well-being of those under the care of kinesiologists. While the above research areas are crucial, there are also simpler but equally important issues that must be addressed. Because there's no real standard way of doing research in kinesiology, it can be tough to make consistent progress as a field. To fix this, it's necessary to put some money into research in those neglected areas like motor control, biomechanics, and sport pedagogy. It would also be great if universities started setting up research centers that bring together experts from all sorts of different fields to tackle those tricky problems related to human movement and physical activity. Such centers have the potential to serve as hubs of innovation, fostering a more comprehensive and integrated approach to kinesiology research within the Italian context. By getting people from different backgrounds to work together, these centers could really help to understand the many layers of human movement, which would ultimately improve both the scientific knowledge and the practical applications of kinesiology.

While all the analyses give some good ideas about the challenges facing kinesiology in Italy, it's important to remember that these studies have their limitations too. For example, D'Elia and Raiola (2019) pointed out that physical education programs in schools are all over the place in terms of consistency. But their study didn't really have a clear way of doing things. Moreover, the domain of kinesiology within school settings remains underexplored, and there is a notable lack of robust empirical research evaluating the effectiveness of physical education programs. D'Isanto et al. (2022) did a look at how those European Credit Transfer System (ECTS) credits are handed out, but they mostly focused on the numbers (how many credits each area was getting). That's helpful, but it doesn't tell much about what's actually being taught in each course or what skills and knowledge graduates are really walking away with. ECTS credits are a good way to get a sense of what a program emphasises, but they don't give the whole story about the quality or depth of the teaching. Going forward, it would be great if researchers used more qualitative methods, like interviewing teachers and students, to get a better sense of what the learning experience is really like and what skills are actually being developed during these programs. An analysis of course materials would also be instrumental in assessing the extent to which curricular content aligns with the practical competencies required in professional practice. Similarly, D'Isanto et al. (2024) gave some valuable insights into what's being prioritised in MEaSS research in Italy, but they only looked at the most cited works by full professors. That means they might be missing out on the contributions of researchers who are just starting out or whose work hasn't had a chance to get widely cited yet. Relying on tools such as Google Scholar can be problematic, as these platforms may not provide a comprehensive overview of the academic literature (Baccini et al., 2019). A better approach would be to use more scientific databases and metrics that offer a more complete and objective assessment of scholarly work. The categorization of research papers into domains such as biomedical, pedagogical, psychological, and sports is inherently subjective. This could introduce some bias into the analysis and might not fully capture the fact that kinesiology research is often interdisciplinary. To make future studies more reliable, it would be good to use more rigorous, data-driven methods for sorting publications. Techniques such as content analysis or machine learning could mitigate subjectivity and enhance the accuracy and consistency of classification processes (Neuendorf, 2016).

In a similar context, D'Isanto et al.'s (2023) study has some limitations as well. They note that it is possible that some items may not be attributable, which could lead to scientific issues. As they observed, the study was restricted to the Sports and Physical domain, meaning more robust scientific methods are needed. They suggest that incorporating techniques such as keyword searches for articles would strengthen the scientific approach.

Considering these limitations, it becomes increasingly important to contextualise the findings of these studies within the broader landscape of kinesiology education, research, and practice, both in Italy and internationally. Examining the evolution and current state of kinesiology in other countries can provide valuable insights into best practices for curriculum design, research prioritisation, and professional development. For example, countries with well-established kinesiology programmes, such as the United States, Canada, and Australia, may offer valuable lessons regarding the integration of different disciplines, the development of practical skills, and the alignment of academic training with professional standards (Earle & Baechle, 2004; Hoffman, 2014; Bruce et al., 2022; Knudson & Brusseau, 2021).

Despite these limitations and challenges, the field could move forward. As stated by D'Elia et al. (2018), with the proper core curriculum and adherence to the correct guidelines, Italy's scientific side can grow. Drawing upon such work could be beneficial. To achieve this, a deeper understanding and a broader range of published works should be integrated into the process. Ultimately, there must be a shift in how the sector operates to achieve greater success (Edwards & Roy, 2017). In this way, a comparison can be made to assess the potential direction forward. However, the limitations currently present hinder the data and must be addressed in the process of development. The absence of relationships between various forms of study across different educational domains may catalyse change (Ioannidis et al., 2015). A thorough analysis will be key.

4. Discussion

The preceding literature review outlines a complex picture of Italian kinesiology, highlighting progress alongside persistent challenges that limit the field's full potential. Despite legislative reforms, increased public awareness, and burgeoning research, inconsistencies in curricular structures, a bias towards biomedical research, and misalignment with international standards require careful attention and proactive measures. At the heart of these challenges is the question of kinesiology's scientific identity and epistemological coherence in Italy. As a multidisciplinary field, kinesiology must integrate diverse perspectives into a unified framework for understanding human movement. The biomedical drift observed in Italian MEaSS research indicates an over-reliance on a reductionist, biologically orientated perspective that neglects broader social, behavioural, and contextual factors affecting physical activity and well-being. This bias has practical implications; inconsistencies in ECTS credit allocation may leave graduates insufficiently proficient in key areas such as biomechanics, motor control, sport psychology, and exercise prescription for specific populations (D'Isanto et al., 2022). Without a solid grasp of these core principles, graduates may be ill-equipped to design and implement effective interventions. An emphasis must therefore be placed on strengthening these non-technical areas in both professional practice and academic settings. Moreover, an overemphasis on biomedicine risks insufficient ethical consideration, potentially undermining research validity and applicability. This persistence may be explained by the historical dominance of medical faculties in Italian universities, which has influenced research priorities and funding allocations, leaving Italy struggling to establish a distinct kinesiology identity and research agenda.

This divergence between an academic focus on biomedical dimensions and the practical demands of kinesiologists exacerbates professional fragmentation. When scholarly work predominantly addresses biomedical aspects, practitioners may feel that their specific concerns and specialised expertise are devalued. Such a disconnect can erode professional morale, limit career opportunities, and ultimately undermine the capacity to advocate effectively for public health and individual well-being.

Addressing these challenges requires a more inclusive, interdisciplinary approach to kinesiology research in Italy. This involves fostering collaborations across disciplines, rigorously investigating salient questions that transcend conventional boundaries, and translating fundamental findings into practical applications that benefit both kinesiologists and their diverse clientele. One viable mechanism is the deliberate establishment of collaborative research centres or networked consortia that unite recognised experts from fields such as biomechanics, motor control, sport psychology, exercise physiology, public health administration, and educational theory.

Such centres could serve as hubs for interdisciplinary research, advanced professional training, and targeted community outreach, thereby fostering a holistic approach to understanding human movement across the lifespan. Improved organisational structures might also help alleviate persistent funding constraints. Moreover, a meticulous re evaluation of existing degree programmes is critical to ensure that graduates are adequately prepared for the profession's diverse demands. This re evaluation should involve a thorough review of curricula, with particular attention to the strategic allocation of ECTS credits, the integration of diverse disciplinary insights, and the deliberate development of practical skills and competencies. Comparative analysis of programmes in countries such as the United States, Canada, and Australia could yield valuable insights into the effective integration of diverse disciplines and the alignment of academic training with essential professional skills (Earle & Baechle, 2004; Hoffman, 2014; Bruce et al., 2022; Knudson & Brusseau, 2021).

However, indiscriminate adoption of international models without appropriate contextualisation within Italy's unique healthcare and educational infrastructures may prove counterproductive. A nuanced approach is warranted—one that adapts globally recognised best practices to Italy's specific and idiosyncratic needs.

It is essential that all kinesiology programmes provide a rigorous grounding in the discipline's foundational tenets. This requires comprehensive coverage of essential subjects including human anatomy, physiology, biomechanics, motor control, the psychological dimensions of sport, and exercise physiology. Such foundational knowledge is crucial not only for understanding the complexities of human movement but also for designing interventions that promote sustained physical activity, reduce injury incidence, and optimise overall performance.

In addition to a strong theoretical foundation, programmes must prioritise the development of practical skills and competencies essential for effective and ethical practice. This includes competency-based training in exercise prescription, assessment techniques, evidence-based behaviour change, interpersonal communication, and ethical considerations. Students should be given ample opportunities to apply their skills in real-world settings—through internships, supervised practicums, and community-based projects—to gain practical experience and build robust professional networks (Kohl et al., 2020). Programmes should also actively cultivate an interdisciplinary mindset by encouraging collaboration with professionals from conventional medicine, rehabilitative therapies, public health, and educational theory to address complex health challenges. Integrating core concepts from diverse disciplines into the curriculum and providing opportunities for interprofessional collaboration through team-based projects and case studies can help clarify pressing issues, address structural deficiencies, and establish a robust scientific basis for learning.

Italian universities might consider adopting a competency-based curriculum framework with clearly articulated learning outcomes and rigorous assessment of defined skills. Such an approach would enhance curricular flexibility and ensure that graduates are well-prepared to meet the multifaceted demands of the profession. Although there is currently no evidence of widespread unethical conduct, ethical considerations remain important and merit ongoing

attention in both research and programme discussions, given the potential risks (Edwards & Roy, 2017). Enhanced dialogue and understanding regarding ethical practices in kinesiological investigations can help mitigate these latent issues.

It is also crucial to align Italian kinesiology with prevailing international standards. As a global discipline, kinesiology benefits from the exchange of knowledge, best practices, and professional standards across national boundaries. By aligning academic structures, research priorities, and certification requirements with those of esteemed international counterparts, Italy can enhance the credibility and recognition of its kinesiology programmes and professionals.

Improving international alignment further requires adopting a more inclusive definition of kinesiology—one that embraces the full spectrum of scholarly inquiry and professional practice. This means moving beyond a narrowly biological focus to incorporate social, behavioural, cultural, and environmental factors (Kohl et al., 2020). Robust, transparent discussions among Italy's key academic sectors are needed to clarify the scientific foundations of the field. Nevertheless, given Italy's unique cultural and historical context, international models must be adapted rather than adopted wholesale. A tailored, nuanced approach is therefore clearly warranted.

Promoting collaboration between Italian and international researchers, practitioners, and organisations is also essential. Joint research projects, international conferences, and student exchange programmes can enable Italian kinesiologists to learn from their global counterparts and contribute to international initiatives, thereby enhancing the field's impact.

Efforts should further be made to harmonise certification and licensure requirements with international standards. By working with global professional organisations to develop mutually recognised criteria for competency, ethical conduct, and continuing education, Italian kinesiologists will be better positioned to practice with credibility and recognition both domestically and abroad—even if such reforms take time.

Sport, a major aspect of Italian culture, offers additional valuable insights for kinesiologists. A better understanding of, and adherence to, effective local standards in sport can further inform and enrich the field.

These recommendations offer a multifaceted approach to addressing the challenges and opportunities in Italian kinesiology. By fostering a coherent epistemological framework, strengthening curricular design, promoting interdisciplinary research, and aligning with international standards, the field can enhance its relevance and impact in promoting health, well-being, and athletic performance (Ioannidis et al., 2015).

Adopting these suggestions and strengthening the field with clear guidelines and scientific direction will help the profession exceed expectations. Significant progress was noted in 2022 (D'Isanto et al., 2022), providing the momentum for further improvements, and continued refinement of Italy's guidelines will drive ongoing progress (Raiola et al., 2018).

Implementing these recommendations will require a concerted effort from universities, professional organisations, government agencies, and individual kinesiologists. A clear, shared vision for the future of Italian kinesiology—one that recognises the field's unique strengths, opportunities, and challenges—is essential to ensure that reform efforts are cohesive and effective.

5. Conclusions

The Italian kinesiology sector faces a critical juncture, presenting both significant opportunities and persistent challenges that require strategic and immediate intervention. As discussed, the discipline navigates a complex terrain shaped by legislative changes, a fragmented curriculum, a bias towards biomedical research, and divergence from recognised international benchmarks. While formal acknowledgement of the kinesiologist profession and growing societal awareness of physical activity are substantive strides, unresolved issues in epistemological coherence, curricular structure, research priorities, and global harmonisation risk undermining progress. Excessive reliance on biomedical research, curricular inconsistencies, and limited interdisciplinary collaboration contribute to fragmentation and uncertainty, impeding the profession's capacity to serve the Italian public and contribute to global advancements in human movement science. Deviations from international standards hinder professional credibility, recognition, and mobility. To flourish, the profession must adapt to an ever-changing world (Ioannidis et al., 2015) by embracing new perspectives that foster sustainable growth. Key stakeholders—including academic institutions, professional organisations, governmental agencies, and individual researchers—must unite to forge a forward-thinking vision and develop actionable strategies. This requires open dialogue, a willingness to embrace transformational change, and a steadfast commitment to collaboration. Central to this process is the development of a coherent, integrated epistemological framework that transcends a narrowly biological perspective to embrace a holistic understanding of human movement, incorporating social, behavioural, cultural, and environmental determinants. Scholarly investigations should be guided by this framework, recognising the interconnectedness of multiple causative factors. Greater emphasis should be placed on promoting interdisciplinary research initiatives and forming partnerships that unite experts across relevant fields. Concurrently, the curricular design of kinesiology degree programs must be strengthened to ensure that graduates acquire both a comprehensive foundation in core principles and the practical skills necessary for effective professional practice. Finally, it is worthwhile to solicit counsel from recognised global experts (Cruickshank et al., 2020) and to enhance the professional development opportunities available to practicing kinesiologists throughout Italy. Focusing on practical skills will enable the sector to fulfil its objectives more effectively (D'Isanto et al., 2024). With improved structural support, students may achieve unprecedented success,

and enhanced mentoring, dedicated learning opportunities, and a commitment to continuous improvement will contribute to a thriving field. This analysis is limited by its reliance on existing literature—which focuses mainly on degree course structures, scientific outputs, and evaluations of professional frameworks in Italy—and may not capture the nuanced experiences of individual kinesiologists and students, nor entirely avoid selection bias. Future enquiries should explore the lived experiences of practicing kinesiologists in Italy, examining their perspectives on the challenges and opportunities they face. Qualitative studies, including interviews and focus groups, could provide valuable insights into factors influencing career satisfaction, professional identity, and service capacity. Comparative studies may also rigorously assess the effectiveness of different models of kinesiology education and research across national contexts, thereby identifying 'best practices' adaptable to Italy. The strategic system employed by the European Research Council (ERC) illustrates prevailing metrics for evaluating scientific endeavours (Reale & Zinilli, 2017). This multi-faceted system, reflected in discrete, well-defined areas with historical and philosophical dimensions, underscores the need to evaluate available data streams and identify pertinent data for diverse applications—from targeted exercise interventions to advanced motorsports. Such a strategic orientation is based on the proposition that a rigorous review of Italy's contributions can empower researchers to better achieve their scholarly goals (Raiola et al., 2025). In summary, the deployment of strategic "keywords" and the incorporation of novel perspectives absent from current research may foster transformational change. In conclusion, by proactively addressing these challenges and embracing a collaborative, interdisciplinary, and internationally aligned approach, Italian kinesiology can unlock its potential to promote public health, individual well-being, and athletic excellence. Success will depend on sustained, concerted efforts from all key stakeholders to ensure that the field thrives and contributes to the global advancement of human movement science.

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