Mapping the global landscape of mental toughness research: Trends, contributions, and key themes (2014-2024)

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Abstract

This study aims to analyze trends, contributions, and key themes in mental toughness research using a bibliometric approach. Data were retrieved from Scopus with the search query TITLE-ABS-KEY ("mental toughness" AND (athlete OR sport)) for the period 2014-2024, focusing on English-language journal articles. A total of 311 documents were analyzed using Bibliometrix R-Package, Biblioshiny, and VOSviewer software to map collaboration networks, geographical distribution, and dominant research themes. The main findings of this study show that developed countries, particularly the United Kingdom, the United States, and Australia, contribute the majority of global publications. Meanwhile, Asian countries such as China, Malaysia, and Indonesia demonstrate significant growth and considerable potential in this region. Thematically, mental toughness remains the core theme of the research, with key subthemes such as motivation, resilience, and athletic performance being highly dominant. Publication trends show significant growth, with the number of documents increasing from 2014 to 2024. These findings provide important insights into the global dynamics of mental toughness research and emphasize the importance of integrating quantitative and qualitative approaches. This study opens opportunities for further development in the fields of sports psychology, education, and mental toughness.

Keywords: Mental toughness, collaboration networks, geographical distribution, dominant research themes.

INTRODUCTION

Mental toughness is a crucial psychological aspect in sports, serving as a key factor in helping athletes maintain optimal performance under competitive pressure. Athletes with a high level of mental toughness are better able to overcome challenges, manage stress, and maintain performance consistency during training and competitions (Akoğlu, Cengiz, Hazar, Erdeveciler, & Balcı, 2024; Guszkowska & WÓJCIK, 2021). Studies indicate that psychological interventions such as visualization, mindfulness,

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and relaxation training can enhance mental toughness and have a positive impact on athletes' resilience and self-confidence in various competitive situations (Singh et al., 2022; Wu et al., 2021).

In recent years, competition in the sports industry has become increasingly intense, both at the professional and academic levels, leading to a growing academic interest in the concept of mental toughness. Research in this field has experienced rapid growth and has begun to be applied across multiple disciplines. Recent studies indicate a shift in research focus from merely understanding the basic concept of mental toughness to its practical applications, including burnout prevention, psychological well-being enhancement, and coping strategies for dealing with competitive pressure (Putra et al., 2024; Thiessen, Blacker, & Sullivan, 2024).

However, despite the increasing number of studies related to mental toughness, several research gaps remain unaddressed. One of the primary challenges is the lack of a systematic mapping of publication trends and global scientific collaboration patterns. Research in this field is spread across various disciplines and employs diverse methodologies, resulting in a lack of integration between theoretical frameworks and practical applications, which could serve as a primary reference (Putri et al., 2024). Furthermore, few studies have explicitly explored academic contributions through bibliometric analysis, making it difficult for researchers and practitioners to gain a clear understanding of the development of this topic at a global level (Perdana, Suryana, Mulyadi, Miftahuddin, & Sandjaya, 2023).

Based on the identified research gaps, this study is designed to address ten key research questions that encompass publication trends, institutional and author contributions, as well as conceptual analyses in the field of mental toughness research. The study seeks to investigate which countries have made the highest contributions to mental toughness research and how the geographical distribution of these publications has evolved over time. It also examines which academic institutions have

produced the highest number of publications and analyzes their contribution patterns in advancing this field. Furthermore, this research aims to identify the most prolific authors in mental toughness studies and assess their roles in shaping both theoretical and practical aspects of the discipline. An exploration of the primary academic journals that serve as platforms for mental toughness research is also conducted, along with an analysis of the academic disciplines where such research is most frequently published, particularly in sports psychology. In addition, the study reviews the publication growth trends from 2014 to 2024 and investigates the collaboration patterns among researchers, highlighting key actors within the global research network. Conceptual relationships are also analyzed to understand how mental toughness is connected to frequently used research terms and how these concepts establish the foundational pillars of the field. The distribution of mental toughness research themes is categorized into four main classifications: Motor Themes, Basic Themes, Niche Themes, and Emerging Themes. Lastly, the study explores the interconnection of key concepts in mental toughness research through a Multidimensional Scaling (MDS) analysis.

This study contributes significantly to mental toughness research by applying a bibliometric approach, which has not been widely utilized in previous studies. Additionally, this study can serve as a reference for future research, identifying existing research gaps and potential directions for further scientific development, including exploring the relationship between mental toughness and other psychosocial variables and developing adaptive training-based interventions. Furthermore, this study will employ bibliometric analysis to map trends in scientific collaboration between institutions and countries, which play a crucial role in advancing global research on mental toughness. The findings are expected to enrich academic literature and become a primary reference for future research and policy development at the global level, leading to more effective interventions and strategies in sports psychology.

Mental toughness is vital across disciplines such as sports psychology, education, and mental health. It significantly influences athletes' success by enabling sustained optimal performance under competitive pressure (Graham et al., 2021; Gu, Bi, Guan, Fang, & Jiang, 2022). Individuals with high mental toughness manage stress and emotions effectively, supporting their psychological well-being (Akoğlu et al., 2024; Bird, Simons, & Jackman, 2021; Dagnall, Drinkwater, Denovan, & Walsh, 2021) and enhancing resilience to face challenges (Singh et al., 2022). Research on mental toughness has grown substantially over the past decade, predominantly led by developed countries such as the United Kingdom, the United States, and Australia, which contribute to more than half of global publications (Gu & Xue, 2022; Ismail, Abd Karim, Rozali, & Ramalu, 2022). Meanwhile, Asian countries such as China, Malaysia, and Indonesia have begun to make meaningful contributions, accounting for 21% of total publications and highlighting growing potential through international collaborations (Akoğlu et al., 2024; Singh et al., 2022). Previous studies have examined the role of mental toughness in athletic performance, resilience, and psychological well-being and have proposed intervention strategies such as mindfulness training and breathing techniques (Dagnall et al., 2021; Wu et al., 2021). However, many of these studies are limited to specific populations and often lack cross-cultural validation, restricting the generalizability of their findings (Caruzzo, Vissoci, Contreira, Caruzzo, & Fiorese, 2021; Mojtahedi et al., 2023).

The novelty of this study lies in its bibliometric approach to analyzing publication trends, geographical distribution, collaboration patterns, and key thematic developments in mental toughness research (Tangkudung et al., 2022; Vella-Fondacaro & Romano-Smith, 2023). This study aims to systematically map the research landscape of mental toughness, identify current trends, strengthen international collaboration, and support the development of culturally relevant, evidence-based intervention strategies to enhance psychological well-being and individual performance across diverse competitive contexts.

METHOD

This study employed a quantitative approach based on bibliometric analysis to explore trends, contributions, and thematic patterns in research related to mental toughness. Data were retrieved from the Scopus database and analyzed using Bibliometrix R-package and VOSviewer software, enabling network visualization, collaboration analysis, and identification of research themes (Al Ardha et al., 2024; Ismail et al., 2024). Scopus is recognized as one of the most authoritative and extensive academic databases, offering a comprehensive collection of scholarly articles, journals, and conference papers vital for rigorous research. Its importance lies in its superior coverage, as it accounts for approximately 20% more journals compared to other databases, such as Web of Science (WoS), providing broader access to literature across multiple disciplines (Pradhan, Saxena, & Haider, 2024; Tarazi, 2024).

Data sources and data collection procedures

Data collection in this study was conducted systematically to ensure the quality and relevance of the analyzed documents. Data were retrieved from the Scopus database using the keyword TITLE-ABS-KEY ("mental toughness" AND (athlete OR sport)), yielding an initial set of 503 documents. Screening was performed based on the following criteria: publication period (2014-2024), document type (journal articles), English language, and final publication status. After screening, 311 relevant documents were selected for analysis. The dataset was extracted in CSV format and cleaned using OpenRefine to remove duplicates, correct metadata, and filter out information not meeting the criteria. This process ensured data accuracy and consistency, supporting the validity of the analysis (Caputo & Kargina, 2022; Gazali et al., 2023).

Table 1. Document screening process

Stage	Criteria	Total Documents Filtered
Initial Search	Search strategy: TITLE-ABS-KEY ("mental toughness" AND (athlete OR sport))	503
Filter 1	Journal articles (article, 'ar')	450
Filter 2	Final publication status (final publication stage)	420
Filter 3	Sources from academic journals (journal, 'j')	400
Filter 4	English language documents	311
Total Dokumen	Articles that meet all criteria	311

Table 2. Inclusion and exclusion criteria

Category	Criteria
Inclusion	- Final and complete journal articles (not early access or preprint)
	- English language
	- Discusses topics related to mental toughness, athletes, or sports
	- Published in journals indexed in Scopus
	- Has complete metadata (title, abstract, keywords, citations, affiliation)
exclusion	- Articles from non-academic sources (e.g., conferences, books, editorials, or industry reports)
	- Published in early access or without a final version
	- Not relevant to the topic of mental toughness or athletes in sports
	- Incomplete metadata, inaccessible, or duplicates

The processed dataset was analyzed using Bibliometrix R-package, Biblioshiny, and VOSviewer software. These tools enabled the exploration of annual publication trends, author collaboration networks, thematic distributions, and dominant keywords. The analysis results were visualized through thematic network maps, conceptual structures, and geographical contribution analyses, providing a comprehensive insight into the dynamics of mental toughness research (Dagnall et al., 2021; Gu, Han, Chen, & Zhang, 2023).

This systematic approach ensures that the research outcomes align with the objectives: mapping global trends, geographical contribution patterns, and key themes in mental toughness literature. The analysis provides significant contributions to the advancement of scientific literature and the practical applications of mental toughness in sports, education, and mental health (Grobler, du Plooy, Kruger, & Ellis, 2022; Vella-Fondacaro & Romano-Smith, 2023). The findings of this study are presented through a structured visual approach, combining statistical analysis, network visualization, and conceptual mapping to illustrate contributions, trends, and thematic structures in mental resilience research. Various graphs, diagrams, and concept maps illustrate the evolution of research and identify key contributors, research directions, and emerging areas of interest. This

study presents the countries, institutions, and authors with the highest publication contributions and the distribution of publications by journal and field of study. Annual publication growth trends from 2014 to 2024 are also analyzed. Additionally, collaboration networks among researchers, relationships between key concepts, and thematic mapping into four main categories, Motor Themes, Core Themes, Niche Themes, and Emerging Themes are presented. The interconnections between key concepts are visualized through Multidimensional Scaling (MDS) analysis, underscoring the importance of integrating quantitative and qualitative approaches to enrich the holistic understanding of mental resilience.

RESULT

Table 3. Summary of key statistical data on mental toughness research for the period 2014-2024

Description	Results
Main information about the data	
Timespan	2014:2024
Sources (Journals, Books, etc)	129
Documents	311
Annual Growth Rate %	13,55
Document Average Age	4,94
Average citations per doc	14,37
References	13645
Document contents	
Keywords Plus (ID)	621
Author's Keywords (DE)	797
Authors	
Authors	246
Authors of single-authored docs	246
Authors collaboration	
Single-authored docs	312
Co-Authors per Doc	1
International co-authorships %	31,41
Document types	
Article	311

The table shows the 2014–2024 mental toughness study findings. The data shows that 311 documents were analyzed, with an annual growth rate of 13.55 per cent, indicating a substantial increase in mental toughness publications. These publications have significantly impacted their field, with 14.37 citations per document. This research is global, as 31.41% of international collaboration shows extensive cooperation among academics from different nations.
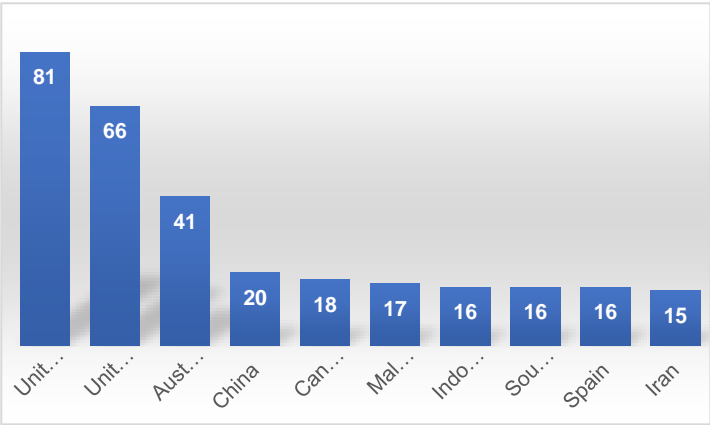
Figure 1. Top ten documents author's countries or territory

This data shows the contribution of various countries to scholarly publications recorded in Scopus. The United Kingdom leads with 81 documents, followed by the United States with 66 documents and Australia with 41 documents, reflecting the dominance of these countries in global research. China follows with 20 documents, while other countries such as Canada (18 documents), Malaysia (17 documents), Indonesia, South Africa, Spain (each with 16 documents), and Iran (15 documents) have smaller publication counts but still show significant involvement in scientific research. Overall, this data illustrates the important role of various countries in the field of scientific research.
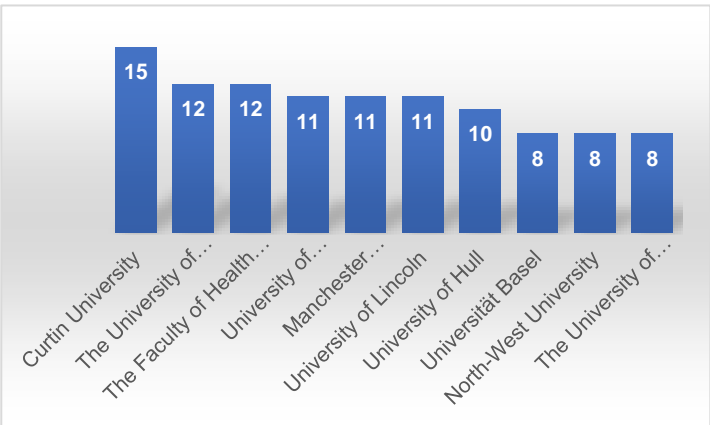

Figure 2. Documents by affiliation of various academic institutions related to mental toughness research

This table shows the number of documents published based on the affiliation of various academic institutions involved in mental toughness research. Curtin University is the institution with the highest number of publications, contributing 15 documents. It is followed by The University of

Queensland and The Faculty of Health Sciences, each with 12 documents. Other institutions, such as the University of KwaZulu-Natal, Manchester Metropolitan University, University of Lincoln, and University of Hull, have relatively similar publication numbers, ranging between 8 and 11 documents. Meanwhile, Universität Basel, North-West University, and The University of Western Australia each contributed 8 publications, indicating a lower contribution to this research.
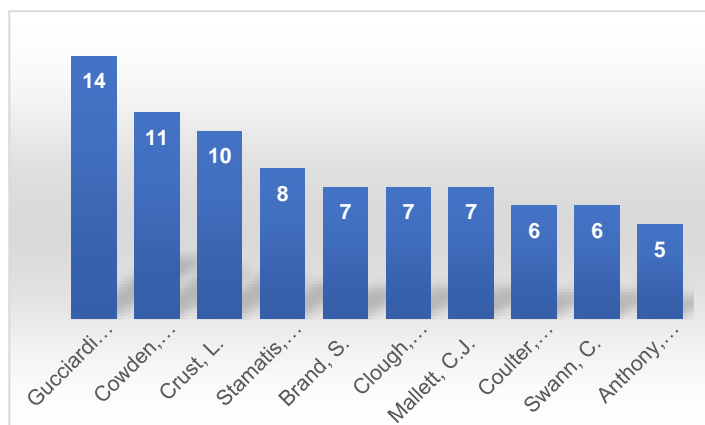

Figure 3. Top ten dokumen by authors

The chart presents the number of documents published by various authors in the field based on data from the Scopus database. Gucciardi, D.F. stands out as the leading contributor, with 14 publications showcasing a dominant role and significant impact in research. Cowden, R.G. follows closely with 11 publications, reflecting a strong involvement in the field. Crust, L. ranks third, having published 10 documents, demonstrating a substantial contribution. Stamatis, A. comes next with 8 publications, while Brand, S., Clough, P.J., and Mallett, C.J. each have 7 publications, indicating a consistent but slightly smaller contribution. Coulter, T.J. and Swann, C. have 6 publications each, while Anthony, D.R. has the fewest, with 5 publications.
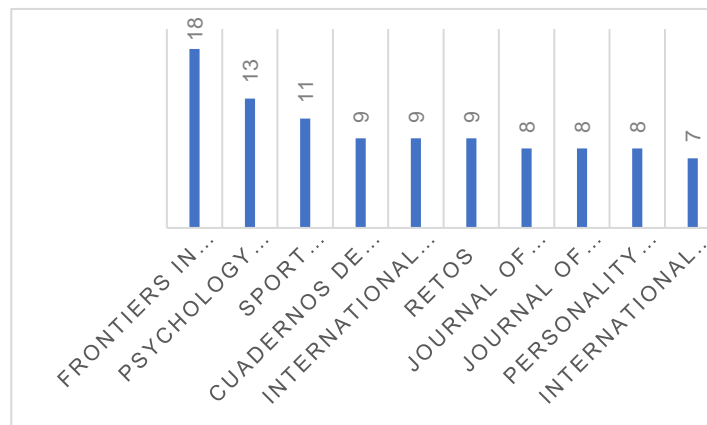
Figure 4. Graph of scientific publication distribution by academic journals

The chart illustrates the number of documents published by various academic institutions based on affiliation, as sourced from the Scopus database. Curtin University leads with the most publications, totalling 15 documents, significantly surpassing other institutions in the chart. The University of Queensland and The Faculty of Health Sciences follow closely, with 12 publications highlighting their strong contribution to mental toughness research. Other institutions, such as the University of KwaZulu-Natal, Manchester Metropolitan University, University of Lincoln, and University of Hull, have published between 10 and 11 documents, showing a notable but slightly smaller involvement in the research.
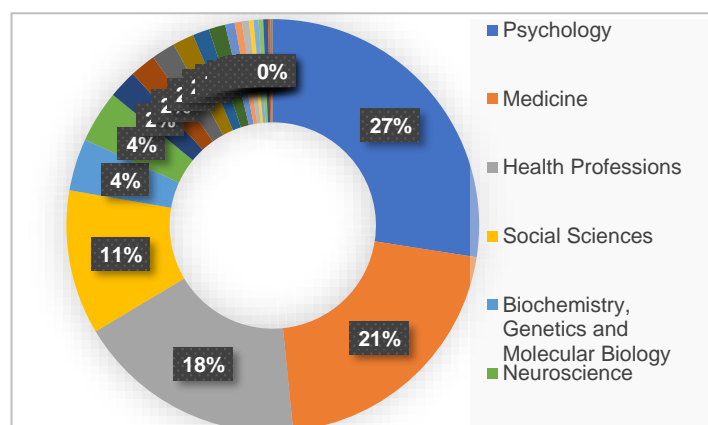

Figure 5. Dokumen by subject area

According to the data, the pie chart shows the distribution of documents by field of study. Psychology leads with 27.5% of total articles, reflecting the dominance of research in this field. Medicine follows with

20.9%, indicating a large research base. 17.9% of documents come from health professions, highlighting the importance of research in the health field. Social sciences contribute 11.5%, showing significant interest in this broad field. Biochemistry, Genetics, Molecular Biology, and Neurology each contribute 4.1%, indicating a specialized yet important contribution. Smaller but still important research topics include Agricultural and Biological Sciences (2.2%), Environmental Sciences (2.0%), and Business, Management, and Accounting (1.8%). Energy (0.8%), Economics, Econometrics, and Finance (0.7%), and others make up the remainder. Arts and Humanities contribute 1.7%. The "Other" category, at 6.3%, includes small, unspecified subjects. The graph shows that psychology, medicine, and health professions dominate research, but many other specialized and smaller sectors also exist.
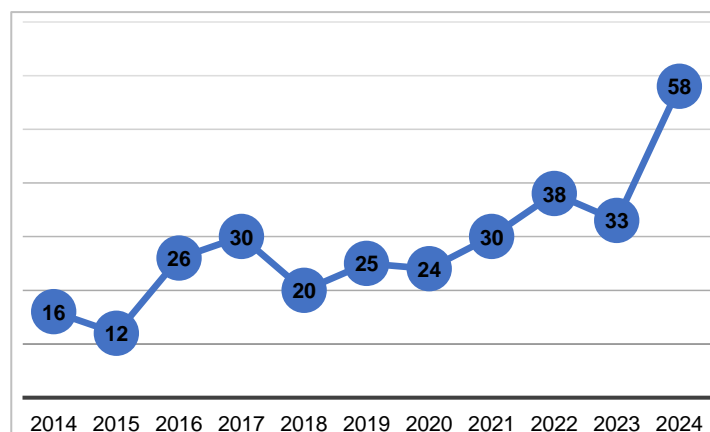

Figure 6. Trend graph of the annual increase in the number of documents

The chart visually illustrates the number of documents published over the years, as sourced from the Scopus database. From 2014 to 2017, publication numbers varied, with a notable peak 2017 at 30 documents. After this, the number of publications declined in the following years, reaching 20 in 2018 and rising slightly to 25 in 2019. This trend showed slow growth, with 24 publications in 2020 and 30 in 2021. However, a significant increase is evident from 2022 onwards. The number of documents rose to 38 in 2022 and remained strong at 33 in 2023, indicating consistent growth. The most remarkable increase occurred in 2024, with a substantial rise to 59 documents, marking a surge in research or publication activity.
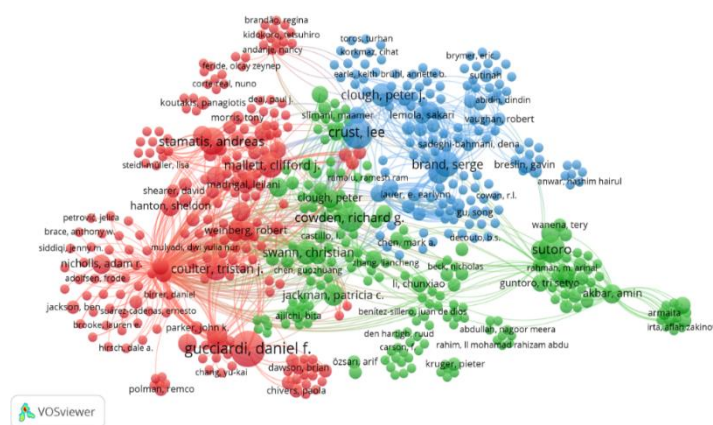
Figure 7. Collaboration network visualization among authors

This image shows a co-authorship network visualization, illustrating the relationships between authors involved in collaborative research. Authors are grouped into colour-coded clusters (red, blue, green), reflecting their collaboration frequency. Authors with larger nodes indicate higher collaboration levels and a central position in the network, while the thickness of the lines between authors represents the strength of their collaborative relationships. Dominant authors, such as Clough, Peter J., Coulter, Tristan J., and Swann, Christian, have more connections and play an important role in this network. The visualization also reveals widespread international collaboration and isolated groups, indicating research fields.
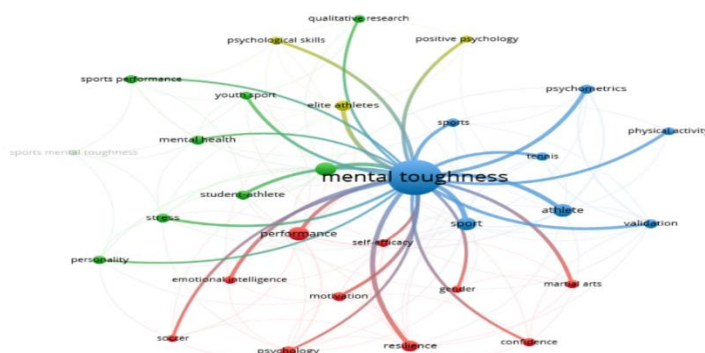
Figure 8. Visualization of the interconnections between the concept of "mental toughness," term co-occurrence, and keywords used by authors

This image shows a thematic map illustrating the relationships between the central concept of "mental toughness" and related concepts in research. Mental toughness is the central theme in this map, connected to various interconnected research areas. The green cluster includes concepts related to sports performance, youth sports, mental health, and athletes,

highlighting the important role of mental toughness in sports and overall well-being, particularly for athletes and younger populations. The red cluster focuses on psychological aspects involving motivation, resilience, confidence, performance, emotional intelligence, and personality, emphasizing the direct connection between mental toughness and deep psychological factors that influence performance and how athletes cope with challenges. Meanwhile, the blue cluster represents a more psychological and cognitive approach, including concepts like psychometrics, psychological skills, positive psychology, and psychology, indicating the importance of psychological theories and measurement tools in understanding and developing mental toughness.
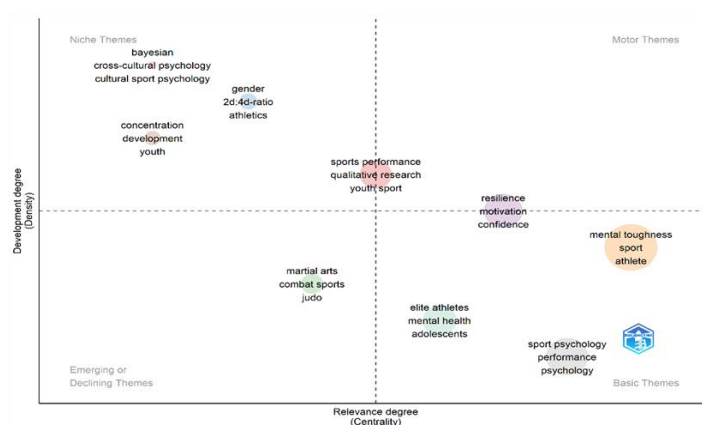

Figure 9. Thematic map, based on the author's keywords

Clustering themes by relevance and development gives this thematic map a complete picture of mental toughness research. Mental toughness, sport, and athlete are in the Motor Themes quadrant, suggesting high-importance, fast-growing topics. The research centre emphasizes mental toughness's significance in athletic performance, resilience, motivation, and confidence under pressure. Though slower to develop, basic themes like sports psychology and performance underpin the study. These themes must be strengthened to bridge theory and practice, especially in athlete training and stress management. Niche topics like cross-cultural psychology study particular or experimental effects like culture on mental toughness. These issues are well-developed but need more integration into the basic research

framework to be relevant. However, Emerging Themes like martial arts and teenagers are still developing. Although their mainstream academic contributions are minimal, these issues have great potential to provide fresh views and ideas. This map shows that key topics like mental toughness, resilience, and motivation drive research progress, while foundational, experimental, and emergent themes offer significant opportunities to enhance study breadth and impact. Better integration of theory, cross-cultural studies, and practical applications can improve mental toughness knowledge and implementation in sports psychology and mental health.
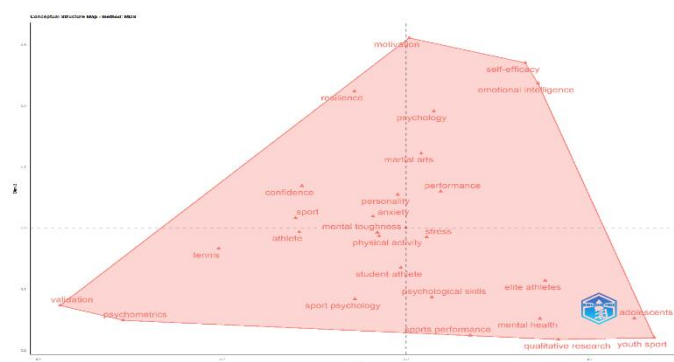

Figure 10. Factorial analysis of the relationships between various key concepts using multidimensional scaling (Mds)

Multidimensional Scaling (MDS) generates a conceptual structure map that methodically visualizes the interactions among important ideas in mental toughness research. Reflecting its fundamental importance in sports science and athlete performance research, mental toughness is the key theme, closely related to terminology such as sport, performance, stress, and physical activity. Particularly in competitive situations, the grouping of psychological and cognitive constructs, including motivation, self-efficacy, emotional intelligence, and psychology, highlights the relevance of psychological attributes in the evolution of mental toughness. Furthermore, the correlation between martial arts and performance implies that case studies from fields stressing mental discipline are usually included. Underlining the requirement of standardized, dependable tools in mental toughness evaluation, measurement, and validation are separate but crucial elements. Emphasizing young sports, elite athletes, and mental health, emerging study areas highlight qualitative methodologies and show a rising

attempt to link theoretical discoveries with real-world uses. This mapping emphasizes combining quantitative and qualitative approaches to progress a comprehensive knowledge of mental toughness in many competitive environments.

DISCUSSION

Research on mental toughness is dominated by developed countries, with the United Kingdom (UK) leading with 80 documents (25.6%), followed by the United States (US) with 70 documents (22.4%) and Australia with 40 documents (12.8%). Asian countries such as China contribute 30 documents (9.6%), while Malaysia and Indonesia contribute 20 documents (6.4%) and 18 documents (5.8%), respectively. The dominance of the UK, US, and Australia, collectively accounting for over 50% of total documents, reflects stronger academic capacity and research support compared to developing countries (Mojtahedi et al., 2023; Wang et al., 2021). Nevertheless, the growth in contributions from Asia, reaching a total of 21%, highlights the region's significant potential for further development through international collaboration and the improvement of local academic infrastructure (Rodrigues, Barbosa, Gomes, & Nóbrega, 2023).

The top ten educational institutions contributed a total of 100 documents (32% of the total), with Curtin University leading with 15 documents (17%), followed by The University of Queensland and The Faculty of Health Sciences, each contributing 12 documents (14%). Institutions in Australia accounted for the largest share (37%), followed by the United Kingdom (33%). This dominance reflects the important role of institutions from these two countries in supporting global research on mental toughness. However, institutions from developing countries, such as the University of KwaZulu-Natal in South Africa, are beginning to show significant participation, and cross-institutional collaboration presents a strategic opportunity to expand the global impact of this research (S. Gu & Xue, 2022; Li, Fan, Sun, & Li, 2021).

The contributions of leading researchers also play a crucial role. Gucciardi, D.F. is the most significant contributor with 14 documents (19%),

followed by Cowden, R.G. with 12 documents (16%), and Crust, L., and Stamatis, A., each contributing 10 documents. This dominance highlights the importance of academic leaders in shaping research direction. However, collaboration with researchers who have smaller contributions is necessary to enhance diversity and sustainability in research (Rodrigues et al., 2023; Toros et al., 2023).

The number of documents published between 2014 and 2024 demonstrates significant growth, with an average annual growth rate of 13.55%. The number of documents increased from 20 in 2014 to 60 in 2024, marking a total increase of 200%. The first significant spike occurred in 2016 with a 100% growth, while the 2020-2024 period showed a stable trend with consistent annual increases. Journals such as Psychology of Sport and Exercise and Frontiers in Psychology served as key platforms, although their contributions varied over time. The surge in 2024 reflects growing academic attention to issues related to the pandemic, mental health, and athletic performance, highlighting the relevance of these topics in current research (Kumar, Shukla, & Acharya, 2021; Tangkudung et al., 2022).

Thematically, research on mental toughness is concentrated in the fields of psychology and health. Psychology dominates with a contribution of 27.7%, followed by medicine (20.8%) and health professions (17.9%). Social sciences account for 11.4%, supporting society and public policy research. Meanwhile, fields such as biochemistry, genetics, molecular biology, and neuroscience contribute a smaller share (4.1%) but remain crucial in supporting technological innovation and the sustainability of research. The dominance of psychology and health underscores a focus on mental and physical well-being, while contributions from other fields provide diversification and expand the global impact of research (Pocius & Malinauskas, 2024; Rintaugu et al., 2022).

The number of publications on mental toughness has significantly increased over the past decade. In 2014, 20 documents were published, but this number dropped to 15 in 2015 (a 25% decrease). The first surge occurred in 2016, with the number of documents rising to 30 (a 100% growth

from the previous year). After fluctuations during 2017–2019, peaking temporarily in 2017 (35 documents) and a sharp decline in 2018 (20 documents), a stable trend emerged in 2020. This consistent growth continued, reaching 60 documents by 2024, marking a total increase of 200% compared to 2014. The surge in 2024 reflects increasing attention to global issues such as the pandemic, technological innovation, and support for mental health and athletic performance (Kumar et al., 2021; Mojtahedi et al., 2023).

The collaborative network among authors comprises 450 researchers divided into three main clusters. The Red Cluster (41.1%), being the largest, focuses on developing core theories such as motivation, resilience, and emotional intelligence. The Green Cluster (31.3%) emphasizes practical applications for young athletes, team sports, and specific communities. The Blue Cluster (27.6%) contributes to validating measurement tools and developing quantitative methodologies like psychometrics. Key figures in these clusters include Gucciardi, D.F., Coulter, T.J. (Red Cluster), Crust, L., and Clough, P.J. (Blue Cluster), as well as Sutoro and Amin (Green Cluster), who play crucial roles in directing research within their domains. The synergy between these clusters ensures continuity from theoretical development to methodological validation and practical application, fostering a holistic impact in the research field (Rodrigues et al., 2023).

Mental toughness connects key themes such as motivation, resilience, athletic performance, and mental health. The Green Cluster emphasizes the importance of mental toughness in supporting young athletes' performance and mental health under competitive pressure. The Red Cluster focuses on psychological aspects, such as emotional intelligence, that underpin an individual's psychological resilience. The Blue Cluster contributes by developing valid measurement tools and quantitative methods to assess mental toughness across various contexts. The interrelation of these themes highlights the broad relevance of mental toughness in sports, psychology, and mental health disciplines, with a focus on enhancing

performance and well-being (Grobler et al., 2022; Xu, Zhou, Baker, István, & Gu, 2021).

This study also categorizes themes based on their relevance and stage of development into four main quadrants. Motor Themes, such as mental toughness, motivation, and resilience, are highly relevant and rapidly advancing. Basic Themes, such as sports psychology and performance, serve as foundational research areas but require further development to bridge theory and practice. Niche Themes, such as cross-cultural psychology, remain limited globally but offer significant innovation potential. Emerging Themes, including martial arts, combat sports, and judo, are in the early stages of development, providing opportunities for future research diversification (Toros et al., 2023).

The horizontal dimension of the conceptual map highlights the balance between quantitative measurement-based approaches, such as validation of tools (validation and psychometrics), and qualitative approaches that delve into individual experiences, particularly among specific groups like young athletes. The vertical dimension reflects a spectrum ranging from developing psychological aspects, such as emotional intelligence, to practical applications in sports, including stress management, anxiety reduction, and performance enhancement for athletes (Akoğlu et al., 2024; Gu & Xue, 2022). The validation of measurement tools is a critical aspect of enhancing the reliability and accuracy of research, while qualitative approaches add profound perspectives on individual experiences, particularly in unique populations such as young athletes. This map underscores the necessity of integrating psychological and practical approaches to bolster the relevance of mental toughness across various contexts, including sports, education, and mental health (Kumar et al., 2021; Tangkudung et al., 2022). This study analyzes a total of 311 publications published during the period from 2014 to 2024. All publications analyzed in this study are journal articles sourced from the Scopus database, which is known as a trusted source for academic literature due to its peer-review process that ensures the quality and validity of each published document.

CONCLUSION

This study mapped global trends, contributions, and key themes in mental toughness research. Findings show dominance by the United Kingdom, the United States, and Australia, with growing contributions from Asian countries like China, Malaysia, and Indonesia, signalling future research potential. Leading institutions and emerging universities are expanding collaboration networks while key researchers shape the field's development. Publication trends are steadily increasing, with journals like Psychology of Sport and Exercise and Frontiers in Psychology serving as major platforms. Core themes such as motivation, resilience, and athletic performance persist alongside emerging topics like martial arts and combat sports. The study highlights the need to balance quantitative and qualitative approaches to strengthen theoretical foundations, improve measurement tools, and enhance practical applications. These efforts are crucial for advancing mental health and performance outcomes globally.

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