



Global Trends Athlete Performance Anxiety Research: Scopus Based Bibliometric and Network Analysis

¹Noor Akhmad, ²Abdul Rahman, ^{3*}Ely Yuliawan, ⁴Rene M. Babiera

¹ Department of Physical Education, Faculty of Sports Science and Public Health, Universitas Pendidikan Mandalika. Jl. Pemuda No. 59A, Mataram 83125, Indonesia

² Department of Physical Education, Health and Recreation, Faculty of Sports and Health Sciences, Universitas Negeri Makassar, Wijaya Kusuma Raya Street No. 14, Banta-Bantaeng Campus, Rappocini District, Makassar City, South Sulawesi Province, Indonesia.

^{3*} Department of Sports and Health Education, Faculty of Teacher Training and Education, Universitas Jambi. Pinang Masak Campus, Jambi-Muara Bulian Road KM. 15, Jambi, Indonesia.

⁴ University of the Immaculate Conception, Davao City, Philippines

*Corresponding Author e-mail: elyyuliawan.fik@unja.ac.id

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Abstract

Performance anxiety in athletes is a critical issue in sport psychology because it may affect mental readiness, emotional regulation, physiological responses, and performance quality during competition. Although research on anxiety in sport has continued to expand, comprehensive scientific mapping of publication trends, collaboration patterns, and thematic directions remains limited. This study aims to analyze the development of research on performance anxiety, sports anxiety, and competition anxiety in athletes using a Scopus-based bibliometric approach. Data were retrieved from publications covering 1976-2025, with an initial search identifying 382 documents; after screening by document type, publication status, journal source, and language, 307 articles were included for further analysis. Bibliometrix, Biblioshiny, VOSviewer, and OpenRefine were used to examine publication trends, country and institutional contributions, author productivity, collaboration networks, and thematic structures. The findings show an annual publication growth rate of 2.27%, with a more pronounced increase after 2010. The United States, the United Kingdom, and Australia emerged as the leading contributors, while academic collaboration remains relatively fragmented. The dominant themes include anxiety, stress, mental health, coping, self-efficacy, and athlete well-being. This study confirms that athlete performance anxiety has evolved into a multidisciplinary research field with important implications for strengthening sport psychology, supporting athlete mental health, and developing evidence-based psychological interventions.

Keywords: Performance anxiety; athletes; sport psychology; bibliometrics; vosviewer.

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INTRODUCTION

Performance anxiety in athletes has become an important phenomenon in sport psychology because competitive sport requires athletes to maintain psychological stability, physiological readiness, emotional regulation, and performance quality under evaluative pressure. In the context of sport science, anxiety is not only understood as an individual emotional response but also as a multidimensional condition that may influence cognition, behavior, bodily responses, and competitive outcomes. Performance anxiety, sports anxiety, and competition anxiety refer to excessive psychological pressure experienced before

or during competition, which can negatively affect athletes cognitively, physiologically, and emotionally (Gabrys & Wontorczyk, 2023; Tomczak et al., 2022). Although these concepts are closely related, performance anxiety refers more broadly to anxiety in evaluative situations, sports anxiety is more specific to sport contexts, and competition anxiety focuses on stress arising from competitive situations (Chen, Zhou, Gong, Wu, & Chen, 2024; Wang, 2023). This anxiety may result in reduced concentration, increased self-doubt, elevated heart rate, muscle tension, and disrupted breathing patterns, all of which can interfere with athletes' ability to perform effectively (Aulia, Puspasari, Fajrika, & Salfina, 2024; Casali, Ghisi, Jansen, Feraco, & Meneghetti, 2022). If not properly managed, performance anxiety may reduce motivation, increase vulnerability to injury, and negatively affect athletes' long-term psychological well-being (Gao, Fu, Mao, & Shi, 2021; Kara, Türküm, & Turner, 2023). Therefore, performance anxiety represents a relevant scientific and practical issue within sport psychology, sports medicine, sport physiology, and athlete development.

The urgency of studying performance anxiety in athletes is strengthened by the continuing development of research on anxiety, particularly as greater attention has been given to athlete mental health and psychological functioning in competitive environments (Gabrys & Wontorczyk, 2023; Tomczak et al., 2022). Earlier studies tended to focus on the relationship between stress and performance, while later developments expanded toward multidimensional explanations of anxiety, including the Multidimensional Anxiety Theory and Individual Zones of Optimal Functioning. These theoretical perspectives emphasize that cognitive and somatic components of anxiety may influence athletes' performance differently depending on individual characteristics and competitive situations (Gabrys & Wontorczyk, 2023; Mojtahedi et al., 2023). Empirical studies in sports medicine and sport physiology have also contributed to understanding anxiety through biological responses, such as changes in heart rate, cortisol levels, and autonomic nervous system activity, which affect athletes' physical and mental states during competition (Lee, Ryu, & Kim, 2023; Oliveira, Cunha, Rosado, Gomes, & Ferreira, 2022). At the same time, social science perspectives highlight that cultural, social, and psychosocial support factors also shape athletes' anxiety experiences (Guntoro & Putra, 2022; Sultanov, 2024). Various intervention approaches have been developed to address this problem, including biofeedback and neurofeedback to help athletes regulate physiological responses to stress (Gao et al., 2021), cognitive-behavioral therapy and mindfulness to strengthen psychological resilience (Pang et al., 2022; Wang, 2023), and virtual reality or artificial intelligence-based simulations to train athletes in managing match pressure (Guo, 2022; C.-C. Huang, 2023). However, despite these developments, the broader scientific structure of this research field remains insufficiently understood.

Although previous studies have examined performance anxiety through psychological, physiological, social, and technological perspectives, important research gaps remain in understanding how the field has developed as a body of scientific knowledge. Existing research has provided explanations of anxiety symptoms, athlete coping processes, self-efficacy, competitive stress, mental health, and intervention strategies, but systematic knowledge about publication trends, academic collaboration patterns, institutional contributions, country distribution, and thematic evolution remains limited (Gabrys & Wontorczyk, 2023; Iwuagwu, Umeifekwem, Igwe, Oforka, & Udeh, 2021). Moreover, research on

performance anxiety remains largely concentrated in developed countries, while the contributions of developing countries have not been comprehensively documented (Gabrys & Wontorczyk, 2023). This limitation is important because athlete anxiety may be shaped by cultural context, sport systems, institutional capacity, research funding, and access to psychological support. The novelty of this study lies in its Scopus-based bibliometric analysis of performance anxiety, sports anxiety, and competition anxiety in athletes by integrating publication trends, institutional and country distribution, author relationships, collaboration networks, keyword analysis, and thematic mapping. Unlike previous studies that primarily examined specific psychological predictors, athlete groups, interventions, or sport contexts, this study maps the global intellectual structure and thematic development of performance anxiety research. Therefore, this study is designed to fill the gap in systematic evidence regarding how athlete performance anxiety research has evolved, who contributes to the field, how academic collaboration is structured, and which research themes are dominant or emerging.

Based on these gaps, this study aims to analyze global research trends on performance anxiety in sports using a bibliometric approach, with specific attention to publication growth, institutional distribution, journal contribution, author productivity, country participation, collaboration networks, and thematic development. The scope of this study is limited to scientific publications indexed in Scopus from 1976 to 2025 that discuss performance anxiety, sports anxiety, and competition anxiety in athletes and sport performance contexts. The analysis focuses on the number of documents published annually, distribution patterns by journal, institution, and country, relationships among authors and contributing countries, frequently used keywords, and thematic categories, including Motor Themes, Niche Themes, Basic Themes, and Emerging Themes in studies on competitive anxiety in athletes (Mountjoy et al., 2023; Yang, Zhang, Zhang, & Veloo, 2024). This study also aims to highlight influential journals and authors and evaluate citation patterns in athlete competition anxiety research. In line with the research gap, the study assumes that publications on performance anxiety in athletes have increased over time, but academic collaboration remains fragmented and research output is still concentrated in developed countries. Methodologically, this study is limited to bibliometric indicators derived from Scopus metadata and does not include non-indexed studies or full-text systematic review synthesis. Nevertheless, the findings are expected to provide a comprehensive overview of the development of performance anxiety studies in sport, support researchers, coaches, and sport practitioners in understanding existing research patterns, and inform evidence-based anxiety management strategies (Burgum & Smith, 2021; Chen et al., 2024). Furthermore, this study may offer insight into emerging research trends and future exploration opportunities, including digital technology and multidisciplinary approaches to understanding and managing competitive anxiety in athletes (Z. Huang, Choi, Lai, Lu, & Tian, 2022).

METHODS

This study employs a bibliometric approach to analyze scientific publications related to *performance anxiety*, *sports anxiety*, and *competition anxiety* in sports. This approach enables a quantitative evaluation of the number of publications, research trends, academic collaboration patterns, and the development of key research themes in this field (Gabrys & Wontorczyk, 2023; Tomczak et al., 2022). To

analyze and visualize bibliometric data, this study utilizes VOSviewer, Bibliometrix (R package), and Biblioshiny software, which help identify relationships between authors, institutions, and contributing countries in this field. Meanwhile, the collected data, extracted in CSV format, is processed using OpenRefine to clean metadata (Akhmad, 2025).

Table 1. Document screening process

Stage	Criteria	Number of Documents
Initial Search	Search query: TITLE-ABS-KEY ("performance anxiety" OR "sports anxiety" OR "competition anxiety") AND ("athletes" OR "sports performance" OR "elite sports")	382
Filter 1	Journal articles (<i>article</i> , "ar")	26
Filter 2	Final publication status (<i>final publication stage</i>)	18
Filter 3	Source from academic journals (<i>journal</i> , "j")	12
Filter 4	English-language documents	20
Total Documents	Articles meeting all criteria	307

Table 2. Inclusion and exclusion criteria

Category	Criteria
Inclusion	- Final and complete journal articles - Written in English - Discuss <i>performance anxiety</i>, <i>sports anxiety</i>, and <i>competition anxiety</i> in sports - Psychological, physiological, or social analysis of athletes - Published in Scopus-indexed journals - Complete metadata (title, abstract, keywords, citations, affiliations)
Exclusion	- Articles from non-academic journals (without peer review) - Early access publications or without a final version - Not relevant to athletes or sports - Incomplete, inaccessible, or duplicate metadata

Table 3. Use of bibliometric analysis applications

Application	Main Function	Visualized Results
Bibliometrix (R-package)	R-based bibliometric analysis for data processing and publication metrics calculation.	- Annual publication trends - Distribution of publications by journal, institution, author, and scientific field
Biblioshiny	Visual interface for descriptive analysis and thematic mapping with MCA.	- Main thematic trends (<i>motor themes</i>, <i>niche themes</i>, <i>basic themes</i>, <i>emerging themes</i>) - Mapping of conceptual research structure - Analysis of keyword distribution and relationships - Research theme clustering (<i>Document Coupling Analysis</i>)
VOSviewer	Mapping collaboration networks and citations through co-authorship, co-	- Collaboration networks between authors and institutions

	citation, and keyword co-occurrence analysis.	- Keyword relationship mapping (<i>Keyword Co-occurrence Analysis</i>)
OpenRefine	Cleans metadata, removes duplicates, and filters out publications that do not meet criteria.	- Valid and relevant publication data for bibliometric analysis

RESULT AND DISCUSSION

This section presents the bibliometric findings on research related to performance anxiety in athletes based on data retrieved from the Scopus database. The analysis focuses on the general characteristics of the dataset, publication trends, citation patterns, keyword distribution, author productivity, collaboration structure, and thematic development in the field. The findings are organized to provide a systematic overview of how research on performance anxiety, sports anxiety, and competition anxiety has evolved over time and how scholarly contributions are distributed across sources, authors, institutions, countries, and subject areas. Bibliometric indicators were used to identify the intellectual structure of the field, while network and thematic analyses were applied to examine relationships among keywords, authors, and research themes.

Table 4. Summary of key statistical data on performance anxiety research

DESCRIPTION	RESULTS
MAIN INFORMATION ABOUT DATA	
Timespan	1976:2025
Sources (Journals, Books, etc)	150
Documents	307
Annual Growth Rate %	2,27
Document Average Age	8,79
Average citations per doc	19,34
References	12561
DOCUMENT CONTENTS	
Keywords Plus (ID)	790
Author's Keywords (DE)	660
AUTHORS	
Authors	264
Authors of single-authored docs	264
AUTHORS COLLABORATION	
Single-authored docs	307
Co-Authors per Doc	1
International co-authorships %	25,41
DOCUMENT TYPES	
	1
Article	307

The distribution of research on performance anxiety in athletes by country or region shows that the United States (55 documents) and the United Kingdom (45 documents) dominate publications, reflecting the dominance of countries with more advanced research infrastructure. Other countries, such as Australia, Spain, and Canada, contribute significantly (25-30 documents), while China, Brazil, and Turkey are beginning to show increased involvement (10-20 documents).

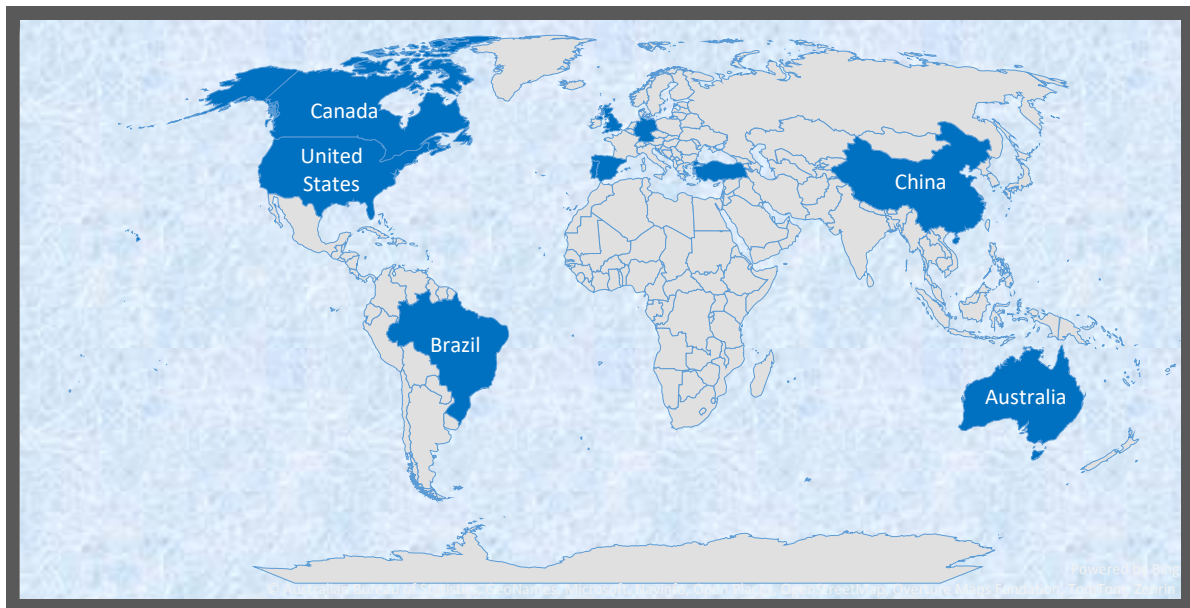


Figure 1. Top ten documents author's countries or territory

This distribution indicates that research remains concentrated in developed countries, but there is an opportunity to expand international collaboration, especially with developing countries. The dominance of Western countries can be linked to significant investments in sports and psychology research. However, the increasing number of publications from Asian and Eastern European countries suggests the need for a broader understanding of performance anxiety across various cultural contexts and sports systems. Future research could focus on a global framework for athlete anxiety management strategies.

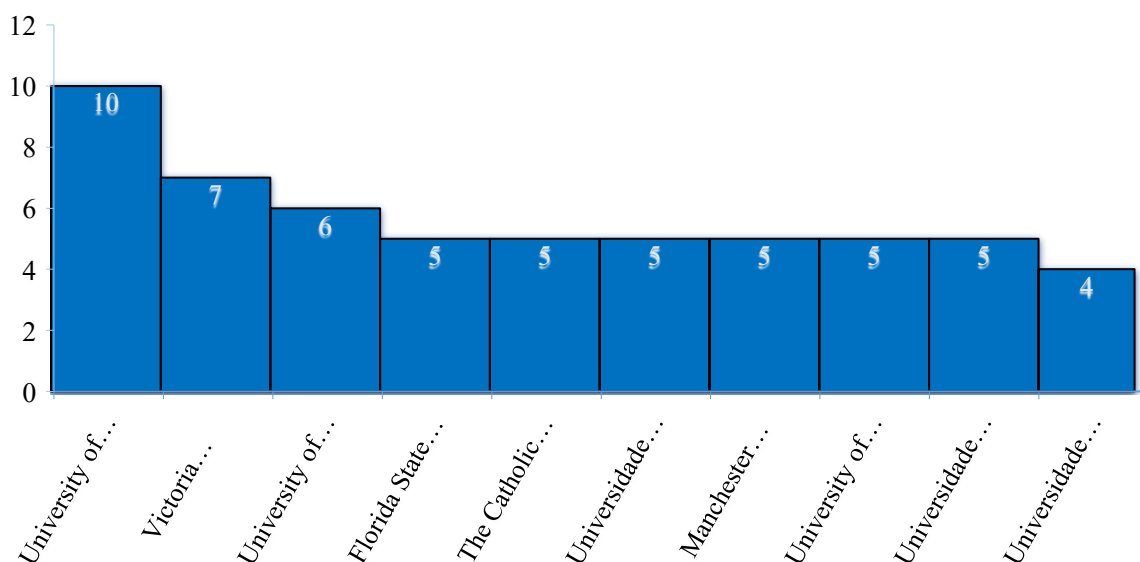


Figure 2. Documents by affiliation of various academic institutions related to performance anxiety research

The distribution of research on performance anxiety in athletes based on institutional affiliation shows that the University of Washington is the leading contributor (10 documents), followed by Victoria University (8 documents) and

University of Bath (7 documents). These institutions have a strong focus on sports psychology and mental health, playing a crucial role in the development of this field. Other institutions, such as Florida State University, The Catholic University of America, and Universidade do Minho, each contributed 5-6 documents, while Manchester Metropolitan University, University of Alberta, and Universidade de Lisboa contributed 4 documents. This distribution reflects a growing global academic collaboration, although research remains concentrated in developed countries. Institutions with high contributions can play a role in facilitating cross-institutional collaboration, strengthening multidisciplinary research, and developing evidence-based interventions to manage athlete performance anxiety. Increasing the involvement of other institutions will enrich the global perspective in this field.

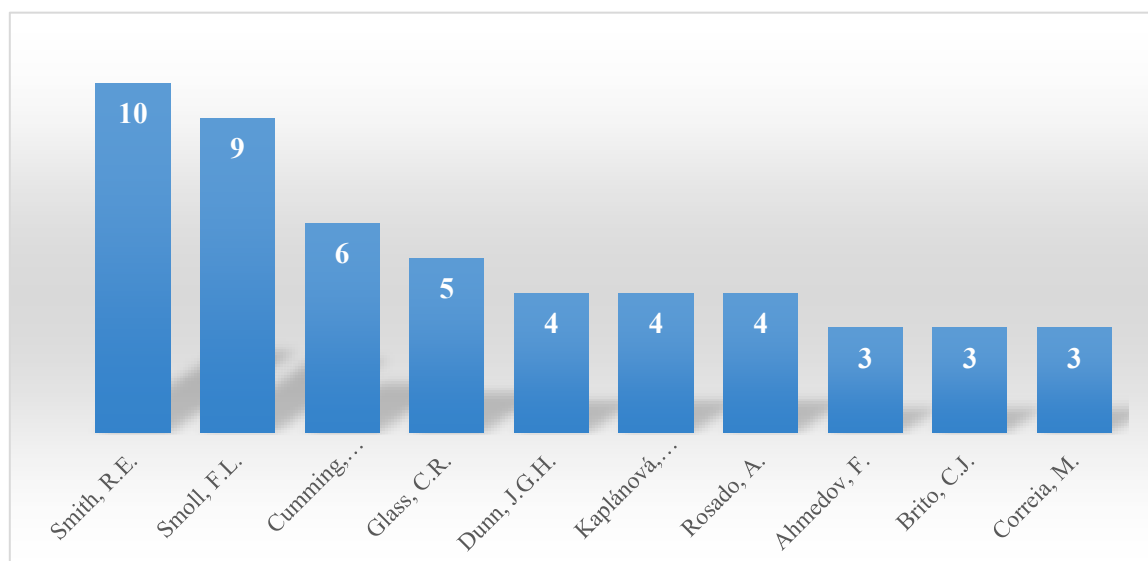


Figure 3. Top ten dokumen by authors

The distribution of research on performance anxiety in athletes based on author productivity shows that Smith, R.E. and Smoll, F.L. are the leading contributors with 10 documents, highlighting their role in sports psychology and performance anxiety. Cumming, S.P. (7 documents), Glass, C.R. (6 documents), and Dunn, J.G.H. (5 documents) have also made significant contributions to this field. Other authors, such as Kaplánová, A., Rosado, A., and Ahmedov, F., have produced 4 documents, indicating broader involvement in the development of this topic. This distribution reflects a diverse academic community, with many researchers contributing through specialized studies. Although some authors have lower productivity, they still play a crucial role in expanding the scope of research. Increasing cross-author and institutional collaboration is necessary to bridge gaps in underexplored topics, thereby strengthening the understanding of performance anxiety in various sports contexts.

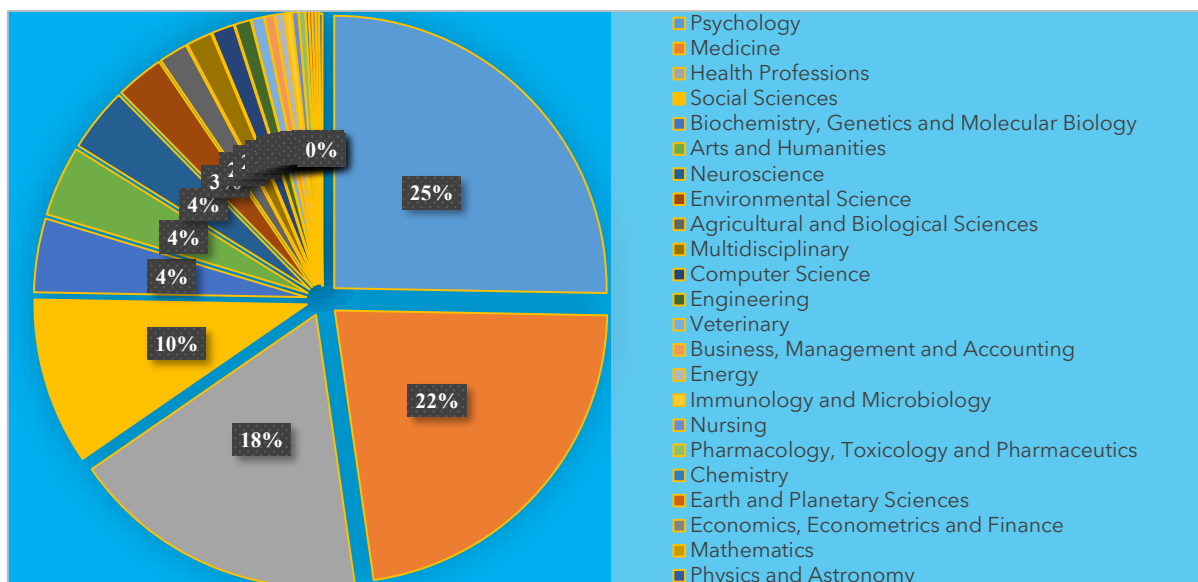


Figure 4. Dokumen by subject area performance anxiety

The distribution of research on performance anxiety in athletes by subject area shows that psychology has the largest contribution (25.3%), reinforcing that this topic is primarily studied within the framework of sports psychology and mental health. Medicine (22.4%) plays a crucial role in understanding the physiological effects of anxiety, while health professions (17.7%) reflect the involvement of practitioners in helping athletes manage competitive pressure. Other fields, such as social sciences (9.9%), biochemistry and genetics (4.4%), and neuroscience (3.8%), highlight a multidisciplinary approach to understanding performance anxiety. Contributions from arts and humanities (4.2%) and multidisciplinary categories (1.5%) indicate that this issue is studied from various perspectives. This distribution underscores the importance of cross-disciplinary collaboration in comprehensively understanding and managing performance anxiety. Such an approach creates opportunities to develop more effective interventions that integrate psychological, medical, social, and physiological aspects to support athlete well-being and performance.

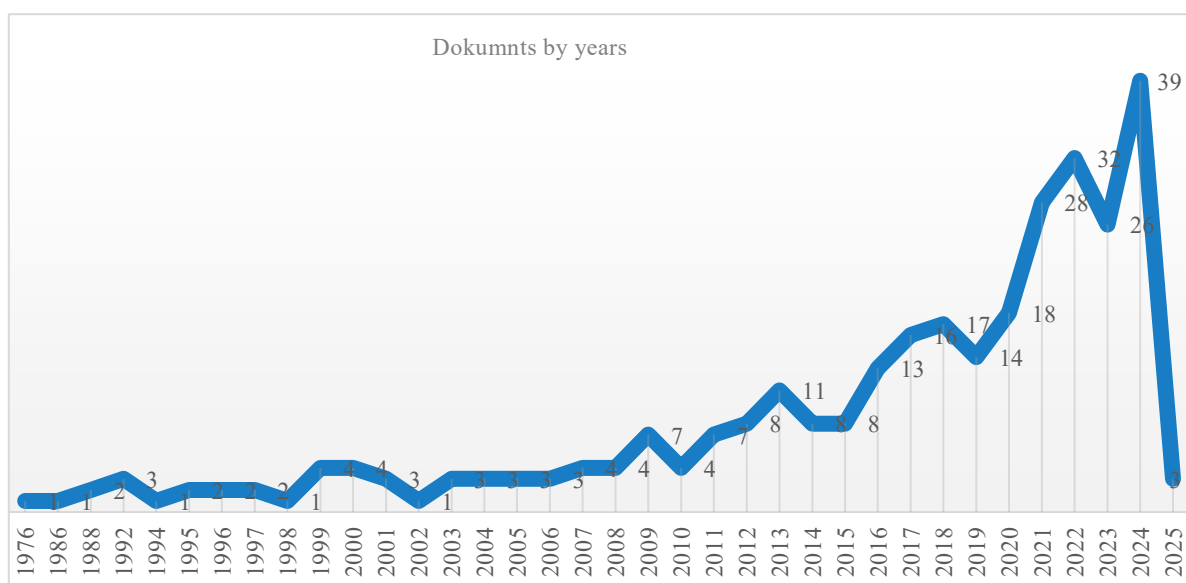


Figure 5. Trend graph of the annual increase in the number of documents

The publication trends of research on performance anxiety in athletes from 1976 to 2025 show distinct phases of growth. In the early period (1976–2000), the number of publications was very low (fewer than 5 documents per year) due to the limited recognition of sports psychology as an independent research field. After 2000, publications began to gradually increase, reflecting growing recognition of the importance of psychological factors in athlete performance. A significant surge occurred after 2010, which can be attributed to increased global awareness of athlete mental health, supported by the advancement of biofeedback technology, CBT-based interventions, and mindfulness techniques. The peak is projected in 2024, with more than 40 documents, indicating strong academic interest in this topic. This trend highlights that performance anxiety has become a central focus in sports psychology, with increasing cross-disciplinary collaboration. Moving forward, research may focus more on specific populations (e.g., young athletes or athletes with disabilities) and personalized approaches to managing athlete anxiety.

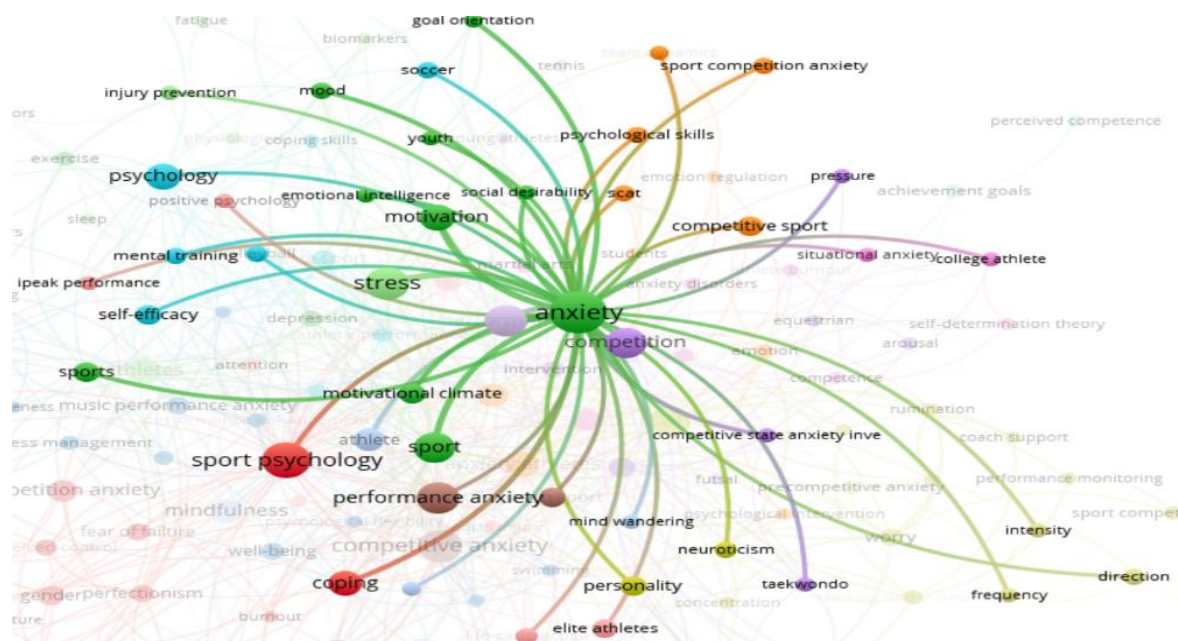


Figure 6. Visualization interconnections between the concept of "performance anxiety in athletes"

Keyword co-occurrence mapping in research on performance anxiety in athletes main keywords, such as anxiety and competition, are positioned at the center of the network, confirming their role as core themes in this study. Anxiety is closely related to stress, performance anxiety, and coping, indicating a research focus on the impact of anxiety on athlete performance and its management strategies. Competition also has a strong correlation with competitive sport and competitive state anxiety, highlighting the importance of the competitive context in this research. Supporting themes include sports psychology and mental health, with connections to performance anxiety, motivation, and self-efficacy, emphasizing the role of psychology in understanding and managing performance anxiety. Some studies also explore specific populations, such as elite athletes and youth, as well as

individual factors like personality and emotional intelligence. Future research opportunities involve deeper exploration of neuroticism and mind wandering, as well as the integration of injury prevention and psychological skills into intervention strategies. These findings emphasize the importance of a multidisciplinary approach, incorporating psychology, physiology, and science-based interventions to support optimal athlete performance.

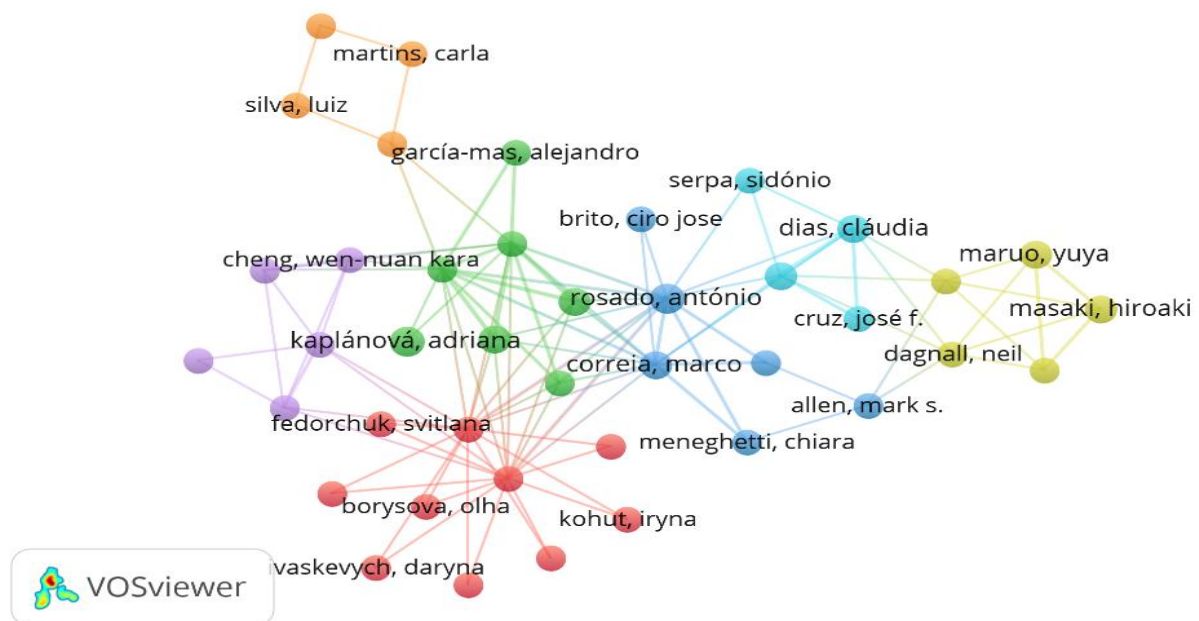


Figure 7. Collaboration map of authors in performance anxiety research

Several key clusters have been identified, with Rosado, António and Correia, Marco leading the green cluster, indicating strong collaboration in this research area. The red cluster, led by Borysova, Olha and Kohut, Iryna, reflects cooperation within a specific region, while the light blue and yellow clusters represent specialized collaborations on subtopics related to competitive anxiety and Asian sports contexts. Authors such as García-Mas, Alejandro and Kaplánová, Adriana act as bridges between clusters, facilitating cross-institutional and cross-regional research collaboration. Although strong intra-group collaborations exist, cross-group connections remain limited, highlighting the need for broader cooperation. This map suggests that research in this field is still regionally concentrated, but there is significant potential to strengthen global collaboration, enhancing the understanding of performance anxiety in various sports and cultural contexts.

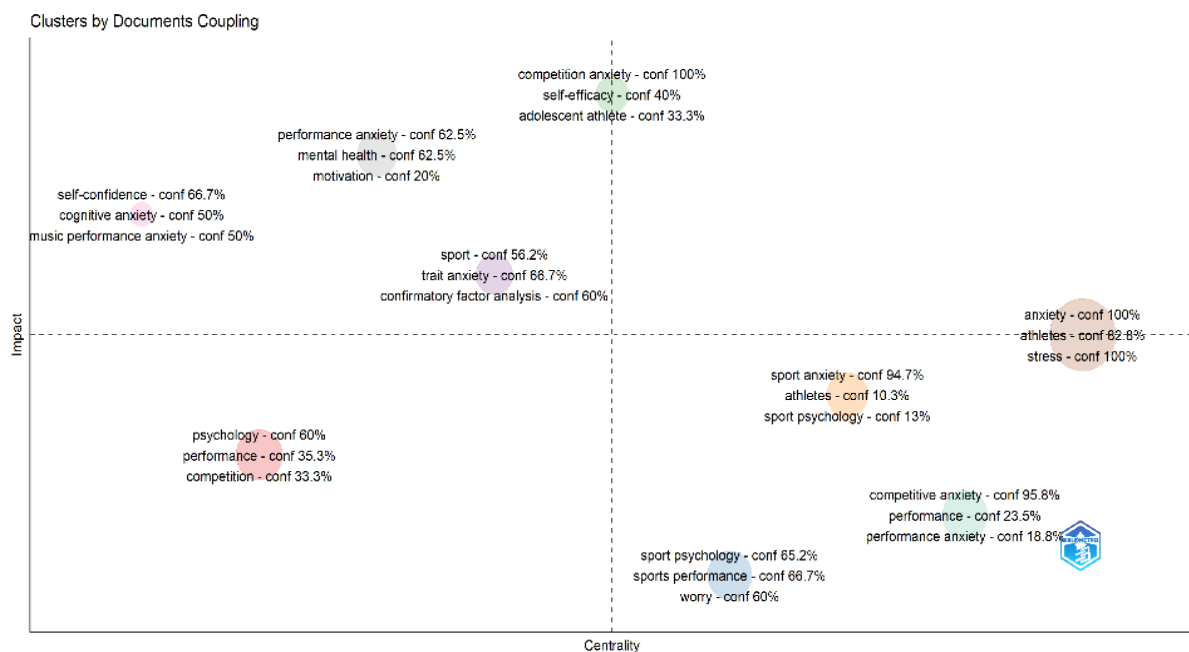


Figure 8. Cluster map by document coupling

Research theme clustering based on document relationships and frequently co-occurring keywords the upper-right quadrant contains core themes with high impact and strong relevance, such as anxiety, stress, and athletes, which serve as the foundation of performance anxiety research. The upper-left quadrant includes high-impact but less integrated themes, such as competition anxiety and self-efficacy, which are often associated with young athletes and individual psychological factors. The lower-right quadrant consists of high-connectivity but lower-impact themes, such as sport psychology and sports performance, which support the main theories in this research. The lower-left quadrant contains fundamental concepts such as psychology and competition, which are more commonly used to build theoretical frameworks. This mapping highlights the importance of understanding performance anxiety across different contexts and presents opportunities to develop new themes to expand the research scope in this field.

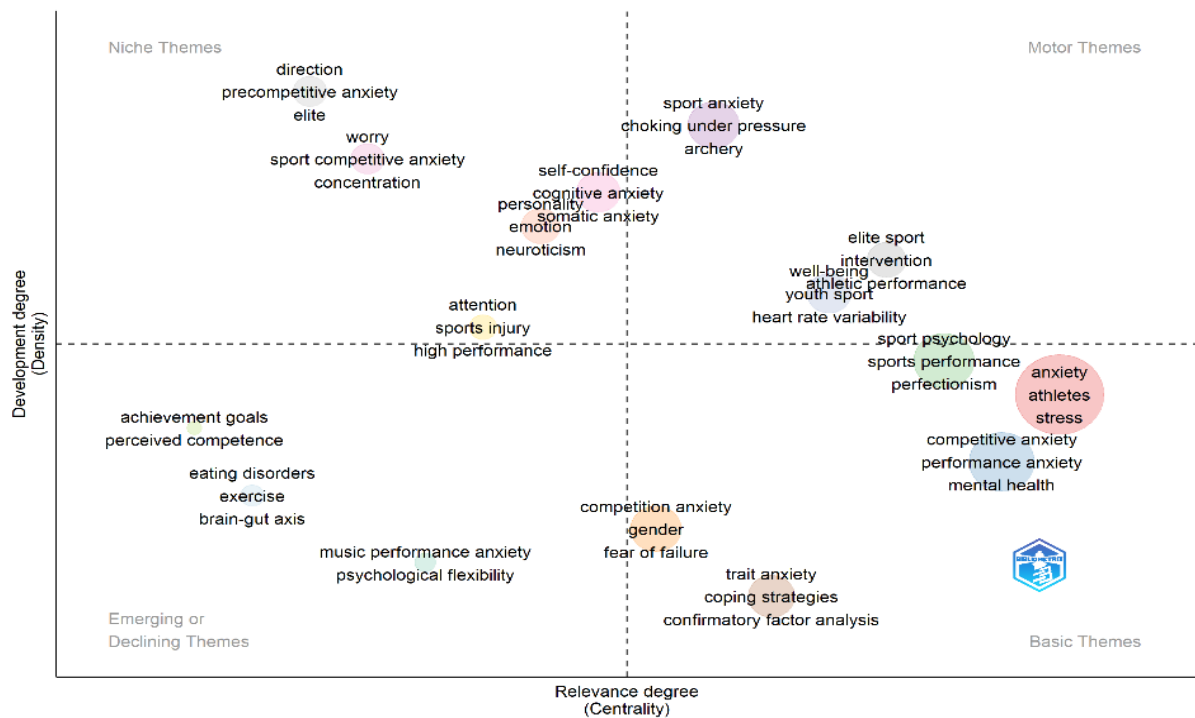


Figure 9. Thematic mapping of performance anxiety research in athletes based on relevance and development

Motor Themes (sport anxiety, well-being, elite sport) are the main topics with high relevance and rapid development, emphasizing stress management strategies and athlete well-being. Basic Themes (anxiety, stress, mental health) serve as the foundation of research, although their development has been slower. Niche Themes (cognitive anxiety, neuroticism, concentration) are rapidly evolving but still limited in relevance, indicating opportunities for further exploration, particularly in individual psychological aspects. Emerging or Declining Themes (psychological flexibility, achievement goals) are in the early stages of development and require further research to determine their impact on sports performance. This mapping highlights that sport anxiety and athlete well-being remain key focuses, while innovation opportunities are emerging in cognitive studies and psychological flexibility. Strengthening core themes and exploring new concepts can enhance multidisciplinary approaches in understanding performance anxiety.

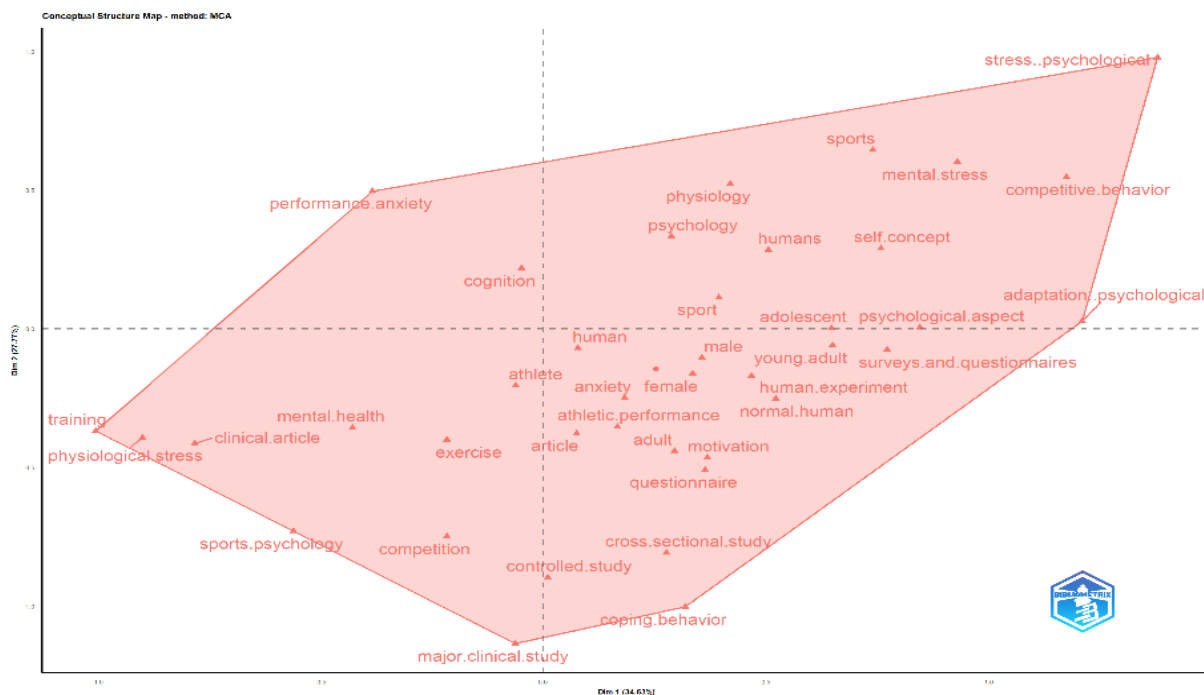


Figure 10. Conceptual structure mapping using multiple correspondence analysis

The core themes include stress psychological, mental stress, and competitive behavior, highlighting the impact of stress on athlete performance and psychological adaptation strategies. The relationship between psychology and physiology is evident through concepts such as self-concept, cognition, and physiology, reinforcing a multidisciplinary approach to understanding athlete responses to competitive pressure. Research also focuses on specific populations, such as adolescents and young adults, while considering gender differences in performance anxiety. From a methodological perspective, controlled studies and surveys dominate research approaches, emphasizing data-driven evaluation. This mapping underscores the importance of mental and physical balance in athlete performance and the need for further exploration of the interaction between psychological and environmental factors. Future studies can deepen this understanding by developing more precise and effective individualized interventions.

DISCUSSION

The research findings indicate that publications on performance anxiety in athletes are still dominated by developed countries, particularly the United States (55 documents) and the United Kingdom (45 documents). This dominance aligns with previous studies showing that countries with more advanced academic infrastructure, greater funding, and higher awareness of mental health in sports tend to be more productive in scientific publications (Zhang et al., 2023). However, the participation of developing countries such as Brazil, China, and Turkey, each contributing 10-20 documents, suggests a growing global engagement with this issue. These findings support the argument of Mountjoy et al., (2024, p. 202), which highlights the increasing global awareness of athlete mental health, particularly through advocacy from international sports organizations.

This trend presents opportunities to strengthen cross-national academic collaboration, helping to expand the understanding of performance anxiety across

different cultural contexts and sports development systems (Ahmedov & Abdulakhatov, 2023). Further analysis shows that the University of Washington (10 documents), Victoria University (8 documents), and University of Bath (7 documents) are the leading institutions contributing to performance anxiety research. Although several active research groups exist, collaboration networks among authors remain limited, indicating a tendency for research to be conducted within closed academic networks without significant cross-institutional and interdisciplinary dissemination (Gabrys & Wontorczyk, 2023). Previous studies have shown that cross-disciplinary and cross-institutional collaboration has a significant impact on the development of theories and practical applications in sports psychology (DeSantis, Deck, Hall, & Roland, 2022). Therefore, strengthening international cooperation through joint research projects, global conferences, and open-access journal publications could help enhance knowledge integration and broaden the impact of research in countries with limited resources in this field (Tolukan et al., 2024).

This study shows that psychology is the dominant field in performance anxiety research (25.3% of total documents), followed by medicine (22.4%) and health professions (17.7%). These findings support previous studies that emphasize performance anxiety not only affects psychological aspects but also has significant physiological consequences, such as increased cortisol levels, changes in heart rate variability, and heightened muscle tension, which can impair athletic performance (Jens, 2024). The growing number of studies in biochemistry, neuroscience, and social sciences reflects a paradigm shift in understanding performance anxiety, moving from a monodisciplinary to a multidisciplinary approach (DeSantis et al., 2022; Tolukan et al., 2024). Recent studies integrating neurofeedback and biofeedback have demonstrated their effectiveness in managing competitive anxiety in elite athletes. Therefore, future research may focus more on neuroscience and digital technology-based approaches to develop more precise and data-driven anxiety management strategies (Kaplánová, 2021, p. 202).

The number of publications has increased significantly since 2010, peaking in 2024 (more than 40 documents). This surge reflects the growing global attention to athlete mental health, reinforced by an increasing number of professional athletes openly discussing psychological pressures in competitive sports (Mountjoy et al., 2024). This trend also indicates the evolution of intervention methods for managing anxiety, including cognitive-behavioral therapy (CBT), mindfulness, and imagery training, which are increasingly being implemented in athlete training programs. Recent studies suggest that CBT-based interventions can reduce competitive anxiety by up to 30% more effectively than traditional methods such as simple relaxation techniques (Gao et al., 2021).

Future research can focus more on individualized anxiety management approaches, which consider differences in how athletes respond to competitive pressure. This aligns with the Individual Zones of Optimal Functioning (IZOF) Theory, which states that anxiety responses to performance are subjective and vary among individuals (Kaplánová, 2021; Sanader et al., 2021). Keyword analysis indicates that anxiety, stress, and performance anxiety are core themes in this research, closely linked to coping strategies, motivation, and self-efficacy. This connection suggests that research not only focuses on the negative effects of anxiety but also on the adaptive mechanisms athletes use to manage competitive pressure (Burgum & Smith, 2021). However, current research has yet to fully explore specific individual factors, such as neuroticism, cognitive anxiety, and self-

regulation, which may play a crucial role in determining whether anxiety has a positive or negative impact on athlete performance (Sanader et al., 2021). Therefore, future studies could examine the influence of personality traits and self-regulation strategies in determining the effectiveness of different psychological interventions for athletes with varying levels of anxiety (Aulia et al., 2024).

Conceptual structure analysis reveals that current research focuses on the relationship between stress psychological, competitive behavior, and self-concept, suggesting that performance anxiety is not only a psychological issue but also linked to an athlete's self-perception of their ability to handle competitive pressure (Iwuagwu et al., 2021). Additionally, the focus on adolescent and young adult athletes confirms that this population is more vulnerable to competitive anxiety effects. Previous studies indicate that young athletes with low self-efficacy are more likely to experience excessive performance anxiety, which can negatively impact their skill development and motivation in sports. Thus, future research could develop more targeted intervention strategies based on age, competitive experience, and athlete confidence levels (Kaplánová, 2024).

Overall, research on performance anxiety in athletes has been expanding significantly, supported by increased academic collaboration, multidisciplinary approaches, and the application of technology in psychological interventions (DeSantis et al., 2022). However, gaps remain in research network connectivity and the exploration of specific individual factors (Yang et al., 2024). To enhance future research effectiveness, it is necessary to strengthen cross-institutional and international collaboration and develop more personalized approaches to anxiety management based on athletes' psychological and physiological factors. By deepening the understanding of the complexity of performance anxiety, future research can contribute to the development of more accurate, evidence-based intervention strategies that are integrated into modern sports training systems (Tolukan et al., 2024).

CONCLUSION

This study provides a bibliometric synthesis of the development of research on athlete performance anxiety and confirms that the field has grown substantially while remaining unevenly distributed across the global research landscape. The findings answer the study objectives by showing that scholarly attention to performance anxiety in sport has increased over time, that publication output is still concentrated among countries and institutions with stronger academic infrastructures, and that collaboration networks remain relatively fragmented. These patterns indicate that, although athlete performance anxiety has become an increasingly recognized area within sport psychology and health-related research, its knowledge production has not yet been fully globalized.

The study further demonstrates that performance anxiety is no longer treated merely as an individual psychological response to competition, but as a multidimensional issue involving psychological, physiological, social, and performance-related factors. The emergence of themes related to anxiety, stress, coping, self-efficacy, mental health, and athlete well-being reflects a shift toward more integrated and intervention-oriented approaches. This finding is significant for the advancement of sport psychology because it positions performance anxiety as both a scientific and practical concern that requires evidence-based, multidisciplinary responses.

Theoretically, this study contributes to a clearer understanding of the intellectual structure and thematic evolution of athlete performance anxiety research. Practically, it highlights the need for coaches, sport psychologists, and athlete support systems to develop more individualized and context-sensitive anxiety management strategies. Methodologically, it demonstrates the usefulness of bibliometric and network analysis for identifying research trends, influential contributors, thematic clusters, and collaboration gaps.

This study is limited by its reliance on Scopus-indexed journal articles and selected bibliometric indicators, which may exclude relevant studies from other databases or non-indexed sources. Future research should compare multiple databases, examine underrepresented regions and athlete populations, and integrate bibliometric findings with systematic or qualitative reviews to generate a more comprehensive understanding of performance anxiety in sport.

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