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Bibliometric Analysis of Global Research Trends on Athlete and Motivation

Wildan Akbar Firdaus[1]*, Nurlan Kusmaedi[1]

[1]Study Program of Sport Education, Universitas Pendidikan Indonesia, Indonesia

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Correspondence

*Wildan Akbar Firdaus
Address: Jalan Setiabudhi No. 229, Kota Bandung, Jawa Barat 40154, Indonesia
E-mail:
wildanakabarfirdaus@upi.edu

Abstract

This study utilized bibliometric analysis to examine topics related to "athletes" and "motivation." Data was obtained from articles published between 2019 and 2024. The research strategy in this study involved searching for the current status and trends of research in the field of athletes and motivation through a data screening process. The database used for quantitative analysis was Scopus.com, with the help of the Mendeley application. This research has been developed and structured in accordance with the BIBLIO Checklist for bibliometric reviews of biomedical literature. Each item on the checklist, including title identification, abstract structuring, methodological transparency, data synthesis, and results presentation, has been addressed to ensure clarity, reproducibility, and completeness. The publication trend analysis showed a fluctuating pattern over the decade, with significant peaks in 2020 and 2022, indicating a growing interest in this area of research. In addition, keyword co-occurrence analysis was used to reveal thematic clusters and interrelationships between research topics. This study provides a comprehensive understanding of the evolution, trends and collaborations in athlete motivation-related research from 2019 to 2024, providing valuable insights into the interconnectedness of ideas and guiding future research directions. However, limitations such as language bias indicate the need for a broader exploration of the literature and qualitative dimensions to deepen the understanding of athlete motivation.

Keywords: athlete; bibliometric; motivation; research trends.

Introduction

In the domain of sports, motivation has been identified as a pivotal factor in determining an athlete's level of success (Heazlewood & Burke, 2011). Motivation exerts a substantial influence on performance outcomes in athletic contexts, as well as contributing to the optimization of the training process and the development of skills (Tušak et al., 2022). The role of social support in the context of athletic performance is a multifaceted phenomenon that has garnered significant attention in recent research. Studies have demonstrated that the support system, comprised of family members and peers, exerts a substantial influence on an athlete's motivation levels. This, in turn, has been shown to indirectly affect an athlete's performance in achieving their athletic objectives (Zainuddin et al., 2023). A study by Clarasasti & Jatmika (2017) on adolescent badminton athletes found that 76.7% of athletes with high motivation experienced lower levels of anxiety (23.3%). It has been demonstrated that the absence of robust motivation in athletes renders it nearly impossible for them to achieve a high level of performance (Kusumajati, 2011).

Intrinsic motivation, defined as internal motivation stemming from an individual's personal interest or enjoyment in the activity itself, has been demonstrated to positively impact athletic performance (Almagro et al., 2020). Intrinsic motivation is regarded as the most potent driving force, as it originates from within the athlete (Ahmad et al., 2020). When athletes are intrinsically motivated, they engage in sports for personal satisfaction, tackle tasks with enthusiasm, and achieve optimal results (Tajuddin, 2021). Intrinsic motivation exerts a substantial influence on the levels of competitive anxiety experienced by wheelchair handball athletes (Da Silva et al., 2021). According to Rahman et al. (2023), the presence of strong intrinsic motivation has been demonstrated to offer substantial benefits, including the encouragement of athletes to pursue goals with sincerity, to derive enjoyment from the process, and to achieve greater outcomes.

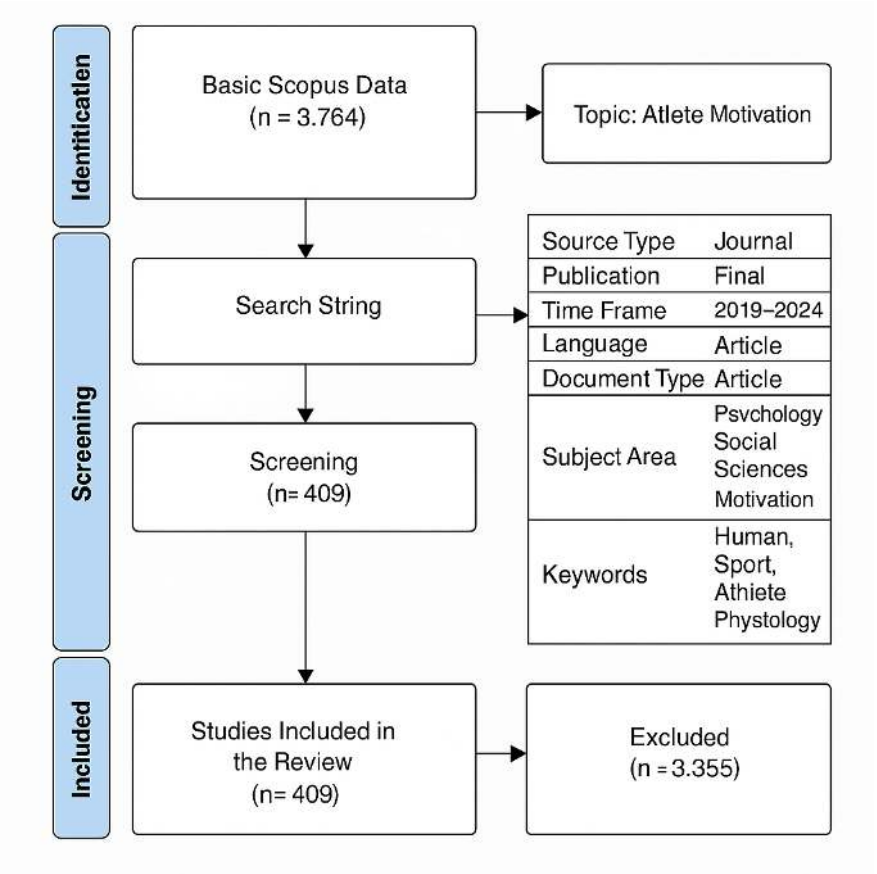
However, motivation is not solely intrinsic; extrinsic motivation also plays a crucial role in training and achieving performance (Gillet et al., 2010). Extrinsic motivation is defined as behavior that is driven by external factors, such as the desire for rewards or support from coaches and family members (Gillet et al., 2010). As posited by Foekh et al. (2022), the provision of motivational support from family members and coaches has been demonstrated to foster self-confidence, thereby contributing to positive emotional responses during training. Nugroho et al. (2022) found that emotional support from family members has a significant impact on the mental well-being of athletes, particularly in competitive environments. Their research indicates that such support can enhance athletes' self-confidence and mitigate the anxiety that is commonly experienced in competitive settings. Conversely, coaches who cultivate positive relationships with athletes can foster a supportive environment where athletes feel valued and motivated to excel (Shanmuganathan-Felton et al., 2022).

Methods

Research Design

This research is a bibliometric analysis that analyzed related to "athlete" and Motivation". The database used to analyzed quantitatively comes from the Scopus.com page with the help of the Mendeley application. Bibliometric analysis as a valuable tool to map the literature widely (Ýri & Ünal, 2024). The searched items were exclusively with the number of articles obtained as much as 3764 then filtered with the past five years published from 2019-2024 to get 409 published articles. The documents were filtered and further analyzed on the Scopus.com page in a specific domain and identified trends and relationships among the studies. The design of this analysis is presented in Figure 1.

Figure 1
Search strategy in Scopus



Procedure

The researcher conducted a comprehensive search of the Scopus database in order to increase the relevance of the data (Eswari et al., 2024). The research strategy in this study was to search for the current status and trends of research on athlete and motivation with a data filtering process. The data for this study was obtained from articles published between 2019 and 2024. The search strategy includes subject terms, namely: TITLE-ABS-KEY (athlete AND motivation) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "MEDI") OR LIMIT-TO (SUBJAREA , "PSYC") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "HEAL")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (EXACTKEYWORD , "Motivation") OR LIMIT-TO (EXACTKEYWORD , "Human") OR LIMIT-TO (EXACTKEYWORD, "Athlete") OR LIMIT-TO (EXACTKEYWORD, "Psychology") OR LIMIT-TO (EXACTKEYWORD, "Sport") AND (LIMIT-TO (LANGUAGE, "English") AND (LIMIT-TO (PUBSTAGE, "final") AND (LIMIT-TO (OA, "all")). After the data filtering process VOSviewer was used to perform data visualization (Li et al., 2024). The resulting software is a network analysis of co-authorship, and co-occurrency (Pereira & Jegatheesan, 2024).

This research has been developed and structured in accordance with the BIBLIO Checklist for bibliometric reviews of biomedical literature. Each item on the checklist, including title identification, abstract structuring, methodological transparency, data synthesis, and results presentation, has been addressed to ensure clarity, reproducibility, and completeness.

Results

The overall publication trend in the keywords "Athlete" and "Motivation" in 2019 to 2024 in Figure 2. Analysis based on the Scopus database shows the last 5 years, the distribution of publications shows an increasing trend that jumped in 2020 as many as 90 documents, then increased again in 2022 as many as 100 articles published, in 2022 is the highest number of publications recorded in the last 5 years in Figure 2. Then the research trend decreased in 2023 as many as 70 documents to 2024 as many as 77 documents.

Figure 2
Documents Published on Scopus Database

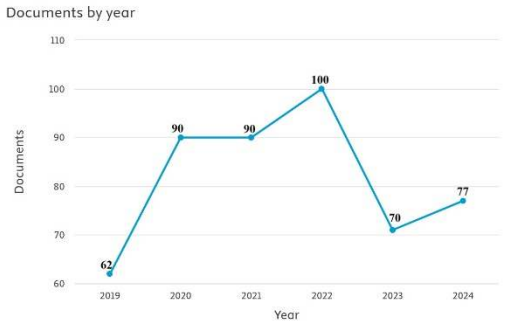
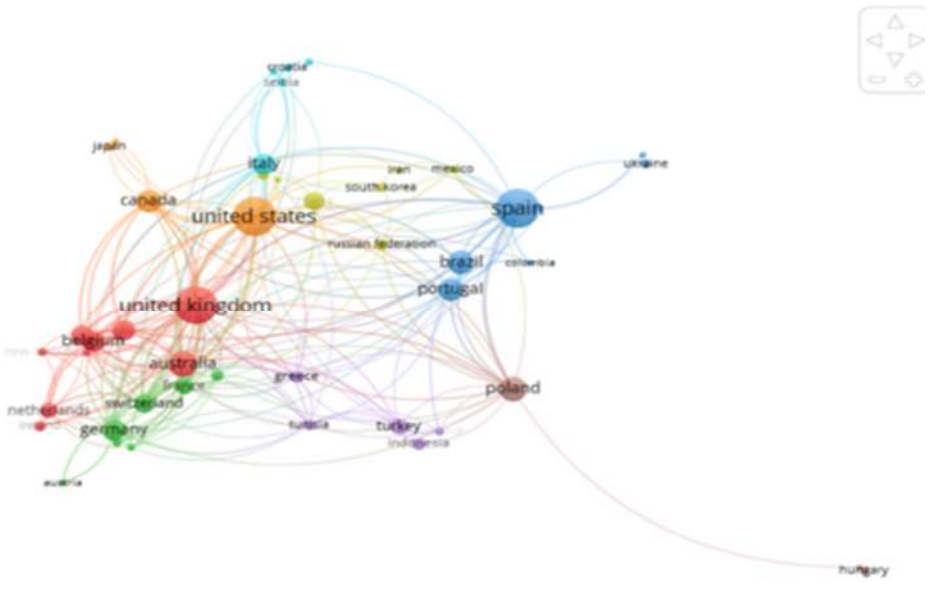


Figure 3
Influential Authors generated using VOSviewer

Figure 4
Citation network analysis that identifies author origin by country



Author's Analysis

In total of 409 articles (N = 409), Malchrowicz, Ewa. had the most publications with 12 documents and Fransen, Katrien as the most citations with 162 citations (Table 1 and Table 2), followed by Knechtle, Beat as an author further with a total of 7 documents and 161 citations.

Table 1

Authors based on the most citations generated using VOSviewer

Rank	Author By Citations	Document
1	Malchrowicz, Ewa	12
2	Fransen, Katrien	7
3	Leon-guereno, Patxi	7
4	Knechtle, Beat	7
5	Manzano-Sanchez, David	6
6	Valero-Valenzuela, Alfonso	6
7	Boen, Filip	5
8	. Haslam,S. Alexander	5
9	Steffens, Niklas K	5
10	Freire, Gabriel	5

Table 2

Authors based on the most citations generated using VOSviewer

Rank	Author By Citations	Citations
1	Fransen, Katrien	162
2	Knechtle, Beat	161
3	Malchrowicz, Ewa.	131
4	Nikolaidis, Pantelis T	119
5	Knight, Camilla J	104
6	Rosemann, Thomas	102
7	Leon-guerreno, Patxi	93
8	.Vansteenkiste, Marteen	91
9	Van Puyenbroeck, Stef	85
10	Boen, Filip	84

Country Analysis

Table 3 shows the top 10 countries based on documents generated. United Kingdom has 80 documents, followed by Spain and United States with 79 and 77 documents respectively. While table 4 shows that of the 10 countries that have the most citations, United Kingdom ranks first with a total of 1249 citations, then Spain 767 citations and United States 678 citations. Figure 4 presents a map of the distribution of collaboration networks, namely the United Kingdom as the country that has the most significant centrality, followed by Spain and the United States. Based on the definition of centrality, these countries show close collaboration with other countries with strong academic participation (Gong et al., 2023).

Figure 4
Citation network analysis that identifies author origin by country

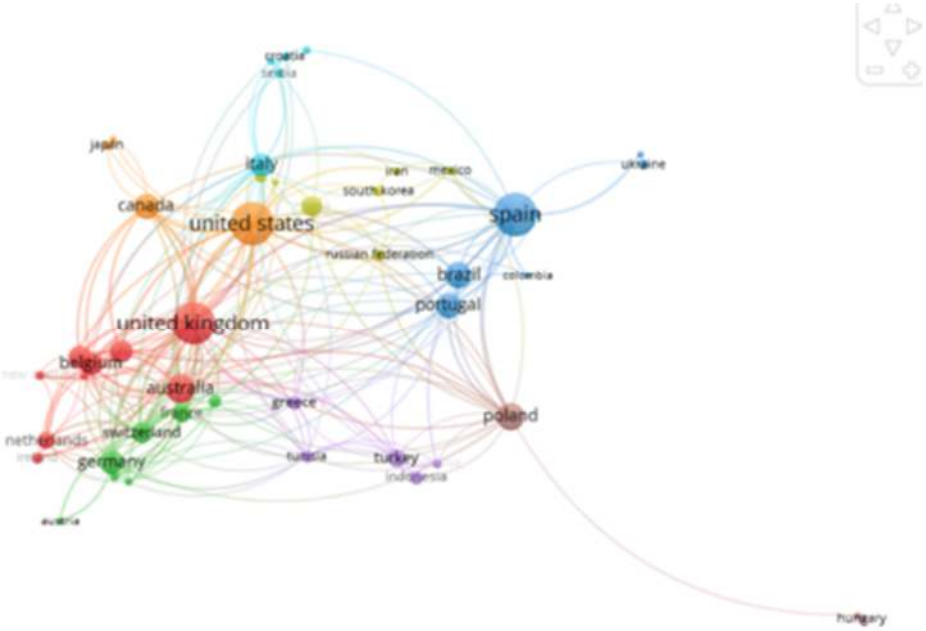
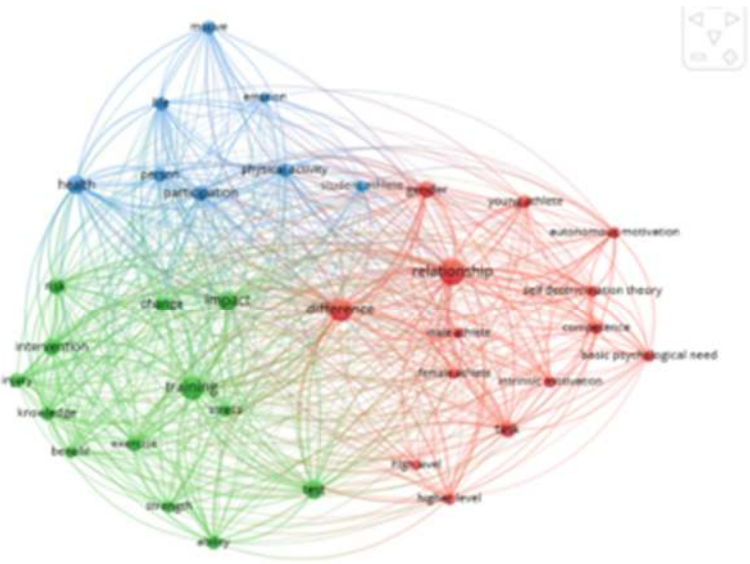


Figure 5
Network Visualization of Shared Keyword Occurrence



Analysis of co-occurrence of keywords

Researchers mapped the main contributors (authors, country of origin, and keywords), analyzed the occurrence of keywords to identify publication trends, and tracked the main themes in the publications. The size in the item labels is proportional to the number of publications found, while different colors represent different knowledge topics grouped based on software clustering techniques (Delmoral & R S Tavares, 2024). Citation relationships between publications are the cornerstone of many bibliometric analyses. Therefore, the availability of accurate citation data is essential for high-quality bibliometric studies (Wang et al., 2024).

In this study, we created a keyword graph using the keyword function in VOSviewer, used the fractional counting method, set the keyword occurrence as 35 keywords, and used the author's keywords as the unit of

analysis. Each cluster has been grouped and presented in Table 4 and Figure 5 cluster analysis

In Table 6. researchers present the 10 documents with the most citations on the Scopus page for the *Athlete and Motivation* article research category. Contains the title of the article, data on the year of publication along with the author and with the most citations

Table 3
Analyses that identify a country based on documents

Rank	Country By Document	Document
1	United Kingdom	80
2	Spain	79
3	United States	77
4	Australia	37
5	Poland	35
6	Brazil	31
7	Canada	29
8	Portugal	28
9	Germany	27
10	Italy	25

Table 4
Analysis that identifies a country based on citations

Rank	Country By Citations	Citations
1	United Kingdom	1249
2	Spain	767
3	United States	678
4	Australia	376
5	Belgium	300
6	Poland	285
7	Sweden	282
8	Switzerland	274
9	South Africa	262
10	Canada	247

Table 6
10 Most Cited Articles

No	Title	Author	Year	Total Citation
1	Physical Activity and Exercise during Pregnancy and the Postpartum Period	(Kader, Manzur., 2020)	2020	417
2	Nowhere to hide: The significant impact of coronavirus disease 2019 (COVID-19) measures on elite and semi-elite South African athletes	(Pillay et al., 2020)	2020	195
3	How elite athletes, coaches, and physiotherapists perceive a sports injury	(Bolling et al., 2019)	2019	154
4	Ecological grief as a response to environmental change: A mental health risk or functional response?	(Comtesse et al., 2021)	2021	95
5	Elite female athletes' experiences and perceptions of the menstrual cycle on training and sport performance	(Brown et al., 2021)	2021	91
6	Visual feedback attenuates mean concentric barbell velocity loss and improves motivation, competitiveness, and perceived workload in male adolescent athletes	(Weakley et al., 2019)	2019	78
7	Coaching the coach: Intervention effects on need-supportive coaching behavior and athlete motivation and engagement	(Reynders et al., 2019)	2019	65
8	Concussion Symptom Underreporting among Incoming National Collegiate Athletic Association Division i College Athletes	(Conway et al., 2020)	2020	53
9	How the menstrual cycle and menstruation affect sporting performance: Experiences and perceptions of elite female rugby players	(Findlay et al., 2020)	2020	50
10	Anxiety and Motivation to Return to Sport During the French COVID-19 Lockdown	(Ruffault et al., 2020)	2020	45

The following table shows the top 10 most cited articles related to athlete and motivation topics. Each article is grouped based on the type of study or main focus, making it easier to understand the research trends in this field. This classification helps to highlight which study designs such as reviews, observational, or experimental studies have had the greatest impact and what themes are most frequently explored in highly cited publications. A total of 1,253 citations were recorded across the 10 articles, with an average of 125.3 citations per article, the most common publication year being 2020 (5 articles), the highest cited article reaching 417 citations, and perception-based studies on female athletes emerging as the most frequent study type.

Table 7
Classification of Top 10 Most Cited Articles by Type of Study

No	Article Title	Type of Study / Main Focus	Year	Citation Count
1	*Physical Activity and Exercise during Pregnancy and the Postpartum Period*	Policy/practice review	2020	417
2	*Nowhere to hide: COVID-19 impact on SA athletes*	Observational study (pandemic impact)	2020	195
3	*How elite athletes perceive sports injury*	Qualitative study on perception	2019	154
4	*Ecological grief and environmental change*	Theoretical review (psychological)	2021	95
5	*Elite female athletes & menstrual cycle*	Female athlete perception study	2021	91
6	*Visual feedback and motivation in adolescent athletes*	Experimental motivation/performance study	2019	78
7	*Coaching the coach intervention*	Coaching intervention study	2019	65
8	*Concussionsymptom underreporting*	Survey-based study	2020	53
9	*Menstrual cycle in elite rugby players*	Female athlete perception study	2020	50
10	*Anxiety and motivation during lockdown*	Quantitative pandemic study	2020	45

Discussion

Based on the research results, several key findings emerged regarding research trends and contributions in the fields of "Athlete" and "Motivation" from 2019 to 2024. Analysis of publication trends reveals a fluctuating pattern over the decade, with prominent peaks in 2020 and 2022 indicating increased interest in this field of study. The article with the most significant impact based on the highest citations was written by Kader, Manzur. (2020) entitled " Physical Activity and Exercise during Pregnancy and the Postpartum Period " with 417 citations. This article focuses on physical activity and exercise during pregnancy and the postpartum period.

Figure 3 highlights the significant contributions of the 10 most prolific researchers, such as Malchrowicz, Ewa, Fransen, Katrien, Knechtle, Beat, who have published many insightful articles in this domain. These contributions not only enrich the academic discourse but also reflect a commitment to advancing knowledge and innovation in athlete and motivation. In addition, the analysis of citations from the impactful work of Malchrowicz, Ewa, who is widely influential. Table 3 and Table 4 provide a global insight into the impact of her research benefits. The United Kingdom is the country with the most significant centrality, followed by Spain and the United States. Figure 4 visualizes the collaboration network between countries with the leadership of the United States depicted in Figure 4.

The central position of the United Kingdom, along with strong collaborations involving Spain and the United States, Australia, and Belgium highlight the global nature of research efforts in athlete and motivation. This may be due to the data that Scopus-listed journals or proceedings are predominantly in English (Net et al., 2023). Furthermore, this study utilized shared keyword analysis to uncover thematic clusters and reciprocal relationships among the research topics. This methodological approach facilitates the identification of key themes and emerging trends in the literature, offering a structured understanding of the interconnectedness of ideas and facilitating future research directions. By mapping these shared keyword clusters, this research contributes to refining and expanding the scientific discourse on athlete motivation that can affect athlete performance, especially in female athletes.

From the emergence of keywords, the topic of motivation relationships in athletes is interesting to explore. Motivation has a significant impact on the behavior, performance, and well-being of athletes, especially during competition. This can be observed from the group and percentage of occurrence, such as in Group 1: "Autonomous motivation, basic psychological need, competence, difference, female athlete, gender, high level, higher level, intrinsic motivation, male athlete, relationship, self-determination theory, task, young athlete", which is often mentioned as a keyword in the analysis document. However, there are still many issues

that have not been researched or require further investigation, such as how athlete motivation can affect female student athletes. Overall, this comprehensive analysis of research provides valuable insights into the evolution, trends and collaborative dynamics of research in Coach Athlete Relationships for Student Athletes. The findings not only inform current research but also serve as a mapping for future investigations aimed at improving psychological well-being outcomes in student-athletes, particularly female student-athletes who face stressors in sport, such as body image, professional-personal life balance, and gender stereotypes.

This study has several limitations that need to be addressed. First, the focus on English-language publications indexed in Scopus may lead to language bias, overlooking important research contributions in other languages. Second, reliance on Scopus may lead to publication bias, as it does not cover all relevant literature, especially from non-indexed sources or less common fields. Third, this analysis is limited by data available up to November 2024, so it is possible that recent developments are not accommodated. Fourth, despite careful keyword design, some relevant articles may not have been detected, affecting the completeness of this review. Finally, bibliometric approaches provide broad quantitative insights, but often fail to capture the qualitative dimensions or deep context of individual studies, so caution is required in interpreting the results. These limitations suggest the need for a more comprehensive and exploratory approach in future research to broaden the understanding of athlete motivation.

Conclusions

This research study provides a comprehensive understanding of research developments, trends and collaborations related to athlete motivation over the period 2019 to 2024. The findings indicate an increase in scientific attention to the topic, with publication activity peaking in 2020. Notable contributions, such as works addressing physical activity during pregnancy and postpartum, as well as the role of prolific researchers and strong international collaborations, further emphasize the importance of this topic in the academic realm. The United Kingdom's dominance in publication and citation production demonstrates its significant influence in determining the direction of global research. However, limitations such as language bias and bibliometric approaches point to the need for wider exploration of literature sources and qualitative dimensions to deepen understanding of athlete motivation. This opens up opportunities for future research to fill in the gaps and enrich existing perspectives.

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