Brazilian rhythmic gymnastics national team: territorial linkages and gymnasts' participation in international competitions

Selección brasileña de gimnasia rítmica: vínculos territoriales y participación de las gimnastas en competiciones internacionales

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Abstract

Introduction: The trajectory of Brazilian Rhythmic Gymnastics (RG) is closely linked to the formation of its national team, marked by selection criteria, training organization, and participation in competitions.
Objective: Therefore, we sought to analyze the participation of the Brazilian national team in World Championships, World Cups, FIG World Challenge Cups, and Olympic Games, as well as to identify the gymnasts' territorial linkages from 1984 to 2025.
Methodology: This is a documentary study with descriptive analysis and census perspective presented in two parts: analysis of participation in events identified on the websites of the World Gymnastics and the Olympic Studies Centre; and identification of the gymnasts' territorial linkages (state/club at the time of call-up). A total of 71 competition editions and 67 gymnasts were analyzed.
Results: A high level of participation in World Championships was observed, but with limited presence in the Olympic Games. In the World Cups and FIG World Challenge Cups, individual events showed significant participation, unlike group events. Regarding territorial linkages, 61.2% of the gymnasts originated from the Southern Region of Brazil, and 41.8% were affiliated with four clubs in the state of Paraná.
Discussion: We understand that the frequency of participation is associated with the consolidation of RG, its reference centers, scientific exchange, and institutional organization. However, the constitution of the national team remains strongly concentrated in specific clubs, cities, and states.
Conclusions: Understanding how these spaces are organized allows for the development of proposals aimed at disseminating and improving RG in Brazil.

Keywords

Competitions; national team; rhythmic gymnastics; territorial linkages.

Resumen

Introducción: La trayectoria de la Gimnasia Rítmica (GR) brasileña está vinculada a la formación de su selección nacional, marcada por criterios de convocatoria, organización de los entrenamientos y participación en competiciones.
Objetivo: Analizar la participación de la selección brasileña en Campeonatos Mundiales, Copas del Mundo, Copas del Mundo FIG Challenge y Juegos Olímpicos, así como identificar los vínculos territoriales de las gimnastas.
Metodología: Investigación documental con análisis descriptivo y perspectiva censal presentado en dos partes: análisis de la participación en eventos identificados en los sitios web de la World Gymnastics y del Centro de Estudios Olímpicos; e identificación de los vínculos territoriales de las gimnastas (estado/club en el momento de la convocatoria). Se analizaron un total de 71 ediciones de competiciones y 67 gimnastas.
Resultados: Se observó una alta participación en Campeonatos Mundiales, pero una presencia limitada en los Juegos Olímpicos. En las Copas del Mundo y Copas del Mundo FIG Challenge, las pruebas individuales mostraron una participación significativa, a diferencia de las pruebas de conjunto. En cuanto a los vínculos territoriales, el 61,2% de las gimnastas provenían de la Región Sur de Brasil y el 41,8% estaban vinculadas a cuatro clubes del estado de Paraná.
Discusión: La frecuencia de participación está asociada con la consolidación de la GR, sus centros de referencia, el intercambio científico y la organización institucional. Sin embargo, la selección nacional permanece concentrada en clubes, ciudades y estados específicos.
Conclusiones: Comprender esta organización territorial permite desarrollar propuestas para difundir y fortalecer la GR en Brasil.

Palabras clave

Competiciones; gimnasia rítmica; selección nacional; vínculos territoriales.

Introduction

The systematization of Rhythmic Gymnastics (RG) was marked by formal regulations and the organization of competitions, in accordance with the principles of modern sport, such as the standardization of rules, the development of objective evaluation criteria, and the institutionalization of sports federations (Cleophas & Visser, 2024; Pizzol et al., 2022), as exemplified by the Fédération Internationale de Gymnastique (FIG), currently known as World Gymnastics. This process enabled RG to enter the global competitive arena, consolidating it as a high-performance sport with international visibility (Pizzol et al., 2022; Furtado et al., 2020).

Within this process, competitions play a crucial role in the promotion, spectacularization, and dissemination of sport (Vargas, 2017; Furtado, 2020). World Championships, World Cups, and Olympic Games are highly visible events with global reach that require participating countries to have an organizational structure capable, at a minimum, of selecting and organizing athletes based on specific criteria for the formation of national teams (Vargas, 2017). Brazilian participation in international events, particularly competitions, contributed to bringing Brazilian RG closer to the work developed in countries with greater consolidation in the sport (such as Russia, Bulgaria, and Belarus), reducing the technical-pedagogical gap (Rezende, 2012). In addition, competitions are inherent to sport and are related to athletes' career development and the country's sporting success, constituting an essential phenomenon for the maturation of the sport and, from the athletes' perspective, for measuring their progress, gaining experience, and exchanging knowledge (Mess, 2014; Lourenço, 2015; Furtado, 2020).

Based on the above, participation in international competitions contributes to the development of sport. However, Oliveira et al. (2023) point out that the significant results achieved in gymnastics disciplines in Brazil are the result of individual and isolated actions and argue that there are weaknesses in management, making it important to investigate the environmental context surrounding these gymnasts. Thus, territory should not be understood merely as physical space or geographic location, but as a socially produced dimension in which individuals establish relationships and institutional, technical, cultural, and political conditions are articulated, which may influence sports trajectories (Maquera-Maquera et al., 2024; López-Hernández & González-Ortega, 2026).

In other words, Oliveira et al. (2023) identified the relevance of the place of birth and/or training in the development of successful high-performance gymnasts. Thus, this place

[...] may provide consistent evidence of how athletes' development toward sporting success occurs, while also offering an overview of the place where these individuals spent their childhood, how they were initially exposed to sport, and some of the aspects that influenced their sporting performance over time (Oliveira et al., 2023, p. 4).

Wise (2024), when investigating globalization and migration, highlights the importance of training locations for the development of elite athletes. According to the researcher, it is essential to understand where these spaces are located and how they are organized to develop new athletes, direct investments, and promote sport. From this perspective, such discussions may contribute to the country's sports policies by understanding locations with positive experiences that combine ease of access to participation, safety, and high-quality sports facilities (Tozetto et al., 2017).

Despite the importance of the topic, understanding remains limited regarding how territorial linkages are distributed among the gymnasts who reached the Brazilian RG national team and which clubs, states, and regions were associated with their trajectories. Identifying these territorial relationships also makes it possible to problematize how certain positions occupied by clubs, cities, and states may be related to the gymnasts' trajectories within the context of the sport. Thus, contextualized territorial diagnoses are needed to support qualified interventions and contribute to sports management (López-Hernández & González-Ortega, 2026), relating these parameters to sporting success within the specificity of this sport practice (Oliveira et al., 2023).

Therefore, identifying who comprises Brazilian RG through its national team may provide information on training methods, sports contexts, and regional trends. In this sense, the present study aimed to analyze Brazil's participation in international competitions and identify the territorial linkages (state and club/institution at the time of call-up) of the gymnasts who were members of the Brazilian national

teams at the Olympic Games, World Cups, FIG World Challenge Cups, and World Championships, in both individual and group categories, from 1984 to 2025.

Method

Type of Research

The present study consisted of documentary research with a quantitative approach. In this sense, documentary research uses a variety of documents as the object of investigation (Sá-Silva et al., 2009). According to Gil (1991), the documents used in documentary research have not undergone prior analytical treatment and exist in a diversified and dispersed manner and may be produced and issued by public or private institutions in different formats.

These documents enable a primary analysis of the events within the intended phenomenon and are compiled by the study authors to seek hypotheses consistent with the research problem (Marconi & Lakatos, 2003; Cechinel et al., 2016). Based on the above, documentary research seeks to provide a better understanding of the problem and to construct hypotheses that better represent the intended context (Gil, 1991).

Research Object

Based on these considerations, the object of this study comprised Brazilian gymnasts who were members of the national RG team, focusing on the identification of their territorial linkages, considering the state and club at the time of call-up. Thus, the research was conducted in two distinct stages: (1) Identification of the gymnasts who participated in the previously established championships, from 1984 to 2025, and their number of participations; (2) Territorial Linkages: Identification of the state and club in which they were active at the time of call-up.

Thus, four different international competitions with global scope, organized and/or regulated by World Gymnastics and intended for the senior category were used: World Cups, FIG World Challenge Cups, World Championships, and Olympic Games. These competitions were selected due to their relevance and representativeness at the international level. However, it should be noted that the Pan American Championship was not analyzed in this study because it is a continental event.

Procedures for Data Collection and Organization of Sources

During the first phase of the study (Identification of the gymnasts who participated in the previously established championships and their number of participations), the analyzed documents consisted of the Participants Lists and/or the Official Results and Score Sheets of the competitions, with the purpose of identifying the editions and stages of the championships in which Brazilian gymnasts were present, both in individual and group competitions, as well as identifying the participating gymnasts. Each competition presents a specific temporal delimitation in the study, according to its characteristics:

World Cups and FIG World Challenge Cups: The World Cups were investigated considering the editions of both the World Cups and the FIG World Challenge Cups from 2017 onwards, totaling 46 editions. In the case of these events, this time frame was adopted due to the modification in the organization of the championship and its division into two distinct events, which occurred in 2017. That is, from 2017 onwards, the World Cups began to take place in four editions between February and April (FIG, 2024a), while the FIG World Challenge Cups were held in three editions between March and November, representing the first and last events of the year (FIG, 2024b).

From this perspective, the purpose of these events is to provide greater participation opportunities for gymnasts throughout the year and to support affiliated federations in the development of RG (FIG, 2024a). The score sheets were found on the World Gymnastics platform through the official website under the results section, specifying the year and the discipline (WG, n. d.).

World Championships: Regarding the World Championships, the analysis began in 2007 due to the availability of score sheets on the World Gymnastics platform through the official website under the results section, specifying the year and the discipline (WG, n. d.). All competitions from the 28th edition in 2007 to the 41st edition in 2025 were analyzed, totaling 14 events.

Olympic Games: The Olympic Games were analyzed in all editions featuring RG participation. Thus, the study examined the Official Results from 1984 Summer Olympics to 2024 Summer Olympics. In total, 11 editions were considered, and the data were collected from the official website of the Olympic Studies Centre (OSC, n.d.).

In total, 71 championships were analyzed (Table 1), with the analyzed editions and the names of the Brazilian gymnasts present in each edition organized in a Microsoft Excel spreadsheet.

Table 1. Editions, years, and periodicity of the events analyzed in the study.

Events	Editions	Years of the Analyzed Editions	Periodicity
Olympic Games	11	1984, 1988, 1992, 1996, 2000, 2004, 2008, 2012, 2016, 2020*, 2024	Quadrennial
World Championships	14	2007, 2009, 2010, 2011, 2013, 2014, 2015, 2017, 2018, 2019, 2021, 2022, 2023, 2025	Annual. Not held during Olympic Games years.
World Cups	30	2017, 2018, 2019, 2021, 2022, 2023, 2024, 2025	Four editions per year. Two editions in 2024.
FIG Challenge World Cups	16	2017, 2018, 2019, 2021, 2022, 2023, 2024, 2025	Between one and four editions per year.

*The 2020 Olympic Games were officially held in 2021 due to the COVID-19 pandemic. No other championships were held in 2020.

Considering the different periods covered by the competitions—40 years for the Olympic Games (1984–2024), 18 years for the World Championships (2007–2025), and 9 years for the FIG World Cups and FIG World Challenge Cups (2017–2025)— the limitation of directly comparing participation rates across competitions was acknowledged, given that their timeframes and numbers of editions differ. Thus, the percentages presented were used to describe the gymnasts' participation in each competition within its respective period of analysis and were not interpreted as directly comparable measures across events. However, the relevance of this study lies in the possibility of tracking, based on the availability of official data, the expansion of Brazilian participation and the increase in the number of international competitions, aspects that are part of the process of consolidating Rhythmic Gymnastics (RG).

In the second phase of the study, territorial linkages (the gymnast's club and state at the time of call-up), the clubs of the Brazilian gymnasts participating in the selected events were identified, as well as their training state. In total, 67 gymnasts represented the Brazilian RG national team in the group and/or individual categories within the presented time frame, and the official documents used to determine the club and state were obtained through different sources (Table 2). Therefore, it should be noted that the data collection procedures described below were carried out in order of priority. In other words, only the gymnasts who were not identified through Procedure 1 were subsequently searched for in Procedure 2, and so on.

Table 2. Data collection procedures and number of results found through each source.

Type of Procedure	Description of the Procedure	Limitation of the Procedure	Number of Results Found
Official WG website	Club identified on the official WG website under the "Athletes" section in the "Club" field.	All gymnasts have biographies; however, not all data are complete and visible.	21
National Championship Results Booklets	Club identified in the results booklets of Brazilian Championships available on the Confederação Brasileira de Ginástica website under the "Results" section in the year the gymnast represented the national team or the previous year.	The platform provides results only from 2017 onward, not covering previous years and cycles.	15
Olympedia Platform	Club identified under the "Athletes" section of the database available on the Olympedia website.	Data are available only for athletes who participated in the Olympic Games.	11
Published News Reports	Club identified in different news reports, including interviews or descriptions of the gymnasts' lives.	Different communication channels were used, such as newspapers specific to cities and states.	18
Bibliographic Documents	Club identified in articles, dissertations, or theses that mention specific gymnasts.	Materials were difficult to locate.	2

Data Validation Procedures

The identification of the gymnasts' territorial linkages, including the state and club with which they were affiliated at the time of call-up, was subject to verification among the researchers. Initially, one researcher collected the sources and recorded the results, while the other three independently checked and reviewed the information. When inconsistencies or discrepancies were identified, the data were verified against the available sources until a consensus was reached among the researchers involved in the study.

Furthermore, for the results obtained through Procedures 4 and 5 (Published News Reports and Bibliographic Documents), the information was verified against at least two news sources or documents. This process was carried out by both the researcher responsible for data collection and the researchers responsible for the independent review.

Analysis Procedures

Considering that the study includes the 67 gymnasts identified in the population defined for the study, the analysis of the results was conducted from a census perspective using descriptive statistics. In this approach, as highlighted by Guedes et al. (2005), the aim is to express trends through absolute (n) and relative (%) frequencies, organized into tables, graphs, or descriptive measures. Thus, descriptive statistics comprise a set of methods that use indicators to organize data and aim to increase knowledge about reality (Silvestre, 2007). Statistical inference tests or confidence intervals were not used, since the objective was to describe the population defined in the study rather than to make estimates or generalizations based on a sample.

Based on these data, the results are presented and subsequently discussed in two categories: 1) Brazilian RG on the world stage: an analysis of the participation of Brazilian national teams in international championships; and 2) Who are the members of the Brazilian RG national teams? An analysis of the gymnasts' territorial linkages.

Results

According to the methodological procedures, the analysis of the participation of the Brazilian RG national team in the aforementioned international competitions was based on 71 distinct editions/events. In Table 3, it was possible to observe the data from each of the four analyzed competitions, both in the individual and group events.

Table 3. Number of editions and participation of the Brazilian national team analyzed.

Events	Period	Number of Editions	Number of Participations (Brazilian Individual National Team)	Number of Participations (Brazilian Group National Team)
Olympic Games	1984–2024	11	4	6
World Championships	2007–2025	14	13	14
World Cups	2017–2025	30	18	3
FIG Challenge World Cups	2017–2025	16	15	3
Total	-	71	50	26

Before presenting the results, it is necessary to emphasize that the percentages do not indicate the same type of competitive opportunity, since the Olympic Games, World Championships, World Cups, and FIG World Challenge Cups have different periodicities, access criteria, and participation limits/opportunities.

In this context, in the World Championships, Brazil achieved 100% participation in the group category and approximately 93% in the individual category. For the Olympic Games, Brazilian participation represented 54.5% of the editions in the group category and 36.4% in the individual category. Finally, the World Cups and FIG World Challenge Cups showed a lower percentage of participation. When analyzing the 46 editions of the World Cups and FIG World Challenge Cups, it was observed that the Brazilian

individual national team was present in 33 of them, corresponding to 71.7%, while the group team participated in 6 editions, corresponding to 13%.

Based on the presented results, the Brazilian national team was represented by 67 different gymnasts in official competitions. Of this total, 48 gymnasts were members only of the group national team, while 13 composed only the individual national team. Six gymnasts represented the country in both events.

Among the gymnasts, 21 represented the Brazilian national team only once (31.3%). All Brazilian gymnasts who participated in the 2024 Summer Olympics had more than one participation in the events analyzed (Table 4).

Table 4. Brazilian gymnasts who participated in the 2024 Olympic Games and number of participations in the championships analyzed.

Gymnast	Type of National Team Represented	Number of Participations in World Championships, World Cups/FIG Challenge World Cups, and Other Olympic Editions
Bárbara de Kássia Godoy Domingos	Individual	26
Nicole Pircio Nunes Duarte	Group	12
Deborah Medrado	Group	11
Maria Eduarda de Almeida Arakaki	Group	11
Sofia Madeira Pereira	Group	6
Victória Borges	Group	3

The 67 gymnasts who have been members of the national RG team, at the time of call-up, represented clubs from 12 different states and the Federal District (Figure 1). In other words, among the 27 federative units that make up the country, 44.4% of the states have already had representatives on the Brazilian RG national team.

Figure 1. Number of gymnasts who represented Brazil in championships by Brazilian federative unit.



Furthermore, it was possible to visualize the overview of the called-up gymnast by region (Table 5). In general, the Southern Region accounted for more than half of the call-ups, followed by the Southeastern Region.

Table 5. Approximate Percentage of call-ups by Region of Brazil.

Region	Number of call-ups	Percentage (Approximate)
South	41	61.2%
Southeast	15	22.4%
Northeast	7	10.4%
North	2	3%
Central-West	2	3%

Regarding the clubs, the gymnasts were affiliated with 28 different clubs at the time of call-up. Of these, 20 clubs had only one call-up, totaling 20 gymnasts and corresponding to 29.8% of the population. In

turn, eight clubs had more than one call-up, comprising 47 gymnasts, corresponding to 70.2% of the population. These eight clubs are presented in the following table (Table 6).

Table 6. Number of call-ups, state, and city of clubs with more than one call-up.

Club	Number of call-ups	State	City
Associação Esportiva e Recreativa Sadia/Associação de Ginástica Toledana*	12	Paraná	Toledo
Associação Desportiva e Recreativa da UNOPAR	11	Paraná	Londrina
Escola de Campeãs	6	Espírito Santo	Vila Velha
Associação Desportiva do Instituto Estadual de Educação	4	Santa Catarina	Florianópolis
Associação de Ginástica Rítmica	4	Paraná	Curitiba
Clube Ítalo Brasileiro do Espírito Santo	4	Espírito Santo	Vitória
Grêmio Náutico União	4	Rio Grande do Sul	Porto Alegre
Espaço Cultural GRM	2	Minas Gerais	Belo Horizonte

*Associação Esportiva e Recreativa Sadia, an RG team from Paraná created in 1999, later began operating under the name Associação de Ginástica Toledana, maintaining the continuity of the sports project, as well as its technical structure and athletes (AGITO, n.d.).

Discussion

Brazilian RG in the World: An Analysis of the Participation of Brazilian National Teams in International Championships

Regarding participation in the events, the World Championships showed the most significant frequency of participation by the Brazilian national team (100% for the group category and 93% for the individual category). When reflecting on this competition, it is possible to identify different studies that use it as a methodological basis, justifying its importance due to the greater consistency and number of participating gymnasts and national teams in comparison with other competitions, in addition to the prioritization of this championship by delegations seeking Olympic qualification, which increases its technical level (Leandro et al., 2016; Örs, 2020; Agopyan & Örs, 2019).

These characteristics enable a greater number of gymnasts overall in this event (Agopyan & Örs, 2019) and help explain the strong Brazilian participation associated with the dynamics of the competition itself. The possibility of securing a place in the Olympic Games through ranking in the World Championships is a point of interest for countries (Santos et al., 2024). According to Santos et al. (2015), the Olympic Games are the most desired event for athletes due to their nature in involving different global audiences and because of their periodicity, which makes them “rare”, a factor that justifies the high participation in the World Championships as a qualifying event. It should be noted that Brazil secured Olympic qualification for both the individual and group categories in the 2024 Summer Olympics through the 2023 World Championship (Santos et al., 2024).

However, the Olympic Games showed a low number of participating Brazilian athletes, with the group category present in 54.5% of the editions and the individual category in 36.4%. During the analyzed period, which included all editions in which RG was present (11 editions), Brazil participated only four times in the individual category (1984, 1992, 2016, and 2024), with a gap of five editions between 1996 and 2012, and six times in the group category (2000, 2004, 2008, 2016, 2020, and 2024).

These data reflect the high technical level of the competition and the previously established participation limit of 26 individual gymnasts and 14 groups (Andrés & Bender, 2016). From this perspective, the presence of the Brazilian RG national team in the Olympic Games has intensified in recent years, with two participations in the individual category and three in the group category over the last three editions. In the 2024 edition, Brazil presented its first Olympic finalist (IOC, 2024).

The study by Shi and Bairner (2022) highlights the magnitude of the Olympic legacy as an instrument for increasing the popularity of sports practices, promoting sport growth, strengthening federations, and improving the technical level. Considering this, the increased participation of the national team in

recent editions appears to have contributed to the steady growth of the practice in Brazil, which can be observed through the country's unprecedented Olympic finalist.

The participation of the Brazilian national team in the World Cups and FIG World Challenge Cups occurs in a more variable manner (71.7% participation in the individual category and 13% in the group category) and directly affects the number of events per gymnast: there is a notable difference in the overall number of participations between individual gymnasts, such as Bárbara Domingos with 26 championships, and the group category, in which the gymnast with the highest participation was present in 12 competitions.

It is important to emphasize that changes in the World Cup format were intended to expand participation and promote the internationalization of the discipline, creating opportunities for gymnasts from the current generation to compete in more events. However, in Brazil, this change has been reflected more clearly in the individual category and has not yet been similarly observed in the group category. In this regard, Brazilian participation was concentrated in events with greater relevance to the Olympic cycle and qualification process. Furthermore, the data indicate that the increased frequency of participation in international championships coincided with the country's growing prominence in the discipline.

Several aspects contribute to the advancement of Brazilian RG, such as the expansion of its popularization, the institutional structuring of the discipline, and the reorganization of competitions, as in the case of the World Cups and FIG World Challenge Cups (Santos et al., 2024). Moreover, the significant frequency of participation may be related to the better consolidation of a reference center for the Brazilian national team, which generates benefits through the work of a multidisciplinary team, specialized monitoring, and the maintenance of gymnasts in their different activities (Collet et al., 2021). Therefore, institutional organization enhances the development of RG through strategic planning for participation in international competitions, the organization of the national team, and the consolidation of federations, thereby structuring this sporting phenomenon (Collet et al., 2021).

The points presented support the advancement of Brazilian RG as a national organization. From the next section onward, the analysis will be conducted through the territorial configuration, directing the discussion toward a more specific and localized/regionalized level.

Who Are the Members of the Brazilian RG National Teams? An Analysis of the Gymnasts' Territorial Linkages

One of the factors that determines a country's sporting success is the provision of sports opportunities aimed at access, experimentation, and sport development across different territories (Santos et al., 2024). However, only 44.4% of Brazilian states were represented on the national RG team, and only 28 clubs had athletes selected. These data become even more expressive when observing the states, regions, and clubs that account for a significant number of call-ups.

The South Region is the region with the highest concentration of selected gymnasts, accounting for 61.2% of the call-ups (41 gymnasts). In addition, the three clubs with the highest number of call-ups, *Associação Esportiva e Recreativa Sadia/Associação de Ginástica Toledana* (*Paraná*), *Associação Desportiva e Recreativa UNOPAR* (*Paraná*), and *Escola de Campeãs* (*Espírito Santo*), together accounted for 43.3% of the call-ups (29 gymnasts). These data play a crucial role in the proposed analysis and are central to the study, as they indicate that the international presence of the Brazilian RG national team does not result from a homogeneous distribution of the sport throughout the national territory, but rather from a structure concentrated in a small number of clubs, cities, and states that have historically provided better conditions for the inclusion of gymnasts in high-performance sport.

By understanding RG as a sports subfield, Paz et al. (2018) point out that its internal dynamics are marked by disputes among agents and institutions occupying unequal positions. At the national level, clubs, federations, and regions with a longer tradition in the sport tend to accumulate better conditions for remaining in high-performance sport through the continuity of programs, the development of gymnasts, the circulation of qualified coaches, and participation in competitions. In contrast, regions and institutions with less established involvement face greater difficulties in accessing resources, consolidating training structures, and competing for recognition. Thus, the territorial concentration identified in this study can be interpreted as an expression of these internal asymmetries, in which certain clubs, states,

and agents accumulate sporting capital, thereby expanding their opportunities for representation on the Brazilian national team (Paz et al., 2018).

Several studies have pointed out, in recent years, an unequal growth of gymnastics disciplines across the different regions of Brazil (Carvalho & Schiavon, 2019; Brant et al., 2024; Menegaldo & Bortoleto, 2024). These studies indicate that, particularly, Artistic Gymnastics and Gymnastics for All have shown stronger development in the Southeastern Region of the country due to the number of clubs and gymnasts from grassroots to elite levels, the call-up of athletes for representation in national and international competitions and events, and the development of scientific studies in the field.

However, in the presented data, RG demonstrates a significant prominence of the Southern Region, especially regarding the number of gymnasts from Paraná (41.8%). According to Antualpa (2011), the states of Paraná, Espírito Santo, and Santa Catarina stand out in the discipline in Brazilian championships due to investments in training centers and the organization of other promoting entities, such as state federations. Complementarily, Oliveira et al. (2023) demonstrate that, regarding the Olympic Games, there is a predominance of gymnasts from the Southern Region. According to Santos et al. (2024), in the Brazilian context, Olympic gymnastics disciplines are still concentrated in specific regions, frequently associated with cities that maintain development projects. Thus, the disparity in the distribution of the discipline is reinforced (Balestro et al., 2025).

This scenario may be related to several factors that should be addressed cautiously, but which help to understand the broader panorama of the discipline.

A relevant point concerns the state federations and their importance. In a study conducted by Schiavon (2009), it was found that the Brazilian Gymnastics federation (CBG) had 18 recognized state federations in 2009, with nine states lacking existing federations and one state without an affiliated entity. However, with the development of the practice, after consulting the CBG website in 2026, it was observed that all 27 federative units have a gymnastics federation. Although some of these federations are recent, such as those in Acre and Amapá, created in 2023, this aspect suggests advances in the formalization process, as it reflects the increase in recognition and formalization (Jorge, 2021), including, in the case of RG, a broader extension across the national territory. However, the development of state federations capable of producing results that impact the Brazilian national teams in different disciplines requires time, strategic planning, and the exchange of knowledge.

Another relevant aspect concerns public funding and public policies for sport. The study by Carneiro and Castellani Filho (2021) demonstrates how different regions organize investments in the Sport and Leisure Function in distinct ways. In other words, in the Southern and Southeastern Regions, municipal funding is more significant than state funding, resulting in a more specific allocation of resources within cities. The opposite occurs in the Northern, Northeastern, and Central-Western Regions, where state funding constitutes the main source of resources, affecting participation rates and the massification of sports through sports proposals that are less specific to different local realities. In line with this, municipalities that offer sport at the levels of Sport Development, Sport Excellence, and Sport for Life efficiently develop the sport within their territory, from grassroots to elite levels (Santos et al., 2024). This aspect reinforces that the gymnasts' territorial linkages may also be interpreted as an effect of inequalities in funding and sports management, since municipalities and states with greater organizational capacity tend to create more stable conditions for systematic training.

Furthermore, the association with the scientific community is essential for strengthening the practice, and this aspect becomes evident when analyzing the University of Northern Paraná (Unopar), which, in addition to hosting an RG team, maintains a relationship with the graduate program in the discipline (Santos et al., 2024). This program has been responsible for the training of coaches and the production of specialized knowledge in the discipline since 1997 (Gaio & Zuzzi, 2021).

According to Lanaro Filho and Böhme (2001), Brazilian RG has shown significant advances as a result of the work and studies carried out by its coaches, scientific and educational exchange with professionals from other countries, and the popularization of the discipline. In recent literature, Nunes et al. (2021) state that important events in the discipline contribute to the increase in scientific research due to the interest generated in the sport, a factor that suggests the growth of studies and the improvement of

practice associated with science. Corroborating this perspective, Jaime et al. (2024) present the relationship between the increase and qualification of scientific research and the advances achieved by RG in recent years.

From this perspective, it is worth directing efforts toward understanding the prominence of the state of Paraná, which accounts for 41.8% of the gymnasts selected for the Brazilian national team. These gymnasts trained/train in four different clubs, three of which are among the eight clubs with the highest number of call-ups (*Associação Esportiva e Recreativa Sadia/Associação de Ginástica Toledana, Associação Desportiva e Recreativa da UNOPAR,* and *Associação de Ginástica Rítmica).* In addition to these three clubs, which account for 27 of the selected gymnasts, there was also one call-up from the "*Associação de Ginástica Rítmica de Umuarama"*. Therefore, these institutions encompass four different cities and their metropolitan regions: Toledo with 12 selected athletes, Londrina with 11, Curitiba with 4, and Umuarama with 1.

The predominance of clubs from Paraná within the Brazilian elite, therefore, is concentrated in the northern and western regions of the state, together with the metropolitan region of Curitiba (Santos et al., 2024). This finding highlights the unequal distribution of the discipline within the state itself, corroborating the study by Santos et al. (2024), which points to the need for the development of the central-western and coastal regions of the state, in addition to indicating that only approximately 16% of municipalities offer at least one competitive gymnastics discipline, suggesting a limited availability of the practice.

The analysis of the current Brazilian senior RG national team (CBG, 2026), for example, composed of 17 gymnasts, revealed that 6 of them come from clubs in the state of Paraná. This finding not only confirms the representativeness of this state at the national level, but also demonstrates the continuity of this prominence, considering that since the 1990s the Brazilian national team has maintained a strong relationship with the context of Paraná, both through the call-up of gymnasts from the state and through the presence of the Brazilian National Team headquarters in Londrina and the CBG headquarters in Curitiba (Santos et al., 2024), as well as the presence of clubs considered pioneers and strategic for the future of the modality, described as follows:

[...] spaces dedicated to sports practice that aim to encourage the development and retention of high-performance athletes within the national territory, providing sports facilities compatible with the needs of high-performance sport (Antualpa, 2011, p. 81).

Continuing this discussion, another aspect associated with the strengthening of RG in Paraná is the presence of its different representatives at the institutional level. For example, the Brazilian presence in technical committees of continental and international federations includes PhD Márcia Regina Aversani Lourenço, who was a member of the technical committee of the discipline in the Pan American Gymnastics Union and is also part of the technical committee of the discipline at World Gymnastics, as well as the current coach of the Brazilian Group National Team, Camila Ferezin do Amarante.

Another essential figure for the context of Paraná is Bárbara Laffranchi—former coach of the Brazilian national team based in the state—who represents a fundamental milestone in the development of RG in Paraná and in Brazil (Locci, 2023). It was during her period of work that the discipline began to gain prominence and structure in the state. Under her leadership, training programs were implemented that raised the technical and competitive level of gymnasts from Paraná. Laffranchi was responsible for shaping the training foundation, promoting exchanges, and creating a solid infrastructure that enabled the emergence of local talents and the strengthening of teams. Her contribution not only boosted the popularization of the discipline but also established a standard of excellence that influenced the national scenario, positioning Paraná as one of the main centers for the development of the discipline in Brazil.

Thus, we understand that Paraná is an important state for the strengthening and development of RG in Brazil. However, its centrality should not be interpreted merely as a positive exception, but rather as evidence of a broader tension within the discipline in the country: while Brazilian RG achieves significant international results, its support base remains strongly linked to localized territorial experiences concentrated in certain clubs, cities, and states. Therefore, understanding the territorial distribution of the selected gymnasts makes it possible to reflect both on the centers that favor the qualification of the discipline and on the challenges related to the expansion and consolidation of RG in other regions of the national territory.

Conclusions

Brazilian Rhythmic Gymnastics (RG) is constantly developing, and one of the aspects contributing to this process is participation and achievements in international events. These events have contributed to the technical, structural, and organizational development of the sport. Therefore, this study aimed to analyze Brazilian participation in international championships and identify the territorial linkages of gymnasts who were members of the national team. Accordingly, based on the analysis of 71 events, the results indicate different participation patterns across the competitions studied and an unequal territorial distribution of selected gymnasts.

In this regard, a higher frequency of participation in international championships, the consolidation of a reference training center, scientific and educational exchange, and institutional organization may be related to the development of Brazilian RG.

However, the analysis revealed that the territorial distribution of the athletes comprising the national team is unequal, with a greater concentration in the South Region and, particularly, in the state of Paraná. More specifically, the predominance of a small number of clubs was identified. The data demonstrated the importance of considering the territorial and institutional dimensions of the sport.

These aspects may inform concrete recommendations for strengthening Brazilian RG, such as establishing regional hubs and decentralized training centers, as well as developing strategic partnerships with the sport's governing bodies and universities to provide professional training.

Among the study's limitations is the possibility of including other international events, such as the Pan American Games and South American Games; analyzing the youth category, which also maintains a permanent national team; and expanding the timeframe of the events analyzed to encompass all of their editions. Therefore, this study constitutes a starting point for more specific and comprehensive analyses of the territorial distribution and development of Brazilian RG.

Finally, future studies should investigate the institutional, economic, territorial, educational, and organizational elements associated with the concentration of certain training locations to the detriment of others. They may also investigate the relationship between participation in competitions and the qualification of the national team, from youth development to high-performance sport, contributing to an understanding of and support for actions in the training process of Brazilian gymnasts. Such possibilities may contribute to a more comprehensive understanding of the phenomenon identified in this study and provide a basis for proposals for a more homogeneous development of the sport, expanding access to training and competitive opportunities in Brazil.

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