



## SPORTS DEVELOPMENT IN YOUTH VOLLEYBALL: PEDAGOGICAL ANALYSIS OF THE BRAZILIAN CONFEDERATION'S PROJECT


*FORMAÇÃO ESPORTIVA NO VOLEIBOL DE BASE: ANÁLISE  
PEDAGÓGICA DO PROJETO DA CONFEDERAÇÃO BRASILEIRA* 

*DESARROLLO DEL DEPORTE JUVENIL EN EL VOLEIBOL: ANÁLISIS  
PEDAGÓGICO DEL PROYECTO DE LA CONFEDERACIÓN  
BRASILEÑA* 

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**Abstract:** This study aims to analyze the proposal of the Brazilian Volleyball Confederation for standardizing the youth competition of volleyball, investigating the suggested adaptations and reasons for modifications for the respective age categories based on the perceptions of elite volleyball professionals in Brazil. Through a qualitative, descriptive, and exploratory approach, the study analyzed suggested changes for each age group through document analysis and semi-structured interviews with five professionals involved in developing the document. Qualitative content analysis was employed to conduct the data analysis. We identified 14 adaptations/adjustments related to the function and structure of the game, such as court and net size, number of players, game system, and scoring system; and six reflective categories: athlete development and curriculum, game promotion, cognitive and emotional learning, technical and tactical development, avoiding early specialization, and promoting sport and participation.

**Keywords:** Sports development. Youth sports. Volleyball. Sports Pedagogy.

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## 1 INTRODUCTION

Brazilian volleyball has been dominant in international competitions for several years. The remarkable performance in the World Leagues, World Cups, and Olympic Games in the last two decades both from national women's and men's teams is the result of a set of managerial decisions that encompass the financial and structural conditions, aiming to foster the development of the sport in Brazil and worldwide.

The Brazilian Volleyball Confederation (BVC) has implemented several actions that are familiar to the public. For instance, they introduced player rankings during the 1992/1993 Superliga season (National Championship), which continued until about 2018. The objective was to create a level playing field for teams, promote the development of players from clubs, and foster the formation of new teams (Tavares *et al.*, 2019). Internationally, volleyball also has been undergoing modifications, such as changes in the rules including the rally scoring system from 15 to 25 points, the inclusion of the libero function, and the prohibition of two touches on the first ball.

While there have been attempts to enhance the performance of adult and elite teams, there is a lack of knowledge about programs that support the development of grassroots volleyball. Considering long-term athlete development, competition formats and settings should be age and skill appropriate. It is crucial to create pedagogical strategies for young players to maintain the quality of the game and offer a better learning environment for youth age groups (Bergeron *et al.*, 2015). In this regard, the BVC recently developed a "Project for the standardization of the Brazilian volleyball youth categories," which introduces a set of game adjustments for the youth competitions environment in Brazil.

The current development of volleyball worldwide and the results of the Brazilian youth teams in recent years have shown that we need to restructure the current format of developing our athletes. For some time now, we have noticed that the heterogeneity of the youth categories in Brazilian states is one of the factors that weakens the development and evaluation of potential Brazilian national team athletes (Brazilian Volleyball Confederation, 2021, p.1).

In recent times, there has been an increasing focus on how games are adjusted for children and youth. In an attempt to provide a representative learning environment for players, several studies and researchers seek to investigate the impact of games' adjustment (e.g., number of players, pitch dimension, rules, and others) on players' intrinsic dynamics - individual constraints such as skills level, players' age, and others (Rodrigues *et al.*, 2022).

The ecological dynamics approach claims the need to manipulate key constraints (individual, environmental, and tasks) to provide a more adjusted and representative learning environment for the players in training and competition settings (Davids *et al.*, 2013; Woods *et al.*, 2020). Thus, investigating the adjustments of youth competition is vital to enhance a long-term athlete's development and engagement in sports (Burton; Gillham; Hammersmeister, 2011).

Stakeholders involved in long-term sports development, such as administrators, coaches, and athletes, require a broader and more informed perspective on sports and their developmental process. This approach should prioritize diversity and the appropriateness of teaching methods, including competition. Studies on competitive youth contexts have shown consensus regarding creating an environment aligned with players' skills (Woods *et al.*, 2020), including enhancing participation through the diversification of competitive contexts and preventing early specialization (Kliethermes *et al.*, 2020). These factors are crucial for achieving optimal performance in adulthood and ensuring children's and young people's continued access to and engagement in sports over time (Côté; Hancock, 2016).

In the Brazilian context where this study was conducted, the promotion of adapted youth competitive environments has been debated, at least, since the beginning of the 2000s. So, modifying the model of sports competition adopted in most youth age groups is crucial for long-term results. Based on this assumption, several Brazilian studies have been focusing on comprehending or practically proposing adjustments in competition environments that are consistent with youth sports, such as soccer (Bettega *et al.*, 2020), handball (Leonardo; Scaglia, 2019), and volleyball (Milistetd *et al.*, 2008). The studies by Milistetd *et al.* (2008; 2014) identified the role of competition and functional modifications in the context of Brazilian volleyball, identifying changes in relation to the technical fundamentals (serving, blocking), game actions (setting, number of attackers), and tactical limitations in initial categories. However, we observe that studies of this nature in volleyball are scarce.

The game's structural and functional elements can be adjusted in youth sports. Structural elements refer to the game's physical space, facilities, and equipment. In contrast, functional elements pertain to the game's internal logic, which is directly related to the management of the game rules (Burton; Gillham; Hammersmeister, 2011). The relationships between structural and functional elements of the game can provide a set of games' manifestations, adapting the complexity and difficulty level of the game to players' intrinsic dynamics. Therefore, establishing a variety of pedagogical possibilities capable of enhancing the performance of players' perceptual and motor skills (Milistetd *et al.*, 2014). Each adaptation should have an objective that is linked to the long-term athlete development process in the specific sports modality.

So, this study aims to analyze the BVC's proposal for standardizing the youth competition of volleyball, investigating the suggested adaptations for the respective age categories based on the perceptions of elite volleyball professionals in Brazil.

## 2 MATERIALS AND METHODS

### 2.1 RESEARCH DESIGN

This qualitative research was conducted through two complementary stages: a) documentary analysis of the "Project for the standardization of the Brazilian volleyball youth categories" developed by BVC, aiming to select and categorize the competitive modifications proposed for the youth age categories of Brazilian volleyball; b) a

semi-structured interview with the authors of this document was conducted, aiming to identify the reasons that justified the proposition of this document. The analytical stages and processes will be presented in detail below.

## 2.2 DOCUMENTARY ANALYSIS

While analyzing the Brazilian volleyball standardization document, our objective was to organize and systematize the raw information from this material into information that would facilitate access, consultation, and reference (Grazziotin; Klaus; Pereira, 2022). To conduct interviews with the coordinators and authors of a document, we used the organized data as a guide. The guiding question during this stage was: “What adaptations/suggestions are being proposed in the document for youth competitions?”.

The data collection was based on the nature of the proposed modifications, with theoretical guidance from the work of Burton; Gillham; and Hammersmeister (2011). Thus, the study focused on modifications related to equipment and facilities (structural aspects) and modifications to competition rules (functional aspects). A Qualitative Content Analysis (Mayring, 2014) was performed. After reading the entire document line by line, excerpts representing competitive modifications were selected and pre-categorized inductively. The emerging categories from the analysis are described in the results section.

## 2.3 SEMI-STRUCTURED INTERVIEWS

To gain a deeper understanding of the proposal, the study involved five individuals responsible for the organization of the standardization document. They worked as professionals in the management of the Brazilian Volleyball Confederation (BVC) or the technical commissions of the Brazilian women’s or men’s national teams, in either the youth or adult age categories. They have an average of  $10.5 \pm 5.02$  years of experience within the Confederation, with an average age of  $43.6 \pm 7.3$  years. Among the participants, four were male, and one was female, identified as P1, P2, P3, P4, and P5. All participants hold a higher education degree, with three having a degree in Physical Education, one in Sports, and one in Administration and Marketing. Only one participant did not have a postgraduate degree and did not have experience as an athlete in volleyball (Table 1).

**Table 1** - Characteristics of the professionals who participated in the interviews.

Participants	Age (years)	Gender	How long have worked at BVC	Role in the BVC	Academic Education	Competitive Experience
P1	37	Female	9 years	Management	Graduation in Administration and Marketing and Latu Sensus Specialization	-
P2	56	Male	20 years	Female Senior National Team	Graduation in Physical Education and Specialization Latu Sensus	State, National and International
P3	43	Male	12 years	Female U-19 National Team	Graduation in Physical Education with Specialization Latu Sensus	State, National
P4	42	Male	7 years	Male Senior National Team	Graduation in Sport	State, National and International
P5	40	Male	10 years	Female U-19 National Team	Graduation in Physical Education with Specialization Latu Sensus	State, National and International

Source: Prepared by the authors

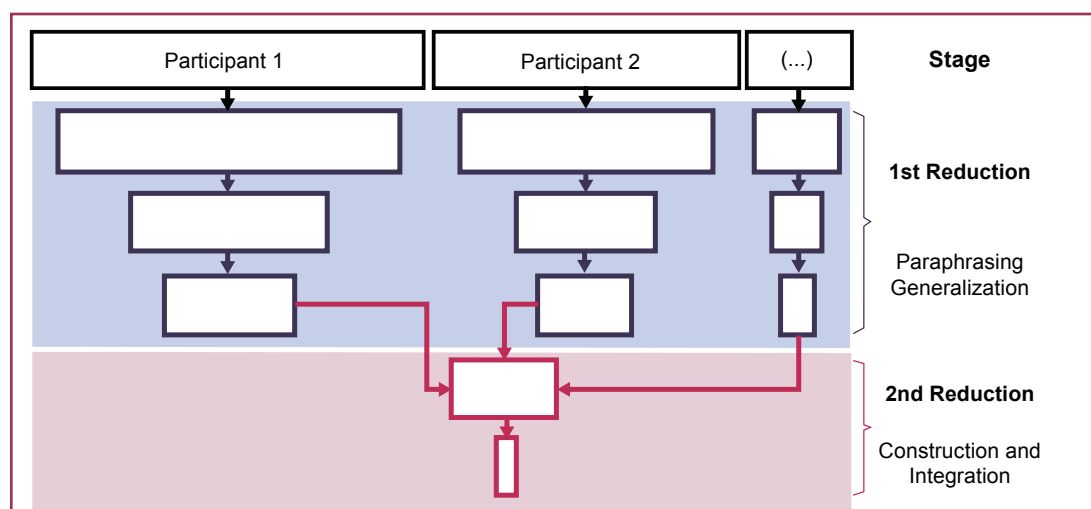
The contact was established through WhatsApp, email, telephone, or social media, and those who responded and agreed to participate in the study provided authorization through an Informed Consent Form. For the information collection, a semi-structured interview guide was developed. The questions were structured in the format of "What are the reasons for including [type of modification] in the document?" where the "type of modification" was derived from the previous document analysis. As the semi-structured interview is sensitive to the interaction between the researcher and the participant (Flick, 2010), new questions aligned with the study's theme were inserted during the interviews when necessary, aiming for a greater thematic depth. The interviews were scheduled in advance and conducted and recorded via Google Meet. Smooth verbatim transcription was used, where the transcription is done word by word, removing irrelevant expressions and words from the text to make it coherent and easy to understand (Mayring, 2014).

After transcribing the interviews, Qualitative Content Analysis was conducted, following the approach proposed by Mayring (2014). After reading line by line, the relevant information for the study was extracted and pre-categorized. For the categorization stage, we employed summarization strategies, which, according to Mayring (2014), allow for qualitative information reduction while preserving the original excerpts' core meanings. To achieve this, two stages of data reduction were adopted.

In the first data reduction performed for each interview, similar phrases were summarized into a single paraphrase, substantially reducing the amount of information by the generalization process. Subsequently, the second data reduction was conducted through processes of construction and integration. This allowed for the consolidation of similar core paraphrases from different interviewees into a single

sentence encompassing the same ideas, generating synthesized responses related to the final categories emerging from the interviewees' answers (Figure 1).

**Figure 1 - Summarizing Process Procedure**



Source: Adapted from Mayring, 2014

The categorization stage adopted an inductive approach, seeking themes in the information obtained through the summarization process that represented pedagogical expectations related to the proposed standardization in the guiding document of this study. Six categories were defined: a) Curriculum and athlete development; b) Promotion of the game; c) Development of technique and tactics; d) Cognitive and emotional learning; e) Avoiding early specialization; and f) Promoting the sport and athlete participation.

## 2.4 TRUSTWORTHINESS

The documentary analysis was conducted on a publicly available document. The document was obtained indirectly after contacting a youth volleyball coach. To ensure the validity of the information in the analyzed document, credentials were verified with the coordinator responsible for developing the material (P1) (Smith; McGannon, 2018).

To ensure analytical rigor, the data analysis was conducted by two specialists in Sports Pedagogy (the first and last authors of this paper) with approximately  $8.5 \pm 0.5$  years of experience in qualitative research and Higher Education. As an approach to enhance inter-rater reliability regarding the adopted analytical processes, the critical friend procedure was employed (Smith; McGannon, 2018).

In this strategy, the entire process of analyzing the documentary data and interviews, including excerpt selection, pre-categorization, summarization, and inductive categorization, was initially conducted by the first author and then reviewed jointly with the last author. The last author provided valuable insights, and, if deemed relevant, adjustments were made to the analytical processes conducted thus far based



on their input. This iterative process aimed to improve the reliability and robustness of the data analysis.

All the procedures in this research were under the Resolution of the National Health Council (466/2012) and the Declaration of Helsinki (2013). This study was approved by the Ethics Committee in Research with Human Beings from Universidade Federal de Goiás.

### 3 RESULTS AND DISCUSSION

The document presents proposals for changes aimed at adapting the game demands to players' intrinsic dynamics. After the initial analysis, all excerpts were reviewed and inductively categorized into 14 thematic areas: a) Court dimension; b) Net height; c) Game system; d) Match duration; e) Athletes per team; f) Serve types; g) Pass systems; h) Setting types; i) Attack types; j) Block types; k) Defensive players participation; l) Other age group participation; m) Substitutions; and n) Libero.

The delineation of these 14 functional and structural dimensions to be standardized was proposed across different age groups, which were organized by levels of initiation, development, and elite, as well as by gender. This information was organized in Table 2 for the women's division and Table 3 for the men's division, based on the stages of sports development designated in the document itself: a) Initiation, from U-9 to U-13; b) Development, from U-14 to U-15; and c) Performance, from U-17 to U-21.

The tables with the systematization of the proposal adjustments allowed for a more detailed examination of the proposals for each category and gender, making it possible to observe the progression of adjustments aimed at tactical complexity and physical demands arising from the game.

Based on the pedagogical analysis of the document and the responses from the professionals involved in its development, six categories were identified, stemming from the emerging dimensions of concerns related to athlete development in volleyball. The functional and structural adaptations will be qualitatively analyzed together with the six emerging categories in the interviews, as we understand that the analysis of adjustments with both documentary data and interviews needs to be treated holistically.

**Table 2** - Adaptations in structural and functional dimensions proposed in the standardization document for youth competition in volleyball, organized by learning-training phases and respective age categories in the female division.

Sport Stage	Initiation				Development		Performance		
Age Group	U-9	U-10	U-11	U-13	U-14	U-15	U-17	U-19	U-21
Court Dimension	6x3	9x3	12x4.5	14x9	18x9	18x9	18x9	18x9	18x9
Net Height	1.70 to 1.90m	2.00m	2.05m	2.10m	2.15m	2.20m	2.24m	2.24m	2.24m
Game System	1x1/2x2 (Catch-ball style)	2x2/3x3 (Forbidden first hit to return the ball)	3x3/4x4. (Forbidden first hit to return the ball)	6x0 (No front-back position change)	4x2 simple	4x2 simple or with infiltration	Free		
Match Duration	5 points	10 points		Required 5 sets of 15 points.		Required 5 sets of 25 points (5th set of 15 points)	Best of 5 sets of 25 points (5th set of 15 points)		
Athletes per Team	N/A		Min. 4/ Max. 6 teams per festival	Min. 10/ Max.15 players per match		Min. 9/ Max.15 players per match	Free		
Serve Types	Thrown, set, and underhand serves	Underhand serve near the back boundary		Overhead, no jump, up to 3 meters from the back line, max. of 5 serves per player		Overhead, no jump, max. of 5 serves per player	Free		
Pass Systems	Individual	2 players		With 5 players (no first ball)	With 5 players		Free		
Setting Types	Front-set only		Front and back sets		Free				
Attack Types	Setting	No jump	Jumping is only permitted from positions 2 and 4 (no back-row attack)		Front and back-line, middle, and tempo attacks (no back-row attack).		Free		
Block Types	Forbidden	Forbidden	Simple	Simple	Free				
Defense Player Participation	Free	2 players	2 or 3 players	Free					
Other Age Group Participation	One age group above					Two age groups above		One age group above	
Substitutions	N/A			Required to use 10 players			Free		
Libero	N/A			Forbidden			Allowed		

Source: Prepared by the authors



**Table 3** - Adaptations in structural and functional dimensions proposed in the standardization document for youth competition in volleyball, organized by learning-training phases and respective age categories in the male division.

Sport Stage	Initiation				Development		Performance		
Age Group	U-9	U-10	U-11	U-13	U-14	U-15	U-17	U-19	U-21
Court Dimension	6x3	9x3	12x4.5	14x9	18x9	18x9	18x9	18x9	18x9
Net Height	1.80 to 2.00m	2.10m	2.20m	2.10*m	2.24m	2.30m	2.38m	2.43m	2.43m
Game System	1x1/2x2 (Catch-ball style)	2x2/3x3 (Forbidden first hit to return the ball)	3x3/4x4 (Forbidden first hit to return the ball)	6x0 (No front-back rotation)	4x2 simple	4x2 simple or with infiltration	5x1	Free	
Match Duration	5 points	10 points		Required 3 sets of 25 points.			Best of 5 sets of 25 points (5th set of 15 points)		
Athletes per Team	N/A		Min. 4/ Max. 6 teams per festival	Min. 10/ Max.15 players per match		Min. 9/ Max.15 players per match	Free		
Serve Types	Thrown, set, and underhand serves	Underhand serve near the back boundary		Underhand, up to 3 meters from the back line.	Overhead, no jump, up to 3 meters from the back line, max. of 5 serves per player		Free		
Pass Systems	Individual	2 players	2 and 3 players	2 and 3 players (No first ball)	5 players		Free		
Setting Types	Front-set only		Front and back sets		Free				
Attack Types	Setting	No jump	Jumping is only permitted from positions 2 and 4 (no back-row attack)		No back-row attack.	Front and back-line, middle, and tempo attacks (no back-row attack).	Free		
Block Types	Forbidden		Simple		Single in the middle and double on the sides		Free		
Defense Player Participation	Free	2 players	2 or 3 players		Free				
Other Age Group Participation	One age group above					Two age groups above			One age group above
Substitutions	N/A			Required to use 10 players			Required to use 8 players	Free	
Libero	N/A			Forbidden			Allowed		

Source: Prepared by the authors

### 3.1 VOLLEYBALL CURRICULUM AND ATHLETE DEVELOPMENT

The volleyball curriculum and athlete development were the most prevalent topics in the discourse of the interviewees. Adjustments on game demands were established to promote an appropriate learning environment for each age group, such as i) net height, defense, and blocking; ii) limitations on attacking from 2 and 4 positions, or jumping, in serving, setting, and competing in older age categories; iii) determinations regarding the game system, match duration, substitutions, and the prohibition of the libero position. According to the interviewed coaches, these adjustments aim to avoid skipping important stages in the pedagogical process that are essential for perceptual and motor skills development. As an example, we have the synthesized response regarding the suggested constraints for blocking:

The constraints and suggestions were put in place to ensure progression in the athletes' development so that in youth categories, they need to gradually learn how to execute blocking until reaching the final stage of their development. This allows for the design of situations to build the game of volleyball until reaching a specific 5x1 system in the later stages of development. (P1, P2, P4).

The concern with athlete's development is also evident when the interviewees are questioned about athletes competing in higher age groups. The document includes restrictions that only allow athletes to compete in one or two categories above their own. In this sense,

An athlete needs to have experienced their age group in psychological and emotional terms to make better decisions in critical moments, providing the necessary experiences for their age and allowing for a gradual progression to higher age categories. It is important to remember that childhood is a phase for learning and playing, and not for being stressed about competitions and the need to win (P3, P4, emphasis added).

From the highlighted responses, it is possible to perceive a concern for the long-term development of athletes based on a contemporary view of the aspects necessary for athletes to reach their maximum performance at the appropriate age. In team sports like volleyball, there is a performance characteristic that emerges after the maturation period, as well as a perspective on learning specific game contents through a diversity of play and practice associated with experience, participation, and performance (Côté; Hancock, 2016; Coutinho *et al.*, 2016).

The ecological dynamics perspective suggests that skill transfer occurs when an athlete is exposed to a variety of situations that specify informational constraints for relevant actions and task goal achievement. This approach promotes rich environments that allow athletes to adapt their perceptual-motor system to a dynamic set of constraints, leading to the functional achievement of task goals. By navigating between situations that promote general and specific skill transfer in a nuanced way, athletes can develop expertise and talent in sports (Seifert *et al.*, 2018).

Tribolet and colleagues (2022) suggest that coaches must attempt to systematically increase the exposure of the team and players to the game played in different practice activities in which the constraints of the match are sufficiently represented in order to obtain adequate skill transfer. On the other hand, considering

youth competition as part of the sports teaching-learning process is essential for the development of future high-performance athletes. Therefore, adjustments in the game in competitive environments should be considered by managers, coaches, and other stakeholders involved in sports practice.

Competition in the youth age categories is part of the sports development process and not the ultimate goal. Therefore, promoting sports competition appropriately for players' intrinsic dynamics is crucial in athlete development (Leonardo; Krahenbühl; Scaglia, 2017). Studies in volleyball that analyze the relationship between children, youth competition, and performance show that youth sports performance is more related to involvement in systematic practice than to physical performance (Milistetd; Collet; Nascimento, 2013). It is also shown that technical-tactical competencies are related to athletes' sports experience (Ramos; Nascimento; Collet, 2009) and that more experienced players, i.e., those with more amount of practice, demonstrate better understanding and game skills (Barcelos *et al.*, 2009; Coutinho *et al.*, 2016).

So, the development of sports talent in volleyball is related to opportunities for practice and play and the proper development and training process. It stems from experiences and opportunities that promote learning and the development of specific skills, and it is directly linked to long-term training that is planned and systematically developed. Thus, providing rich and diverse sports experiences is essential for the development of future generations in sports (Seifert *et al.*, 2018; Ribeiro *et al.*, 2021).

What we observed in the analysis is that there is a concern among professionals that young athletes in the youth age categories have the opportunity to experience official matches adjusted to their skill level. This minimizes biases of sports competition such as overload for standout players, lack of participation opportunities for those who are not currently standing out, and early specialization.

### 3.2 AVOIDING EARLY SPECIALIZATION

One of the most common concerns expressed by the professionals was to avoid early specialization. There was a consensus among them about the need to prevent coaches in youth age categories from specializing athletes prematurely, considering their level of experience and physical condition. This includes athletes who mature earlier than their peers and may have better short-term performance, as well as those with shorter stature who are immediately placed in the libero position.

There is a danger of early specialization, where shorter players in the early stages are immediately assigned to the libero position and do not play other roles. These players need to go through the entire learning process, such as learning how to attack, as the game requires an understanding of the entire game and not just the libero position. (P1, P2, P3, P4, P5).

There was a belief in sports that the earlier the athletes started practicing, the better their performance would be in the future and that dedicating themselves to deliberate practice would help them to achieve excellence in sports (Kliethermes *et al.*, 2020). However, many studies now contradict this perspective by realizing that diversified practice in sports initiation stages and a late specialization leads to high-level performance (Fransen *et al.*, 2012; Davids *et al.*, 2017; Kliethermes *et al.*, 2020).

Early specialization can have negative effects on the development of general motor skills and the psychological well-being of young athletes (Fraser-Thomas, Côté; Deakin, 2008). It limits a child's experience in different sports and physical activities, which can impact their overall development as an athlete and in their personal life. This can lead to increased cases of burnout, hinder the late identification of talents, result in dropouts, and reduce the enjoyment of sports participation for athletes (Fraser-Thomas; Côté; Deakin, 2008; Côté; Hancock, 2016; Davids *et al.*, 2017; Camacho; Costa; Scaglia, 2020).

In a study conducted with volleyball players, Marques *et al.* (2014) found that athletes who had diversified practice during their sports development process and were not specialized early constituted the majority in the *São Paulo State* championships and the *Superliga*, indicating that specialized training after puberty has a higher chance of sporting success.

Camacho, Costa, and Scaglia (2020) conducted a study with volleyball coaches and found that the use of the 4x2 system with infiltration in youth age categories increases the versatility of athletes. This allows them to learn functional aspects of other game formats and play in different positions. On the other hand, the authors highlighted that the 5x1 system promotes the specialization of roles in the game, particularly for the setter position. In this regard,

An emphasis is placed on avoiding early specialization in order to increase the athlete's motor and decision-making repertoire. The 6x0 or 6x6 system in youth categories allows everyone to play in all positions. The 4x2 and 4x2 with infiltration systems are used to have more setters on the field while still allowing players to gain experience in different game situations and positions. This approach aims to prevent the game from being restricted to one player or position (P2, P4, P5).

Diversity and a variety of technical-tactical actions during the developmental stages provide more opportunities for experiences and learning in motor actions, tactical systems, and game positions, ultimately enhancing long-term performance (Güllich *et al.*, 2020). It is necessary to ensure that players go through diverse stages of the training process before reaching specialization so that when the right time comes to specialize, they develop perceptual, motor, and psychological skills to assume their position within the team and execute it in an effective and technically sound manner (Seifert *et al.*, 2018). Thus, the game is considered a crucial setting that requires adjustments to ensure effective learning.

### 3.3 PROMOTION OF THE GAME

In this category, game adjustments were identified in order to promote a more representative and appropriate learning environment through competition for youth players. Often, due to lack of experience and technical and tactical skills, volleyball games do not unfold as expected, requiring adjustments to make the game possible. In other words, high-level volleyball requires learning and experience to be played well, and children and adolescents who do not yet have sufficient practice experience or the perceptual and motor skills to perform at that level. Thus, game adjustments need to be provided in an attempt to prevent the game from becoming demotivating.

Adjustments in structural and functional elements of the game should be required in order to adapt the game's difficulty and complexity levels to players' potentialities, i.e., individual constraints (Davids *et al.*, 2013; Woods *et al.*, 2020; Bettega *et al.*, 2020). By considering the competition and official matches as part of the teaching and learning process, it is relevant to provide adjustments in these game contexts. We noticed that the proposed suggestions address concerns to ensure the game quality, such as adjusting the height of the net, court dimensions, limitations on attacks, sets, serves, and the game system.

It is important to understand the gradual increase in the net height until reaching the standard height for adults. Therefore, in young age categories, the net height is lower. This allows players to have more ball exchanges, stimulating the athletes, as the net should not be an obstacle or a deterrent to playing (P1, P3, P5).

If overhand serves are allowed, a player who serves well and can execute a powerful serve can disrupt the game (P2, P3, P4, P5).

As seen in the highlighted responses, there is a concern about allowing the development of the game, which can be accessible to all the players, while minimizing the advantage of those who may have a physical advantage and impact the dynamics and engagement of other players in the game. This is the case with the service, where one of the coaches mentioned that if overhand serves and jump serves are allowed in the younger categories, a single child could win the game on their own. The net height is also a consideration, as a more appropriate height for each age group allows for easier passing and attacking the ball to the other side.

The volleyball game requires high physical and technical skills due to its practice characteristics. It demands more efficient motor actions to achieve the game's goals. Therefore, at the beginning of the teaching-learning process, there is a high number of errors and a lack of tactical understanding of the game (Mesquita, Marques; Maia, 2001). Then, adapting the game to players' intrinsic dynamics, allowing them to develop according to their individual constraints, is coherent. Modifying task constraints makes it possible to adjust the game conditions to enhance learning opportunities (Chow; Komar; Seifert, 2021). The adjustments proposed for the competition are essential to adapt the environment and constraints of the game to the player's skills, especially in the initiation and improvement stages.

### 3.4 DEVELOPMENT OF TECHNIQUE AND TACTICS SKILLS

The proposed suggestions in specific moments and actions of the game, such as attack, block, defense, set, reception, and serve, are aimed at promoting the technical and tactical skills development of the sport. They value these actions, even when restrictions are proposed, which according to the professionals, are intended to ensure a progression in the development of skills and the necessary understanding of the game.

These rules are important for the development of skills, such as reception and the three-touch rule, and to prevent the game from becoming solely focused on serving, especially in the youth categories where players are learning how to play. (P2, P3, P4).

Regarding the substitutions, game systems, and the exclusion of the libero position, it is not possible to deduce considerations about the pedagogical concerns related to technique and tactics skills solely from the interpretation of the document. Therefore, the explanations provided by the professionals were clarifying in terms of understanding the need for a greater number of players to participate in the game to ensure technical and tactical learning. This is why there is a minimum number of players required to actively participate in the match, not just on the bench but actively involved in the game.

Technical and tactical learning is dependent on active participation in real-game situations, not only in training sessions but also in official matches, where there is a greater prevalence of the athlete's skills to perceive key surrounding information and calibrate their actions to achieve tasks goals (Araújo *et al.*, 2019). The exclusion of the libero position and the limitations on game systems also aim to provide a diversity of game experiences for youth athletes to enhance technical and tactical learning and avoid early specialization. Thus,

We often see taller athletes in the younger categories who may not necessarily be tall in the older age groups, and they end up playing only as middle blockers. Consequently, when a libero position is specialized, two players end up not playing in the backcourt and do not develop their passing and digging skills. By not specializing in the libero position, even the taller players are required to pass, defend, and develop their skills in the backcourt (P1, P2, P5).

The 5-player reception system is used to allow as many passers as possible to train and develop their passing skills. Additionally, by passing in a W or M formation, the court can be equally divided among the players, ensuring that everyone goes through all positions and actions of the game. This prevents players from being hidden and encourages the practice of reception, which is one of the most challenging skills in volleyball. (P2, P3, P5).

The professionals understand the importance of diversification in sports initiation, as they propose adaptations that encourage younger athletes to play in different positions and perform diverse perceptual and motor skills. They believe that developing versatility in motor elements and tactical actions before specialization is necessary for long-term athlete development.

This perspective aligns with current studies of motor learning and sports pedagogy research areas, which indicate that athletes who reach a high level of performance have had greater variability and versatility during the youth age categories (Côté; Vierimaa, 2014; Seifert *et al.*, 2018). The diversity of games and play experiences is crucial for the development of perceptual and motor skills, which are essential for future specialization (Coutinho *et al.*, 2016; Ribeiro *et al.*, 2021).

### 3.5 COGNITIVE AND EMOTIONAL LEARNING

The professionals interviewed mentioned less frequently the objective of emotional and cognitive development, which we describe as learning in situations that require decision-making in critical moments and also in the athlete's ability to be emotionally prepared for demands specific to their age group or level of sports experience.



In other words, decision-making in critical moments refers to circumstances of pressure, such as serving in a game situation where the deciding set is tied at 14-14. Age-specific demands refer to playing alongside players of the same age, facing competitive and training requirements that are appropriate for each stage of development. To address these aspects, some suggestions in the document, such as restrictions on playing in higher age categories (allowing participation in one category above in the initiation stage and two categories above in the training stage), aim to protect and ensure that athletes are exposed to demands that are appropriated to their intrinsic dynamics. Limitations on game systems, mandatory substitutions, and match duration are proposed to enhance participation and democratize cognitive and emotional learning. In this regard,

In the female category, playing 5 mandatory sets of only 15 points aligns with the child's skills to concentrate and exposes them to critical moments of the game more frequently, such as serving at 14-14 or deciding the last point of a set, thereby increasing their opportunity to deal with this type of pressure. (P1, P4).

It is evident that professionals recognize the importance of emotional learning in a competitive context. The athlete's ability to manage emotions during competition and maintain self-confidence is one of the factors that influence athlete performance (Machado *et al.*, 2016; Mowlaie *et al.*, 2011). The relationship between emotions and performance is something that needs to be addressed during the sports development process since childhood (Trevelin; Alves, 2018). Based on the concerns raised by the professionals interviewed, albeit to a lesser extent, the suggested adjustments are related to learning within the reality of the game competition, particularly in critical moments. In other words, while learning occurs through training, it primarily happens through engaging in game practice within a competitive context.

### 3.6 PROMOTING THE SPORT AND ATHLETE PARTICIPATION

The idea of promoting adjustments to the demands of the game to provide a more appropriate and representative practice environment, reflected in the discourse of the professionals interviewed, is manifested in two dimensions: court size and match duration. However, it is possible to identify this category in other adaptations by reflecting on the possibilities arising from the constraints of the adapted games.

Increasing the number of participants is essential to promote the sport, especially in the youth age categories. Initially, there is the issue of structural access to the sport, which involves the ease of setting up spaces and having the necessary materials to conduct official games and matches.

Adapting this court size to focus on promoting mini-volleyball games allows more players to participate actively. Playing is the base for the sports teaching-learning process, and a 6x6 game for children and adolescents in the early stages of sports initiation might negatively impact the players' engagement in the match. The game is crucial for the learning process, as it enables players to be tuned to key surrounding information and calibrate their actions to achieve the game's goals (Araújo *et al.*,



2019). This promotes moments of interaction between game elements, teammates, opponents, and coaches, enriching the learning environment for future athletes.

Consequently, if the goal is to increase participation, providing appropriate competition environments is essential. This is closely related to the possibility of increasing the number of teams in these championships, taking into account financial considerations, as well as the purpose for which a competitive event in childhood should exist, namely, to be part of the sports teaching and learning process.

To achieve this goal, it is essential to adjust the height of the net, limit attacking, receiving, and defensive actions so that the ball is not solely the responsibility of the most skilled players, reduce the size of the court and the number of participants per game, establish a minimum number of players and substitutions, specify the type of game system to be adopted, and adjust the duration of the match, so these adjustments enable more players effectively participate in the games.

The decision to play 3 sets of 25 points in men's matches or 5 sets of 15 points in women's matches, regardless of the game outcome, is based on providing more opportunities for children to participate. By increasing the number of sets played, there will be greater chances for them to be on the court, touch the ball, and develop their skills in the sport. This approach aims to prioritize participation and the overall development of young athletes in the sport (P1, P2, P3, P4, P5).

Indeed, if children have more opportunities to play and develop their game skills, it is likely that they will be more motivated to continue in the sport.

This study revealed that the standardization project aims to prevent early specialization and promote technical-tactical learning through game adaptations that are appropriate for players' intrinsic dynamics. We recognize the importance of implementing this initiative to concretize the model of athlete development in Brazilian volleyball. This study is relevant in highlighting the key points for athlete development, as emphasized by professionals who lead the sport in the country, and understanding how this may impact the sport in the future by proving adjustments to the game in competitive environments.

The intention of the professionals who drafted the document is evident in addressing the learning needs and promoting long-term athlete development. However, when introducing sports to children and young people, it is important to consider a holistic approach, including those who may not pursue a career as athletes (Fraser-Thomas, Côté; Deakin, 2005). In this regard, the suggestions of the document are limited to technical-tactical actions. But by promoting participation in the sport, they are already a starting point for youth sports to develop based on the formation of individuals beyond the sport.

#### 4 CONCLUSIONS

Based on the purpose of this study, which is to investigate the project aimed at promoting Brazilian youth volleyball, we highlight as practical implications for volleyball the importance of prioritizing the learning needs in the athletes' development over inappropriate performance demands. In other words, the adjustments to the

structural and functional conditions of the game and competitive events, aimed at the holistic development of young athletes suggested in the project, promote a favorable environment for the development of the specific technical, tactical, cognitive and emotional skills required in each age group and category.

Finally, we observe the tackling of early specialization juxtaposed with the competitive practice of volleyball, ensuring young players have the opportunity to diversify positions and activities within the game. This contributes to the development of more well-rounded athletes, who are technically, tactically, and emotionally prepared, thereby increasing their long-term chances of success.

We identified a limitation in our research by not conducting a comparison with other studies in the national and international context. However, we assert that this “lack” exists precisely due to the scarcity of publications involving the structural and functional analysis of volleyball in Brazil focused on younger categories. Most studies on volleyball regulations are focused on modifications in the main categories, at the elite level, and how this has influenced the way the game is played over time (Garcia; Meireles; Pereira, 2021). To compare with other contexts and countries, it would be necessary to have published studies that are similar to ours. Another option would be to conduct this analysis, which would mean carrying out another study in different contexts (country, federation).

As limitations of our study, we have not analyzed the important biological variables for the stages of maturation and physical development of young players. The relationship between physical and maturation aspects and the proposed framework needs to be considered in the context of long-term athlete development. Another limitation observed was the proposal of differences between the genders, especially at younger ages, which require further study. Therefore, we understand that additional research perspectives on this document are necessary to continue the dialogue and reflection on the development of young athletes and its long-term consequences in Brazilian volleyball.

Finally, we emphasize the importance of our study, which brings a discussion about functional and structural alterations for children and youth categories, a relevant and necessary topic for the development of youth sports programs, which needs to be widely and continuously studied.

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**Resumo:** Este estudo tem como objetivo analisar a proposta da Confederação Brasileira de Voleibol de padronização das competições de base da modalidade, investigando as adaptações sugeridas e os motivos das modificações para as respectivas faixas etárias com base nas percepções dos profissionais de elite do voleibol no Brasil. Por meio de abordagem qualitativa, descritiva e exploratória, o estudo analisou alterações sugeridas para cada faixa etária por meio de análise documental e entrevistas semiestruturadas com cinco profissionais envolvidos na elaboração do documento. A análise qualitativa de conteúdo foi empregada para conduzir a análise dos dados. Identificamos 14 adaptações/ajustes relacionados à função e estrutura do jogo, tal como tamanho de quadra e rede, número de jogadores, sistema de jogo e de pontuação; e seis categorias reflexivas: desenvolvimento e currículo do atleta, promoção do jogo, aprendizagem cognitiva e emocional, desenvolvimento técnico e tático, especialização precoce e promoção do esporte e da participação.

**Palavras-chave:** Formação Esportiva. Esportes de jovens. Voleibol. Pedagogia do Esporte.

**Resumen:** El objetivo fue analizar la propuesta de la Confederación Brasileña de Voleibol para estandarizar la competición de voleibol de los niños, investigando las adaptaciones sugeridas y los motivos de las modificaciones para las respectivas categorías de edad a partir de las percepciones de los profesionales del voleibol de élite en Brasil. Con enfoque cualitativo, descriptivo y exploratorio, el estudio analizó los cambios sugeridos para cada grupo de edad a través del análisis documental y entrevistas semiestructuradas con cinco profesionales involucrados en la elaboración del documento. Se empleó análisis de contenido cualitativo para realizar el análisis de datos. Identificamos 14 adaptaciones/ajustes relacionados con la función y estructura del juego, como el tamaño de la cancha y la red, el número de jugadores, el sistema de juego y de puntuación; y seis categorías reflexivas: desarrollo y currículo del atleta, promoción del juego, aprendizaje cognitivo y emocional, desarrollo técnico y táctico, especialización temprana y promover el deporte y la participación.

**Palabras clave:** Desarrollo deportivo. Deportes juveniles. Voleibol. Pedagogía deportiva.

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## CONFLICT OF INTERESTS

The authors declare that this work involves no conflict of interest.

## AUTHOR CONTRIBUTIONS

**Tathiane Krahenbühl:** Conceptualization, Data Collection, Data Analysis, Investigation, Methodology, Project Administration, Writing – Original Draft, and Writing – Review and Editing.

**João Claudio Braga Pereira Machado:** Writing – Review and Editing.

**Michel Milistetd:** Writing – Review and Editing.

**Lucas Leonardo:** Data Analysis, Methodology, Writing – Review and Editing.

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## EDITORIAL RESPONSIBILITY

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