

PRACTICE CONTEXT ON SPORT DEVELOPMENT OF ELITE BRAZILIAN VOLLEYBALL ATHLETES

CONTEXTOS DE PRÁTICA NA FORMAÇÃO ESPORTIVA DE ATLETAS DE ELITE DO VOLEIBOL BRASILEIRO

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RESUMO

Os contextos de prática esportiva são importantes elementos que influenciam na formação esportiva de crianças e jovens. Assim, o objetivo desse estudo foi analisar os contextos de prática esportiva de atletas de elite do voleibol brasileiro, a partir da verificação dos locais de prática e de variáveis sociodemográficas (sexo, estágio da formação esportiva, categoria de formação) que pudessem influenciar na inserção a esses ambientes. Participaram desse estudo retrospectivo 121 atletas, integrantes e ex-integrantes das seleções brasileiras nos naipes masculino e feminino. Os dados foram coletados a partir do Instrumento de Análise da Formação Esportiva no Voleibol (IAFEV) e analisados pela estatística descritiva (frequência bruta e relativa) e inferencial (Regressão Logística Multinomial). Os resultados revelaram associação significativa dos locais de prática com o sexo [$X^2(3)=8.387;p=0,039$], os estágios [$X^2(6)=52.709;p<0,001$] e as categorias de formação [$X^2(9)=22.297;p=0,008$], evidenciando-se que os atletas investigados praticavam, ao longo de sua formação esportiva, as atividades físicas e esportivas em ambientes mais estruturados, como clubes e academias, principalmente durante os anos de especialização e de investimento. Além disso, a prática nos clubes destacou-se entre as atletas do sexo feminino e entre os atletas pertencentes às categorias mais jovens, revelando aspectos específicos que podem influenciar na escolha dos ambientes de prática.

Palavras-chave: Esporte para jovens. Desenvolvimento esportivo. Contextos apropriados.

ABSTRACT

The contexts of sports practice are important elements that influence the sports development of children and young people. Thus, the aim of this study was to analyze the contexts of sports practice of elite Brazilian volleyball athletes, based on the verification of practice contexts and sociodemographic variables (gender, development stage and training category) that could influence the insertion on these environments. In this retrospective study, 121 athletes, members and former members of Brazilian national teams participated in the male and female suits. Data were collected from the Instrument for Analysis of Sports Development in Volleyball (IAFEV) and analyzed by descriptive statistics (gross and relative frequency) and inferential statistics (Multinomial Logistic Regression). The results revealed a significant association between practice sites and development stage [$X^2(6) = 52,709; p < 0,001$], sex [$X^2(3) = 8,387; p = 0.039$] and category [$X^2(9) = 22,297; p = 0.008$], showing that the athletes practiced, throughout their sports development, physical and sports activities in more structured environments, such as clubs and gyms, especially during the specialization and investment years. In addition, the practice in clubs stood out among female athletes and among athletes belonging to the younger categories, revealing specific aspects that can influence the choice of practice environments.

Keywords: Youth sports. Sport development. Appropriate settings.

Introduction

The long and complex process of sports development has been studied to identify which paths lead to adequate results. Internationally recognized models have been used to determine the best way to train professional athletes or practitioners over a lifetime¹⁻⁴. Such models define the trajectory of successful athletes in the countries where they were developed, however, this investigation in Brazil, more specifically in volleyball, deserves further deepening. The literature presents little information about elite athletes in Brazilian volleyball, mainly on factors that identify a systematized process of preparation for these athletes, related to the contexts of practice and intervening factors in long-term sports development.

Practice contexts correspond to one of the dynamic elements that influence sports development⁴, considering the importance of involvement in appropriate contexts⁵⁻⁷.

Appropriate contexts are those that promote the development of personal characteristics, initiative, health, performance, and aspects related to the positive development of young people (competence, confidence, connection, and character), to facilitate the achievement of long-term goals, especially those related to performance improvement, sports participation, and personal development⁴. Such contexts can be more or less structured and specific, their characteristics can vary from the wide opportunity to practice free and spontaneous physical activities (streets, parks, squares, beaches...) to places with specific structure and equipment of a certain modality sports (club, school, gym...). Along with personal engagement in physical and sports activities and the interpersonal relationships established during the process, the contexts of sports practice can influence the choice and permanence of involvement with sport.

The physical and social characteristics of the practice places interfere in the established relationships and the available practice opportunities. All of them must be seen as potential environments for sports development. A study carried out with a female volleyball team from the Brazilian youth team revealed that the training of athletes resulted from the sum of stimuli that occurred in formal contexts (clubs and schools with teachers/coaches directing the activities) and non-formal ones (in groups of friends playing freely)⁸. The experiences in these diverse places must promote a culture of participation and performance in sport, as the roles of Physical Education and school sport, recreational sport and performance sport must be interrelated, as the isolated development of these programs becomes very expensive and non-effective¹.

Despite the need for broad sports development, different sports opportunities are presented according to gender. Different patterns of sports participation between the genders have been found in many studies, both addressing physical activity and sports in general^{9,10}, and in studies with volleyball^{11,12}. Differences in participation patterns can be explained mainly by historical and socially constructed issues^{13,14}. The greatest sporting opportunities are offered to males, while female participation in sports has already gone through legal prohibitions, prejudices, and obstacles that hampered and still influence its development^{15,16}.

In general, the process of training elite athletes and sports practitioners throughout life goes through different stages with predominant characteristics in each of them and that, despite not having a fixed transition age, occur according to sequential age groups. These stages are related to the initial diversification in the involvement with activities in unstructured or specific environments (diversification years - up to 12 years), the beginning of specialization in one modality, mixing unstructured environments with specific environments of one modality (specialization years - 13 to 15 years), and the dedication to a specific modality, in structured environments, focused on the development of high performance (investment years - 16 to 18 years)^{2,3,17}. From this last stage on, there is the improvement and maintenance of high levels of performance in a sport, required by the professionalization process of sports or by the daily practice aimed at personal satisfaction, leisure, and maintenance of health benefits and well-being.

The evolution of the sport and, consequently, of the contexts of sports practice has followed the historical and cultural evolution of society, influencing even differences in the patterns of practice according to the age group within each sport category. Modern sport became a possibility of professionalization and spectacularization to then become the multifaceted and contemporary phenomenon it is today¹⁸. This evolution has influenced the way people see and get involved with sport, including its configuration as a heritage of society, changing the contexts primarily chosen and given opportunities for its practice.

The high quality of volleyball in Brazil and the international achievements of the Brazilian teams highlight the importance of understanding the training process of these athletes, to establish indicators that will favor the formation of new athletes. Few studies^{8,19-21} are found when it comes specifically to the sports career of volleyball athletes, especially in the Brazilian

context and with elite athletes in the sport. Thus, there is a need to carry out studies that address the process of sports development from its different dynamic elements, considering that socio-cultural differences directly influence the contexts of sports practice.

Thus, this study aimed to analyze the contexts of sports practice of elite Brazilian volleyball athletes, based on the verification of practice locations and sociodemographic and contextual variables (gender, stage of sports development, and training category) that could influence the insertion to these environments.

Methods

Participants

The study was carried out in volleyball, with young and adult elite athletes, members, and former members (retired) of the Brazilian men's and women's national teams, corresponding to the best Brazilian volleyball athletes in their categories at the time of data collection. Specifically, 121 athletes from the women's national teams of categories under 18 (n=18), under 20 (n=22) and under 23 (n=19), men's national teams of categories under 19 (n=19) and under 21 (n=19), as well as from the adult women's (n=4) and men's (n=1) teams, and male athletes who have already ended their sports careers (n=19) participated in the study.

The athletes in the youth and adult categories belonged to the specific national teams of each category at the time of data collection (July and August 2016) and were preparing for the South American and World Volleyball Championships. Athletes who have already finished their sports career were part of different groups in the past, all participating in international tournaments (n=19). Among them were Olympic and/or world champions (n=3), Olympic medalists (n=4), and Pan American medalists (n=8). Non-medalists were part of groups that were between 5th and 8th place in different editions of the Olympic Games (n=4). The male athletes of the under 23 category did not participate in the study since they had already ended their calls in the year 2016 at the times when the data from the other national teams were collected.

Table 1. Profile of elite athletes of Brazilian volleyball

	n	%
Gender		
Female	63	52.1
Male	58	47.9
Category (average age)		
Infantile-juvenile (16.24±0.74 years)	37	30.6
Juvenile (17.97±0.99 years old)	41	33.9
Under 23 and adult (22.51±4.61 years)	24	19.8
Retired (60.2±8.81 years)	19	15.7
Total athletes participating in the study	121	100

Source: The authors

Procedures

Initially, contact was made with the directors of the Brazilian Volleyball Confederation (CBV) to enable the research to be carried out with the athletes of the teams. After confirmation of the initial contact and authorization to carry out the research, the project was submitted and approved by the Ethics Committee for Research with Human Beings at the Federal University of Santa Catarina (CEPSH/UFSC, opinion number 1.450.060/2016). Athletes were aware of the objectives and purposes of the research and agreed to participate in the study, after signing the Informed Consent Form (in the case of athletes over 18 years of age). Athletes under 18

years old signed the Consent Term, accompanied by the signature of the Informed Consent Term by their guardians.

For data collection, the Instrument for Analysis of Sports Development in Volleyball - IAFEV²² was used, which is divided into two parts: the first part contains 18 items related to the sociodemographic profile of the athletes, while the second part contains 12 subdivided questions in: childhood (up to 12 years old); pre-adolescence (13 to 15 years old); and adolescence (16 to 18 years old), which correspond to the stages of sports development¹⁷. At each stage, the questions address the dynamic elements of sports development^{4,23}, related to the characteristics of the activities performed, interpersonal relationships, and contexts of sports practice. In this study, information related to the contexts of sports practice was used (places of practice such as clubs, gyms, schools, and municipal gymnasiums focused on systematic practice guided by teachers or coaches, as well as streets, square, and beaches aimed at free and spontaneous practice), to the training stage, to gender, and to the sport category.

The validation process of the instrument's content, stability, and internal consistency^{24,25} revealed high rates in all aspects. The content validation carried out through the evaluation of experts obtained the Content Validity V Aiken²⁶ Index of 91. Stability was significant in 77 out of 78 items and internal consistency showed a coefficient $\alpha > 70$ in 77 out of 78 items in the questionnaire²².

Statistical analysis

The data obtained from the questions related to the contexts of sports practice were registered in spreadsheets and grouped into categories for analysis based on raw and relative frequency and statistical analysis. Data were categorized according to gender, stages of sports development, and sports¹⁷ categories (Chart 1).

Variable	Categorization	Data
Gender	1) Female	Female
	2) Male	Male
Stages of sports development	1) Years of diversification	Age group up to 12 years old
	2) Years of specialization	Age group from 13 to 15 years
	3) Years of investment	Age group from 16 to 18 years
Sport categories	1) Infantile-juvenile	Under 18 and under 19 categories
	2) Juvenile	Under 20 and under 21 categories
	3) Adult	Adult Category and Under 23
	4) Retired	They have already ended their sports career as athletes

Chart 1. Categorization of study variables about the sport context

Source: The authors

The inferential statistical analysis of the data was performed using the Multinomial Logistic Regression of the *SPSS for Windows* Program, adopting a significance level of 5%. The main (dependent) variable was the place where the sport was practiced, associated with the (independent) variables, stage of training, gender, and sport category.

Results

The elite athletes of Brazilian volleyball highlighted their involvement in different contexts of physical and sports activities, such as clubs, gyms, schools, and municipal gymnasiums, as well as streets, squares, and the beach. In general, the descriptive data revealed that the athletes practiced physical and sporting activities in environments, preferably, more

structured, systematized, and guided by a teacher or coach, such as clubs and gyms, with emphasis on females, in the years of specialization and investment and belonging to the Infantile-juvenile and juvenile categories (Table 2).

Table 2. Percentage frequency of the distribution of places for the practice of physical and sporting activities of elite Brazilian volleyball athletes

	Club / gym (%)	School (%)	Street / Square / Beach (%)	Municipal gymnasium (%)	Total (%)
Gender					
Female	60.4	23.9	11.4	4.3	100
Male	44.0	27.4	23.1	5.5	100
Stage of training					
Years of diversification	35.4 (F=52; M=48)	33.0 (F=48,6; M=51,4)	26.9 (F=38,6; M=61,4)	4.7 (F=40; M=60)	100 (100)
Years of specialization	53.7 (F=53.2, M=46.8)	26.6 (F=38.9, M=61.1)	14.8 (F=16.7, M=83.3)	4.9 (F=40; M=60)	100 (100)
Years of investment	68.5 (F=50.4, M=49.6)	15.8 (F=23.1; M=76.9)	10.3 (F=11.8, M=88.2)	5.5 (F=33.3, M=66.7)	100 (100)
Category					
Infantile-juvenile	54.7	26.7	16.1	0.7	100
Juvenile	55.7	24.1	14.9	5.2	100
Adult	57.4	26.9	9.3	6.5	100
Retired	36.5	26.3	30.7	6.6	100

Note: F= percentage of female athletes; M= percentage of male athletes

Source: The authors

Descriptive data also present some differences in the patterns of practice places between the genders during the stages of sports development, especially regarding practice on the streets, squares, and beaches. In the years of diversification, male athletes (61.4%) participated in more activities in these contexts than female athletes (38.6%), and this difference intensifies in the subsequent training stages (F= 16.7% and M=83.3% and F=11.8% and M=88.2%, respectively).

When the inferential analyzes were performed (Table 3), the results revealed that, in general, there was a significant association between the places of practice and the training stage [$X^2(6)=52,709$; $p<0.001$], sex [$X^2(3)=8,387$; $p=0.039$] and the category [$X^2(9)=22,297$; $p=0.008$].

Table 3. Association of variables with places of sport practice of elite athletes in Brazilian volleyball

Variable	Street vs Club / Gym		Street vs School		Street vs Municipal Gymnasium	
	OR (CI95%)	<i>p</i>	OR (CI95%)	<i>p</i>	OR (CI95%)	<i>p</i>
Gender						
Female	2.14 (1.08-4.26)	0.029	1.19 (0.57-2.49)	0.638	0.76 (0.20-2.90)	0.691
Male	1.00		1.00		1.00	
Stage of training						
Years of diversification	0.16 (0.08-0.31)	0.000	0.70 (0.34-1.45)	0.338	0.26 (0.09-0.83)	0.022
Years of specialization	0.53 (0.27-1.05)	0.068	1.16 (0.54-2.50)	0.710	0.58 (0.19-1.79)	0.342
Years of investment	1.00		1.00		1.00	
Category						
Infantile-juvenile	2.91 (1.41-6.03)	0.004	1.91 (0.89-4.13)	0.099	0.31 (0.07-1.39)	0.125
Juvenile	3.01 (1.41-6.42)	0.004	1.81 (0.82-4.03)	0.145	0.87 (0.22-3.44)	0.841
Adult	3.33 (1.20-9.28)	0.021	2.99 (1.01-8.84)	0.048	1.86 (0.35-9.88)	0.469
Retired	1.00		1.00		1.00	

Source: The authors

In the first years of involvement with physical and sporting activities, called years of diversification, a balance was observed between the practice in clubs (35.4%) and in school (33%), but the practice in clubs was intensified in the sequence of stages (53.7% and 68.5%, respectively). The inferential results showed that, in years of diversification, athletes were less likely to practice physical and sports activities in clubs (0.16) and in municipal gymnasiums (0.26) than on the street, compared to years of investment. When comparing the sexes, there was a greater practice in more structured environments (club and school) among women, which means that they were 2.14 times more likely to practice physical and sporting activities in the club than in the street, when compared to men. In contrast, men had a relatively higher frequency of street practice than women.

Regarding the different sports categories, there was greater practice in clubs among athletes from the younger categories (54.7%, 55.7%, and 57.4%, respectively), while athletes who have already finished their sports career practiced more street activities (30.7%) than younger athletes. These differences were significant, with athletes in the younger categories being more likely (2.91, 3.01, and 3.33, respectively) to practice activities in clubs than on the street when compared to athletes who have already finished their sports careers. In addition, athletes in the adult category had 2.99 more chances to practice activities in schools outside of school hours than on the street when compared to athletes who have already finished their sports careers.

Discussion

This study aimed to analyze the contexts of practice as one of the dynamic elements that influence the process of sports development. For this purpose, the places of the practice of physical and sporting activities reported by elite athletes of Brazilian volleyball were verified, as well as the intervening variables of this process. From this perspective, it was observed that the investigated athletes practiced, throughout their sports development, physical and sports

activities in more structured environments, such as clubs and gyms, mainly during the years of specialization and investment. In addition, the practice in clubs stood out among female athletes and among athletes belonging to the younger categories (infant-juvenile and juvenile).

Athletes investigated in this study highlighted the practice of activities in sports clubs, especially regarding volleyball. Clubs and gyms are more formal environments, with specific structure and materials for sports practice. Sports development set in clubs should promote opportunities for the pursuit of high performance, but it should also provide opportunities for a wide range of activities to attract and maintain the greatest number of children and young people, aiming at long-term sports participation, as verified in the study with a Spanish successful club²⁷. In addition, clubs must promote good relationships among all involved (athletes, coaches, officers, family, and community) by providing a holistic ecological approach to the sports development environment²⁸⁻³⁰.

Another place of practice highlighted was the school, especially in the years of sports initiation, and mentioned mainly by athletes in the adult category. In this context, it is noteworthy that in the Brazilian reality, many schools offer the practice of activities after school, generally related to training in certain modalities, to improve sports and participating in school competitions. In this case, the practice of sports after school, together with Physical Education classes, can promote cognitive development and immediate³¹ and long-term educational benefits, even helping to maintain mental health as adults³².

Municipal gymnasiums also stood out as a possibility of practice at the beginning of sports development, considering that public policies have a duty to offer and promote sports and in Brazil, municipal public policies for sports stand out in the training process sports, in the most diverse modalities. The goal is to expand practice opportunities so that people can enjoy these spaces and the benefits of physical activity guided by a professional hired by public agencies. The importance of these spaces in sports development was highlighted in a study carried out with basketball players in the state of Santa Catarina, based on the provision of human resources (coaches), financial resources (scholarships), and physical and material spaces (municipal gyms) for the training of sports teams. In the investigated reality (municipality of Santa Catarina), the sports modalities offer the participation in little schools through the Athlete of the Future Project, aiming at the promotion of the sport practice, especially for children during the sport initiation³³.

The practice of sports in the streets, squares, and beaches was also highlighted by the investigated athletes. These places are democratic environments, in which activities can be practiced by different groups of people, as they are informal environments that generally aim at spontaneous practice and fun. They are suitable environments for engaging in unstructured activities, such as plays, games, and sports with people of different ages and with different characteristics, contributing to social interaction and motor enrichment^{8,34-36}.

Opportunities for practice and access to different places for sports practice must be broad and democratic, although different factors may influence the choice of these places. When comparing the genders, there was a greater practice in more structured environments (club and school) among women and a relatively higher frequency of practice on the street among men. This fact demonstrates that the practice opportunities for females are generally in predetermined spaces, while males have greater opportunities to practice in different environments, including when it comes to spaces for deliberate play^{37,38}. Many studies have evidenced greater opportunities for practice and perception of differentiated encouragement between the genders, in which there is an overvaluation of sport among men and less appreciation when it comes to women's sport^{9,10}.

It was also found that in childhood and in the early years of sports development, the investigated athletes experienced a greater distribution regarding places of practice, namely in clubs, schools, and on the streets. The change in behavior related to places of practice

throughout the stages of sports development was related to the characteristics and increase in specific requirements at each stage, in which practice in more structured environments was intensified. In this case, the results corroborate the indication that the early years of involvement in physical and sporting activities should have a great diversity of practice in less formal environments, moving on to more structured activities and in specific environments of sport development to achieve high performance or sports participation^{1,17,39}.

Regarding the different sports categories, there was a greater practice in clubs among athletes from the younger categories, while athletes who have already finished their sports career practiced more activities on the streets and after school hours than other younger athletes. Despite the need to understand sport as a multifaceted phenomenon, with ample opportunities and practice environments¹⁸, current opportunities have been concentrated in structured environments for sports practice. Opportunities for spontaneous practice among young people have been decreasing over time, making the club and the formal environments suitable spaces for the practice of different activities, including sports development.

In general, despite the differences found concerning practice locations, in all variables analyzed there was a predominance of practice in sports clubs, probably due to the characteristics of volleyball, related to the greater need for a specific structure for its practice. As it is a modality that requires a net to divide the game court and a ball that, as it is hit, needs specific dimensions, so sports clubs and sports schools become the environments that best provide such structures and materials.

Culturally, practice opportunities have influenced the choice of environments for physical and sporting activities, whether due to the development of large cities (reducing spontaneous practice environments) or due to the different opportunities when it comes to men and women. Minimizing these differences and expanding opportunities in contexts, through incentives and public policies, is essential to expand and qualify the process of sports development.

Although the sports club represents the most favorable environment for the development of sports modalities, the expansion of practice environments favors the development of skills that go beyond the specificity of the sport. Contact with different environments can help in the development of children and young people, based on the influence of environmental characteristics, whether they are more structured and specific or more adaptable and spontaneous.

The main limitation found for the development of the study was the lack of access to some elite Brazilian athletes, for greater representativeness of the sample. In this case, not having been able to access the under 23 category athletes, as they have already closed the calls, at the time of data collection, as well as the adult athletes, as they are in preparation for the Olympic Games.

For a better understanding of the influence of practice contexts on sports development, it is suggested to expand the study by collecting data in volleyball training sports clubs to identify practice patterns in the sport. In addition, carrying out qualitative studies, using instruments such as interviews and timeline, will favor the deepening of details that involve the influence and choice of environments for sports practice among volleyball athletes.

Conclusions

The evidence found in this study allows us to conclude that the contexts of sports development in Brazilian volleyball can be differentiated, although the more structured context has been highlighted. This evidence was highlighted mainly among female athletes, in the final stages of sports development, and among younger athletes. In fact, volleyball has specific characteristics that make its practice more commonly performed in closed environments,

structured and with specific materials, as is the case of the sports club, but it should not be restricted to it.

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