ORIGINAL ARTICLE

Identification of the training environment and its relationship with talent development from the perspective of Brazilian athletics coaches

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ABSTRACT

Evidence from international studies shows indicates that environmental structures influence talent development (TD) and, consequently, the performance of elite athletes. To identify the training environment and its relationship with talent development from the perspective of Brazilian athletics coaches. Five athletics coaches with significant national and international results participated in in-depth semi-structured interviews. Data were analysed using content analysis supported by NVivo 12 Pro. A deductive thematic analysis with a communicational interpretative approach was adopted, and data credibility was ensured through participant validation after transcript review. A total of 151 Mini-units (MUs) were identified. Coaches understood the training environment as comprising structures directly related to training (71 units), including available and ideal infrastructure, the relationship between structure and performance outcomes, incentives for training, competitions, and continuing education. Structures beyond training (80 units) included multidisciplinary follow-up, financial support from guardians, social relationships, and cultural influences. In addition to aligning with existing literature, the findings highlight the relevance of social inequality, within which athletics development in Brazil occurs. From the coaches' perspective, the study demonstrates the multidimensional nature of the environment in athletic talent development. Despite persistent resource constraints, coaches' adaptability, resilience, and communication skills emerged as decisive factors in the talent development process.

Keywords: Performance analysis, Professional experience, Context, Retrospective research, Athletics.

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INTRODUCTION

The development of sporting talent, according to the Differentiated Model of Giftedness and Talent (DMGT) (Gagné, 2013), the Development Model of Sports Participation (Côté, 1999), Sports Policies Leading to Sporting Success (De Bosscher et al., 2006), and Bloom's work Developing Talent in Young People (1985), depends largely on contextual variables, particularly the environment that supports medium- and long-term training. These theoretical models emphasize that the environment comprises the physical facilities available in the club or city, as well as the political, social, and cultural context, and the immediate environment surroundings (e.g., parents, friends, coaches), all of which play crucial roles in the transformation from talent to expertise.

In countries such as Brazil, where sports infrastructure has historically been unevenly distributed among different disciplines, Mazzei et al. (2012) report that only soccer, volleyball, and archery have Olympic Sports Confederations with high-quality facilities and equipment. In athletics, this disparity is also evident geographically: the Southeast region concentrates a higher number of institutions, training facilities, national results, and accredited athletes (Caregnato et al., 2018). Therefore, Olympic sports coaches face ongoing challenges in ensuring adequate training opportunities for young talent.

Environmental limitations have been shown to directly affect competitive performance and athletes' long-term engagement, particularly in sports such as athletics. This reinforces the need for organized strategies to strengthen the country's development of sport system (Mazzei et al., 2012; Caregnato et al., 2018; Santos et al., 2020).

Although theoretical models of talent development (TD) have indicated for decades that talent does not emerge solely from individual aptitudes, but rather from the interaction between personal and environmental factors (Bloom, 1985; Gagné, 2013), there are still gaps in our understanding of how the environment manifests itself in contexts with limited resources. Training spaces, socioeconomic conditions, support from multidisciplinary teams, and community engagement have been considered decisive environments for athletes' successful trajectories toward high performance (Henriksen & Stambulova, 2023; Martindale & Mortimer, 2011). These components act as structures, factors, or catalysts that collectively facilitate positive reactions in the TD process.

Although talent emerges in favourable environmental conditions, for example, in families of musicians, many musicians are produced, there is, not least, the need for an internal basis of natural ability in the individual, which is why not all subjects in similar environmental conditions develop (Gagné, 2013; Guenther, 2015). Henriksen and Stambulova (2023) suggest a more holistic ecological perspective on athletic DT environments, which considers coaches, but also those responsible for athletes, as characters who influence this process.

The responsible parties can provide essential emotional and financial support for children to continue practicing (Côté, 1999; Ferreira & Moraes, 2012), but they may be viewed by athletes as obstacles (Elumaro et al., 2016) or as one of the main causes of early specialization (Chase & DiSanti, 2017). This positive support also comes from peers, friends, and/or training partners, who act as social motivators in maintaining sports practice (Taylor & Bruner 2012; Seanor et al., 2017).

Despite theoretical advances regarding the environment in sports TD, the following question arises: how does the training environment and its relationship with talent development occur from the perspective of

Brazilian athletics coaches in contexts of social inequality? National studies indicate that Brazilian athletics achieves significant results even without ideal structures, suggesting the existence of adaptive and collaborative strategies that deserve to be investigated, especially from the perspective of the coaches responsible for this process (Caregnato, 2017; Elumaro et al., 2016). There are cases in which they act as guardians/parents or friends, as in studies on gymnastics (Costa & Nonomura, 2025) and athletes from various sports (Pankhurst & Collins, 2013). In other cases, coaches perform the functions of nutritionists and physical therapists, as in studies with athletes in table tennis, gymnastics, karate, and taekwondo (Gullu et al., 2020) and swimming (Raposo & Rosado 2025).

In addition to the multidimensionality of the environment mentioned above by theoretical models, it is also present in other studies. This niche also includes partnerships with other public or private institutions and access to sports facilities (Martindale & Mortimer, 2011), equipment and financial resources (Pankhurst & Collins, 2013, Costa et al., 2021b), professional monitoring (Mazzei et al., 2012), and the social skills of coaches (Cunha et al., 2010).

Given this scenario, the objective of this study was to identify the training environment and its relationship with talent development from the perspective of Brazilian athletics coaches. Considering the multidimensional nature of talent development, the hypothesis is that this training environment has more than one dimension and is not limited to the physical structure used by athletes.

MATERIALS AND METHODS

Study characteristics

This is a qualitative, descriptive, and retrospective study (Marconi & Lakatos, 2011). This approach allows us to interpret the meanings attributed by coaches to the structures that make up the training process for track and field athletes in Brazilian contexts.

The period was defined as 2012 to 2019, referring to two Olympic cycles. The Olympic cycles determine the organization of training planning, which is a reference in setting competitive goals. The observational design structure established here, even though it is a qualitative study, was characterized as nomothetic, with a static and unidimensional nature in terms of the data, and used only primary parameters, which, according to Anguera et al. (2011), allow for distinguishing between frequency, order, and duration.

Participants

Five athletics coaches (four men and one woman) participated, with an average age of 44.8 ± 6.0 years and 15.4 ± 6.7 years of experience in the sport, who worked in Mato Grosso, Brazil, between 2012 and 2019. All had formal ties with clubs or educational institutions and, as an inclusion criterion, had worked with young athletes who had achieved significant results in international competitions (Table 1), this factor being determined by the coach's effectiveness, according to Filgueira Perez (2016). At the time of the study, the state had 10 coaches, but three did not meet the inclusion criteria because they did not have significant results in international competitions. Of the seven coaches in the state, two refused to participate in the study, leaving 71.4% of the sample in relation to the population.

Instruments and procedures

A semi-structured in-depth interview technique was used, consisting of open-ended questions related to the training process and available structures. A previously established script was followed to assist in conducting the interview and understanding the facts (Manzini, 2012). The interview questions were based on the

theoretical dimensions established from the DMGT theoretical model (Gagné, 2013), which details the aspects that make up the structure necessary for the coach for the TD process.

Table 1. Profile of the coaches participating in the study.

Coach sex	Professional data Time/level IAAF	International results	1st or 2nd place	Year
C1 ♀	08 years Level I	Long jump	South American Youth Games (U18), CHI Youth Olympic Games, ARG South American U20 Athletics Championships, COL	2017-2019
C2 ♂	25 years Level II	3000 and 5000 m	South American U18 Athletics Championships, ARG South American U20 Athletics Championships, ARG	2012-2013
C3 ♂	18 years Level III	Javelin Throw, Triple Jump, 100 m and 200 m	Youth Olympic Festival, AUS South American U18 Athletics Championships, ARG South American Youth Games (U18), CHI World U18 Athletics Championships, KEN World U20 Athletics Championships, FIN South American U20 Athletics Championships, COL	2013-2019
C4 ♂	10 years Level II	200 m and 4x100 m	South American Youth Games, PER Youth Olympic Games Qualifier, COL South American U20 Athletics Championships, ECU	2013-2015
C5 ♂	16 years Level II	800 m, 1500 m, 3000 m and 10000 m	South American U18 Athletics Championships, ARG South American U20 Athletics Championships, ARG Youth Olympic Games Qualifier, COL South American Youth Games (U18), CHI Youth Olympic Games, ARG	2012-2019

Notes: ♀: Female; ♂: Male; CHI: Chile; ARG: Argentina; COL: Colombia; AUS: Australia; KEN: Kenya; FIN: Finland; PER: Peru; ECU: Ecuador.

The interviews were conducted individually and online, using Google Meet and Web Room applications, and recorded using the DU Recorder application for later analysis. The interviews were conducted by the researcher, who is a Level 1 athletics coach certified by the IAAF, with two years of experience in Mato Grosso state and participation in official competitions as a technical assistant.

The following themes, based on studies by Henriksen and Stambulova (2023), were used to structure the roadmap: club resources, coaches and their skills, training facilities, city infrastructure; and Elumaro et al. (2016), addressing: home, school, community, sports culture, and support for athletes.

The study followed the ethical precepts of research involving human subjects, with approval from the UFMT Health Research Ethics Committee under No. 245256190.0.0000.8124 (opinion No. 3,849,709).

Data analysis

The collected data were processed and analysed using Content Analysis (Bardin, 2016), and NVIVO 12 Pro software was used to manage and support this analytical process.

The focus of the study, in understanding the perspective of coaches, required concentration on qualitative aspects, in line with the examination of the meanings and underlying sense of verbal messages (Lara & Molina, 2011). The communicational interpretation adopted was that of deductive thematic analysis, following the phases proposed by Braun et al. (2016). After transcribing the interviews, the credibility of the data was established through a validation process by the participants, with the coaches confirming their original discourse.

The analytical phase continued with familiarization with the content and subsequent coding, in which the raw data were categorized in NVIVO software. This process involved the creation of "*nodes*" through the selection of text units, called mini-units (MUs), grouped into categories, indicating the frequency of occurrence of the themes. After refining the categories and reviewing the statements, the results report was prepared.

RESULTS

The interviews showed that coaches' perceptions of sports talent development are related to the structural conditions of each context. The content analysis yielded a total of 151 MUs, distributed into two main categories, each with its respective themes (nodes), as shown in Figure 1.

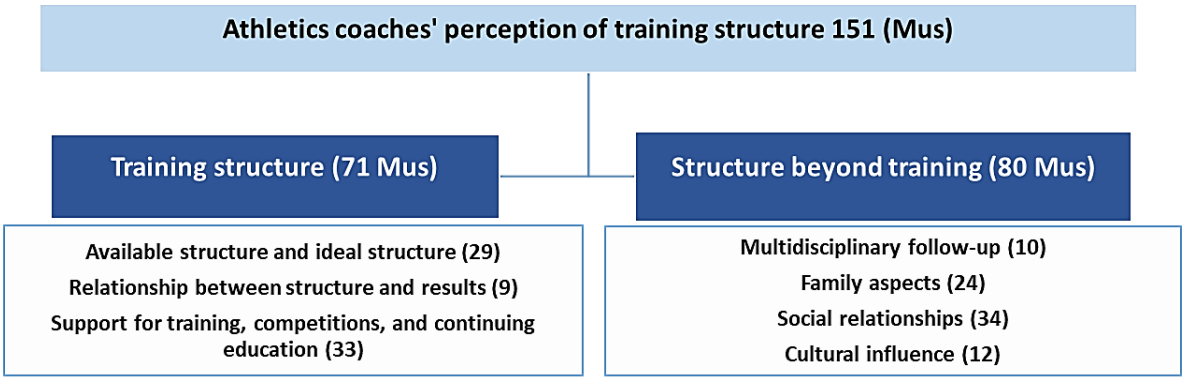

Figure 1. Categories and themes containing the mini-units (Mus) emerging from the content analysis of the interviews with the coaches.

From the emergence of these categories, it was identified that the promotion of sporting talent depends not only on the environmental structure, a concept contained in theoretical models of talent development, but also on contextual and human aspects that go beyond the sporting environment. The results indicated that coaches recognize the importance of structural conditions, whether physical, human, or social, as determinants for the performance and continuity of their athletes, revealing in their discourse both the limitations and adaptation strategies in the face of scarce resources, as well as the transformative potential of sport in the lives of young people and in the local sports culture.

The results are presented in two main sections according to the categories generated: environmental structures for training and structures beyond training.

Training structure

A. Available structure and ideal structure

Of the facilities available to the coaches, all stated that they had a dirt track and that this condition remains unchanged. As for improvements, there was a big difference between two coaches. Coach (C) 2 pointed out that his facility was very poor, working with adapted equipment, such as bamboo darts. However, he made great improvements, such as implements for various events, even a rubberized jumping track.

The C5 pointed out that even with the construction of the athletes' house, the facilities for the events still need improvement, as there are still no adequate environmental structures for training. Unlike the environmental

structures available, the coaches were unanimous in their opinion regarding the environmental structures that are still needed or that would be ideal.

> "*The synthetic track! What we needed to add, to improve our athletes' results*". (C1)
> "*Today, what is mainly missing here for us, which we didn't have in 2012 and still don't have here in 2020, I'm talking about 2019/2020, is the official track*". (C2)

In addition to improvements to the track, coaches reported aspects such as assistance from psychologists, physiologists, and physical therapists, as well as various physical aspects to create an ideal structure.

> *"(...) ideally, you would have all the facilities and support you need, a good track, a gym, a physical therapy lab for recovery, a pool, everything... and a psychologist, a doctor, good nutrition—all of that would be part of the physical structure, which would be ideal*". (C4)

On the other hand, many coaches said they no longer found themselves in precarious conditions. Most expressed their desire for improvements in their track conditions and the need to have more professionals working alongside them in the DT process. Thus, the direct relationship between improving infrastructure and promoting talent, as well as achieving good results, is clear.

B. Relationship between structure and results

There is a relationship between the efforts of coaches to obtain better environmental structures and the behavioural efforts of athletes to achieve results, to take advantage of these structures, and that financial resources permeate between these two points.

> "(...) *because when you leave a dirt track and compete on a synthetic track, it mainly changes for technical events such as the long jump, triple jump, and high jump, where each athlete has their own running mark (...) the track is faster, so your run ends up increasing and you are faster*". (C1)
> "*So, saying that structure will make an Olympic athlete is a lie. The first structure you need to become an Olympic athlete is human, it's the will, it's the desire. That's the first structure. If you don't have that first structure, any other structure is rubbish, it's throwing money away*". (C4)
> "(...) *because in the project, it is not enough to have resources, organization, and structure; if there are no results, it will not move forward, so it all comes down to results. If there are no results, you will not get investment in it; the city, state, or company will not want to finance it*". (C2)

C. Support for training, competitions, and continuing education

Support for training

For coaches to carry out their training sessions, a favourable situation was identified, given that three of them are paid for their exclusive work in athletics. Two others work voluntarily, as they are physical education teachers in elementary schools. However, even coaches who receive funding to work in athletics pointed out difficulties.

> "(...) we can't complain that our Institute is sponsored by Energisa and Unimed, but we worked anyway because we love what we do, right? Because if we thought about it financially, we would have given up halfway through". (C1)

The volunteer coaches described receiving sporadic payments for the work they did with their athletes. Because the project involved children in vulnerable situations, they were also able to secure partnerships with public agencies.

> "*I received incentives for personal training from CBAt, a coaching grant linked to the athlete's results. If the athlete performed well, the coach also received a bonus, so yes, I did. In 2015, with Allifer and Isabela*". (C4)
> "*After that, we also had a partnership with the Ministry of Labor in 2018 and 2019, a resource for the athletes' house (...) so we have good partners here (also in the city), what we don't have is money, for example, a credit at the supermarket that the judge went there, bought the food, and delivered it to us*". (C5)

Unlike in the past, there are now coaches who dedicate themselves exclusively to coaching and receive other incentives, ranging from trips to competitions, festivals, sports equipment, among others, funded by the local government and agricultural cooperatives.

> "*So, since then, there has been a change in management and today there is much better support, even though parents still don't get involved in the finances of their children who participate in the athletics team here. The city government finances all events, all trips, food, accommodation, including airfare, everything*". (C2)

Belonging to this theme of promoting training, athletic scholarships are also an important form of support, and coaches were asked whether their athletes received this assistance (Table 2). As a result, some athletes received it, which was a way to motivate and keep them practicing and within the TD process.

Table 2. Conditions for athletes receiving the Athlete Grant.

Coaches	Athletes who receive financial assistance
C1	"*They receive it, Lissandra herself (...) has the International scholarship*".
C2	"*So, talented athletes get athletic scholarships quite easily (...). So athletes do have financial incentives*".
C3	"*We have about 20 athletes who benefit from the federal and state athletic scholarship program*".
C4	"*Federal athlete scholarship, all federal, none received state*".
C5	"*Yes. Today, Francielly receives 900 reais per month, Evandro receives 900 reais, Duda receives 400 reais per month, and Lucas Pinho receives 1,800 reais from an international scholarship because he was the South American champion*".

Among the scholarship recipients mentioned, there are three different levels of scholarships: state, national, and international. However, it is known that this reality changes every year, depending directly on the results of competitions. In addition, the expenses incurred by coaches in taking their athletes to compete are also a way of keeping them in sport, given the recognized importance of financial support in promoting talent.

Support for competitions

The following topic deals with how each coach organizes themselves to take athletes to competitions. Most describe having good conditions thanks to municipal support, with full or partial assistance and partnerships

with other institutions. These came from companies in the city through tax incentive laws and assistance from the army.

> "(...) *thanks to the support we had from the municipality, which was the municipal sports incentive law, I would create a project, calculate the costs of competitions and events, and then a company would sponsor that project*". (C4)
> "(...) *for competitions within the state, we have a partnership with the army bus service. When competitions are outside the state, such as the Brazilian Championship, each athlete pays for their own travel expenses, and we can provide food and accommodation within a military area*". (C1)

There is also disparity in financial terms. While some coaches have the full support of the municipality and have more than ten athletes who receive government support, others work on a voluntary basis and have fewer than five athletes receiving athletic scholarships. This status persisted throughout the period investigated, since coaches who have a better support network within the environmental structures for training also have more athletes with athletic scholarships, maintaining better conditions to work on their TD projects in athletics.

Support for continuing education
The coaches were unanimous in reporting that they had received incentives from athletics organizations, including the CBAt and the Mato Grosso Athletics Federation (MTAF), for their technical training. However, there are some courses offered in other states that still require participants to pay part of the expenses.

> "*For this course, the IAAF pays for your travel and accommodation, so they have their whole system there, the IAAF pays for everything while you're on the course. And when there are these clinics, the Confederation (CBAt) provides accommodation and meals, but you have to get your own travel there, which is usually to São Paulo*". (C3)
> "*The CBAt always offers these courses, but the travel expenses from your city to Bragança Paulista, where the CBAt Training Center is located today, are out of your own pocket. The times I went, I paid for it out of my own pocket, and there you have accommodation and meals*". (C1)

Athletics organizations are concerned with training their coaches and are aware of their economic conditions. To ensure that this happens more frequently, they collaborate by offering courses, sometimes even paying for travel expenses to maintain or improve the quality of MT coaches.

Considering all the items presented, it was noted that the training facilities had a heterogeneity of available elements, since some subjects had to deal with precarious conditions and others had good conditions from the outset. The facilities described above as good did not undergo major changes from 2012 to 2019, and in the most precarious facilities, there were some improvements justified by the work of the coaches with their athletes.

Structures beyond training

A. Multidisciplinary follow-up

All coaches reported receiving multidisciplinary services (Table 3), even if they were working with a single athlete, as in the case of C1 with the physical therapist. Over the years, partnerships in the projects have

come from the private sector and have been acquired through the dissemination of the results achieved by the project.

Table 3. Multidisciplinary support provided to athletes.

Coaches	Multidisciplinary follow-up and other details	Through
C1	Physical therapist (one athlete) and psychologist (2015 for all athletes)	Partnership
C2	Physical therapist (focus on injuries for everyone) and psychologist (minority of athletes)	Municipality
C3	Physical therapist (for all athletes)	Municipality
C4	Physical therapist (2015 and 2016 for all athletes)	Partnership
C5	Physical therapist, doctors, and dentist (for all athletes)	Partnership

The initiative is still modest, with the exception of C5, which, despite having a training structure that is still precarious, received more significant multidisciplinary support.

B. Family aspects

The financial participation of family members/guardians is non-existent, as stated by three coaches, but was mentioned by the other coaches. This fact may be linked to the socioeconomic status of the parents, which, as pointed out by most coaches, is precarious. Table 4 shows the details of this information.

Table 4. Support, financial situation, and housing conditions of athletes' parents.

Coaches	Financial support from guardians	Housing conditions
C1	*"(...) parents are good partners*"	"*About 80% have good housing conditions*"
C2	"*In early 2012, the family was the 'sponsor,' right? (...) Today, parents don't get involved in their children's finances*"	"*In very poor conditions. And it was very small, very humble indeed*"
C3	"*Some families were very involved (...), there were more who supported it*"	"*Most lived with their grandparents in simpler neighbourhoods*"
C4	"*No, actually, I tried to spare the family as much as possible*"	"*Most live in more peripheral neighbourhoods, some in houses donated by the government, others still in wooden houses*"
C5	"*It's zero! Zero, nothing*."	"*Most of them are boys from the suburbs, all surviving on minimum income*"

Most live with their parents or grandparents (C3), but in precarious conditions, in very small houses located on the outskirts of town and living on minimum wage incomes. Considering this financial situation, most of these athletes belong to a disadvantaged group in society.

C. Social relationships

This subtopic consists of questions regarding relationships between athletes, between athletes and their families, and between coaches and their athletes. Regarding relationships between athletes, all coaches described their quality as good, as shown in the following excerpts.

> "*Look, thank God there is a very good camaraderie among them, especially because we defend this social aspect of behaviour. I have never had any issues with my athletes that are beyond our control*". (C5)
> "*There were a few arguments and such, but I always managed to get around that. I never had any behavioural problems with them, especially in competitions*". (C4)

Regarding the relationship between athletes and their families, four coaches pointed out that it was not always easy, but that it changes over time. C2 provides an overview that was also mentioned by the other coaches.

> "(...) *There are those who are good children and those who are not so good, there are those who have good parents and those who have not so good parents, and we as coaches end up influencing the relationship between parents and children. We visit the family to see how the child is doing, when there are adverse situations at school that the parents are sometimes unaware of, promoting this socialization between the family*". (C2)

The promotion of socialization with the family was also present in the descriptions of other coaches, who make athletics an important tool in bringing families closer together and valuing them. When athletes are not solidly committed to practicing sports, the absence of the family is a determining factor in the abandonment of many of them.

Regarding the relationship between coaches and athletes, different descriptions emerged about how they were treated. Among them, there was a report of a change in attitude perceived by one coach as beneficial to the growth of the project.

> "*Very good, I'm strict. Discipline causes some stress, you know that, but I've always maintained a lot of respect and they respect me... when I walk down the street, if they see me coming, they sit up straight because the teacher is coming*". (C3)
> "*I've always been very playful, and I also work on the professional side of training. I've always talked a lot and listened to them a lot in all aspects, you know?*". (C4)

Based on the reports, the athletes get along well with each other, but the same cannot be said for their relationships with their families. However, one of the highlights of participating in MT athletics projects was the promotion of socialization with the family, with most coaches valuing their involvement in talent promotion activities, as this support becomes another reason for athletes to remain in the process.

D. Cultural influence

To conclude the subcategory of structures beyond training, coaches responded to whether the work they did influenced the city's sports culture.

> "*We are highly respected here in the municipality, you know, the people, the community, the press, society really respects athletics, they know how important athletics is for children's socialization, changing their lifestyle and behaviour*". (C3)
> "*Here we still have a little bit of publicity for athletes in the local media. They are recognized at school, in the neighbourhood, and in a way, other athletes who have even become Brazilian champions have looked up to those who were appearing. This made the sport a little more popular in the city, so much so that I ended up with more than 100 students (...)*." (C4)

It should be noted that cultural influence can be a way to strengthen the sport and promote it in the city, as well as its benefits to local practitioners. These aspects could become a means for coaches to obtain more investment for the structures necessary for athletics, promoting higher quality TD.

DISCUSSION

The present study aimed to identify the training environment and its relationship with talent development from the perspective of Brazilian athletics coaches. The hypothesis was that the training environment had more

than one dimension and was not limited to the physical structure used by athletes. The results revealed two dimensions or categories of the training environment, namely the training structure (71 MUs) and the structure beyond training (80 MUs), which in turn were subdivided into three and four subcategories, respectively, accounting for a high number of MUs identified in the coaches' discourse.

The findings reinforce that the process of developing athletic talent is multidimensional and depends as much on spatial and material structures as it does on the social and institutional networks surrounding the athlete. This understanding is consistent with ecological models of talent development (Henriksen et al., 2010; Henriksen & Stambulova 2023), which highlight the interaction between material resources, human relationships, and sports culture as determinants of long-term success.

Although coaches point out that good facilities and equipment can provide safety and motivate athletes to achieve better results, the lack thereof obviously hinders this process, but does not prevent it from happening. Other studies in athletics corroborate this result and indicate that athletes and coaches alike suffer from a lack of financial support and access to the facilities necessary for effective development (Elumaro et al., 2016; Santos et al., 2020, Costa et al., 2021a). In contrast, there is a need for coaches to be in an environment conducive to the production and development of athletes (Wiman et al., 2010), and many clubs are successful in athletics because they offer a suitable environment and good opportunities for coaches and their respective athletes (Henriksen et al., 2010).

To address the dynamics necessary for both (coach and athlete), Henriksen and Stambulova (2023 p.06), when examining empirical case studies of successful environments in various sports and countries, highlight the important role of health and well-being as an essential resource for the performance and personal development not only of athletes, but also draw the attention of researchers and professionals to "*investigate and promote healthy environments for coaches, managers, colleagues, parents, and sports psychology consultants who influence athletes*". These authors complement the importance of not placing athletic performance above all else but rather seeking balance in the athletic environment.

The athletics coaches investigated demonstrated an active role in overcoming structural limitations, adopting creative strategies to enable training even in contexts of material deprivation. This stance reinforces what the literature points out about the multifunctional role of the coach, who, in addition to being responsible for technical planning, also acts as a manager, social mediator, and values trainer, as confirmed by the studies by Caregnato (2017) and Elumaro et al. (2016) in athletics, and Ramos et al. (2025) and Taylor and Bruner (2012) in soccer. Furthermore, according to a scoping review on talent in volleyball, De Oliveira (2024) states that coaches have a high capacity to detect talented athletes, as they can identify potential characteristics that test batteries cannot measure.

As athletes' performance levels rise, coaches' skills and efforts also increase to compensate for the lack of environmental structures in promoting talent. The coach is part of the DT not only in training, but also in creating an environment for success through dialogue between people in the athlete's context (specialists, teachers, clubs, families, and athletes), with the aim of ensuring that everyone is on the same page and that activities are coordinated, as mentioned in the soccer studies by Storm et al. (2025) and Ramos et al. (2025).

When considering the category of training facilities, two distinct groups were observed: coaches who had good facilities from the outset, and those who had to develop strategies to operate even without basic materials. Most coaches belong to this second group, and, despite the limitations, they achieved gradual improvements between 2012 and 2019, mainly with the support of city governments and partnerships, such

as the construction of the "*athletes' house*," which represented one of the improvements in training conditions and highlights the importance of the participation of various sectors in strengthening the sport. Thus, it is reiterated that nations that invest more in sport can provide more opportunities for athletes to train in ideal circumstances, such as building a strong organizational structure (De Bosscher et al., 2006) with a long-term view (Zhang & Wei, 2025).

These findings are consistent with Caregnato (2017), who analysed partnerships between the Ministry of Sports and the CBAt aimed at creating the National Athletics Training Network, with significant investments between 2011 and 2019. A club in Mato Grosso mentioned in this study, belonging to the group with the best structural conditions, illustrates how infrastructure and sporting results are strongly related, as it has the largest number of athletes receiving scholarships, confirming the relevance of environmental structures for the promotion of sporting talent.

As for the ideal structure, coaches highlight the need for synthetic tracks, well-equipped gyms, multidisciplinary monitoring, and psychological support. However, coaches emphasized that such conditions only become effective when accompanied by effort, commitment, and engagement from athletes and coaches. Mazzei et al. (2012) reinforce that, in Brazil, only a few sports, such as soccer, volleyball, and archery, have complete and integrated structures. In other sports, the lack of resources requires greater human and pedagogical effort from coaches, which is confirmed in the context of athletics in Mato Grosso. Furthermore, parents are not always helpful in this process of engaging athletes, as their behaviour can have a negative influence, putting pressure on athletes instead of encouraging them (Ramos et al., 2025, Zhang & Wei, 2025).

As for training incentives, most coaches receive specific remuneration for their work in athletics, although some work on a voluntary basis. This reality contrasts with that of other sports such as basketball, where many professionals need to take on multiple jobs to ensure their livelihood (Reis et al., 2016). Henriksen et al. (2010) observed a similar situation in Sweden, where volunteer athletics coaches have excellent infrastructure conditions, the opposite of the Brazilian reality, where a scarcity of resources forces coaches to seek and sustain their own means of working.

In the case of athletes, only a minority receive this financial assistance from the Bolsa Atleta program, with the most significant support for athletics concentrated in the Southeast and South regions, with the Midwest in second-to-last place (Anunciação et al., 2017). This scenario reinforces the vulnerability of sports projects in the Midwest and limits the smooth development of new talent, requiring coaches to make greater efforts to retain and motivate athletes.

Support for competitions proved to be more consistent, as most coaches reported receiving partial or full support from municipal agencies and institutional partnerships, such as local companies and assistance from the Army. In addition to the motivational factor, participation in competitions represents a gateway to financial incentive programs and, consequently, to the continuity of the process of developing talent in sport, since financial incentives are one of the reasons for starting and continuing in athletics, according to Costa et al. (2021b). According to Caregnato (2017) and Martindale & Mortimer (2011), competitive experience, combined with a favourable training environment, is one of the main factors for permanence and athletic evolution.

On the subject of continuing education, all coaches reported receiving encouragement and support from athletics organizations (CBAt and FAMT), especially in technical courses. These actions are related to the

Agnelo-Piva Law (No. 10,264/2001), which allocates resources from the Brazilian Olympic Committee to Olympic sports confederations, promoting professional qualification (Almeida & Marchi Junior, 2011). These training courses strengthen the role of the coach as an agent of change in the sporting environment. The findings of Boeck et al. (2024) reinforce the need for these incentives for continuing education, as in the coaching career, the pursuit of continuous knowledge demonstrates a commitment to training and, consequently, the development of athletes as competitors.

In structures beyond training, multidisciplinary support is limited. All coaches reported receiving physical therapy services, but most through partnerships. Only one of the coaches reported having a full team. This scenario reflects the national reality pointed out by Caregnato (2017), in which coaches accumulate technical, administrative, and pedagogical functions, often without specialized support for the development and/or promotion of sporting talent.

Still on the subject of multidisciplinary support, Raposo & Rosado (2025), in their quest to identify the most important factors in professional training and coach efficiency, concluded that "*multidisciplinary support involving professionals from areas such as medicine, biomechanics, physical therapy, nutrition, psychology, and rigorous management of the training and competition process*" are decisive factors for success in high-performance swimming. This result reinforces the need for a broad environmental structure, in addition to the physical environment, to remain among the international sporting elite.

In terms of family background, it was found that most athletes belong to low-income families, live in peripheral areas, and have poor housing conditions. In this context, athletics emerges as a tool for inclusion, social mobility, and better living conditions for athletes in MT. These findings corroborate those of Santos et al. (2020), who identified athletics as a path to personal and social advancement for young athletes from lower socioeconomic backgrounds, as identified in one of the reports: "*Athletics changed my story, and because of it, today I am a teacher, a respected citizen.*" The improvement in the relationship between athletes and their families, promoted through the practice of athletics, was highlighted as one of the most positive impacts of the projects analysed (Souza et al., 2024).

Cultural influence also proved to be relevant in this study. Coaches reported that the results achieved by athletes and the visibility obtained in local and national media contributed to strengthening regional sports culture and inspiring new generations. Studies in various sports, such as those by Almeida & Marchi Junior (2011), and the literature review by Santana, Costa & Purificação (2024) reinforce that media coverage is a key element in consolidating sport as a social and educational practice. In addition, Moraes et al. (2021) advocate the use of community spaces as a strategy for social integration and encouraging deliberate sports practice. Finally, returning to the findings of Henriksen et al. (2010), it is observed that sports environments with a strong organizational culture and cooperative values tend to produce more engaged athletes and more lasting projects. Thus, in the Brazilian context, especially in athletics in Mato Grosso, the strengthening of sporting talent depends on an integrated ecological approach, articulating infrastructure, social support, sporting culture, and continuous training of coaches.

The limitations of this research include the fact that it was conducted during the pandemic, which we understand contributed to the refusal of two invited coaches to participate. In addition, completing all interviews took considerable time, as we depended on the availability of the participants. Further research with coaches from different sports within the state, as well as with athletics coaches in other Brazilian states, may help compare data and generate broader national evidence on this topic. This study advances our

understanding of how athletic talent develops to reach relevant national and international performance, even in contexts characterized by various forms of precariousness.

CONCLUSION

The study highlighted, from the coaches' perspective, the multidimensional nature of what is understood as the environment in the development of athletic talent. Despite working in contexts marked by social inequality, the coaches' narratives identified both the available and ideal environmental structures, the relationship between structure and performance outcomes, incentives for training, competitions, and continuing education, multidisciplinary follow-up, financial support from guardians, social relationships, and cultural influences. Although resource scarcity is a recurring challenge, the adaptability, resilience, and communication skills of athletics coaches proved to be decisive factors in ensuring the continuity and quality of the developmental process.

The analyses revealed that spatial structure and sports equipment alone do not guarantee talent development; rather, they become meaningful when combined with the coaches' commitment, athletes' motivation, and the support of social and institutional networks. Thus, the training environment must be understood broadly, encompassing physical, human, and cultural dimensions. The findings also indicate that financial support and local partnerships are crucial for the sustainability of projects, and that family and community engagement strengthens young athletes' connection to the sport and expands its social impact. Coaches act as mediators between the social context and the sporting environment, achieving significant national and international outcomes. This demonstrates that talent is indeed being developed within these contexts, while also contributing to transforming athletics into a space for human development and social inclusion.

AUTHOR CONTRIBUTIONS

RB: methodology, data curation, data analysis, and writing of the original draft; TM: methodology, writing of the original draft, and writing, review, and editing; DC-M: writing of the original draft; SD: writing of the original draft; AP: writing of the original draft; SR: methodology, data analysis, and writing of the original draft; LA: methodology, data curation, data analysis, and writing of the original draft, as well as writing, review, and editing.

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