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Original Article

STUDY ON YOUTH HANDBALL REGULATIONS: A DOCUMENTAL ANALYSIS ON THE MANDATORY USE OF INDIVIDUAL DEFENSIVE SYSTEM IN UNDER -12 AND UNDER-14 COMPETITIONS

ESTUDO SOBRE REGULAMENTOS NO HANDEBOL DE JOVENS: UMA ANÁLISE DOCUMENTAL SOBRE O USO OBRIGATÓRIO DO SISTEMA DEFENSIVO INDIVIDUAL EM COMPETIÇÕES SUB-12 E SUB-14

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ABSTRACT
Youth competitions should be transformed into a learning environment appropriate to the development of physical, psychological, technical-tactical skills adjusted to young players. In handball competitions the use of compulsory individual defense from 11 to 14 years of age is presented by literature, but in-depth studies are required. This study describes the use of the individual defensive system in under-12 and under-14 handball competitions, based on chronological-temporal and structural-functional aspects. We conducted a documental research in São Paulo competitions held in 2016, through methodological triangulation between qualitative methods. The use of individual defensive system is mandatory in specific periods of the game, is used with greater volume from 11 to 13 years of age, being used by a minimum proximity of one meter between defenders and attackers and is performed at least in defensive half-court. It is a defensive system that suits the learning of these categories, but demands attention of coaches for the physiological questions of young athletes. The possibility of exploiting larger defensive spaces presupposes the existence of punishments to inhibit gamesmanship and cheating attitudes of coaches and athletes in search of offensive and defensive logic of the game compliance.
Keywords: Sport pedagogy. Youth sports. Competition. Handball.

RESUMO
Competições de jovens devem ser transformadas num ambiente de aprendizagem adequado ao desenvolvimento de competências físicas, psicológicas, técnico-táticas ajustadas aos jovens atletas. Nas competições de handebol o uso da defesa individual obrigatória dos 11 aos 14 anos de idade é apresentado pela literatura, mas estudos aprofundados são necessários. Este estudo descreve o uso do sistema defensivo individual em competições de handebol sub-12 e sub-14, sustentada em aspectos cronológico-temporais e estrutural-funcionais. Realizamos uma pesquisa documental em competições paulistas realizadas em 2016, por meio da triangulação metodológica entre métodos qualitativos. O uso do sistema defensivo individual é obrigatório em períodos específicos do jogo, é utilizado com maior volume dos 11 aos 13 anos de idade sendo usado por aproximação mínima de um metro entre defensores e atacantes e é realizada no mínimo na meia quadra defensiva. Trata-se de um sistema defensivo que adequa-se à aprendizagem destas categorias, mas demanda atenção de treinadores para as questões fisiológicas de jovens atletas. A possibilidade de exploração de maiores espaços defensivos pressupõem a existência de punições para inibir trapaças e atitudes transgressoras de treinadores e atletas em busca do cumprimento da lógica ofensiva e defensiva do jogo.
Palavras-chave: Pedagogia do esporte. Esportes para jovens. Competição. Handebol.

Introduction

Sports are a phenomenon whose primary nature is based on dispute and competitiveness[1], which makes the competitive environment an important area of research and investigation in sport pedagogy.

Specifically in the organization of youth competitions, studies have shown the need for changes in this context to turn competitions into learning environments suited to the physical and psychological development of young people, in a logic of progression oriented to develop young athletes' technical-tactical skills[2-5].

Theoretical structures based on these assumptions have been proposed to change young people's competitive scenario considering engagement goals such as the increase of action and scoring, maintenance of close scores, improvement of personal involvement, opportunity to competitive equalization and competitive levels adjusted for the possibilities and interests of young players[6-8].

Recent studies have been based on these theoretical structures to discuss how changes in facilities, equipments, structure and game reules influence young people's different engagement and learning goals[9-11].

Among the possible changes that positively influence the competitive environment of youth sports, Burton, Gillham and Hammermeister[7] highlight adjustments in the tactical strategic plan through modifications in games and competitions regulations, mainly in the defensive organization such as limiting the use of zone defenses, which, according to the authors, can increase participation and action, and thus scoring, which is a positive characteristic for the young athlete engagement.

When it comes to handball, studies conducted in Brazil present information about competitive adaptations that propose individual defensive system as mandatory in age groups up to 14 years of age[12-15], period in which spontaneous individual tactical behavior is typical, through changes of direction, unmarking and search for line pass and the use of individual defensive system are justified by the fact that is considered a precondition for playing in the zone area in more advanced stages, establishing bases to incorporate active defensive conducts and to make defensive players more offensive[14].

Although these studies present these adaptations, they do not analyze them in depth. Their specific goal is not to discuss competitive environment of youth sports, since they focus on a general analysis of institutions that promote youth sports[15,16] and on the teaching-learning-training process in handball[12-14], thus, a more in-depth look at the standard use of the individual defensive system is necessary to present new information that may contribute to discussions in sport pedagogy.

Based on this scenario, this study aims to describe how the use of the individual defensive system in youth handball competitions held in the state of São Paulo, Brazil, is systematized in the sub-12 and sub-14 categories, from chronological- temporal and structural-functional aspects of the game. As contributions, this research seeks to treat the raw data contained in these regulations in representations that facilitate access, consultation and reference in new investigations, contemplating the role of a documentary research according to Bardin[17], in addition to bringing up new problems and questions for future research in sport pedagogy.

Methods

Nature of research

This is a descriptive and qualitative study with analytical attributes[18] performed through documentary research of multiple regulations of youth handball competitions held in 2016 in the state of São Paulo, Brazil. We opted the documentary analysis because regulations are stable sources of information to which analytical approach has not yet been applied[19]. Documental researches has the main function of presenting findings that facilitate access to new information, in order to collaborate with future field studies that use these results as background and reference material[17,18].

Inclusion criteria and data gathering

This study includes only the competitions organized in the state of São Paulo that cover the sampling and specialization years[8], delimited for the age group from 11 to 14 years of age, as defined by the theoretical framework used in this article[6,7].

Two enteties send the regulations by email and other six regulations are collected on the official websites of the organizing entities, because these documents are publicly available and do not present restrictions for their consultation, collection and analysis[20,21]. Thus the following rules of the competition were collected: Pinheiros Handball Cup (PHC), State of São Paulo Handball League (SSPHL), Schoolar Handball League (SHL), Paulistana Handball League (PHL), Paulista Development Handball League (PDHL) and Paulista Handball Federation (PHF). To be included in the study, regulations should contain in their text the mandatory use of the individual defensive system. Thus, LSH under-14 and PDHL were excluded.

The internet is an important tool for qualitative research[18,22]. Flick[22] points that one of the limitations to the use of online documents is its non-linearity, due to the possibility of being modified at any time and recommends the process of triangulation with people who can evaluate the content of these documents as a process of validation of this information.

Following these guidelines, the regulations were evaluated by 15 experts, all handball coaches with at least five years of experience and who participated in at least one of the competitions whose regulations were collected for this study. The validation by experts resulted in the inclusion of all regulations included in this estudy (Chart 1).

Chart 1. Regulations included for the purposes of the study

Regulations	Years of Age	Description	Data Gathering	Inclusion Criteria
PHC	11, 12, 13	General Regulation with unified adaptations for the under-11, under-12 and under-13 categories	Sent by email	Included
SSPHL	11, 12, 13, 14	General Regulation with unified adaptations for the under-12 and under-14 categories	www.lhesp.com.br	Included
SHL	11, 12, 13, 14	General Regulation with unified adaptations for the under-11, under-12 and under-13	Sent by email	Included
		Specific regulation for the under-14 category		Excluded
PHL	11, 12	Specific regulation with own adaptations for the under-12 category	www.lphb.com.br	Included
DPHL	12, 13	Specific regulation with own adaptations for the under-13 category	www.ligahandebol.com.br	Excluded
PHF	11, 12	Specific regulation with own adaptations for the under-12 category	www.fphand.com.br	Included
	13, 14	Specific regulation with own adaptations for the under-14 category		Included

Source: Elaborated by the authors

Data analysis

The documental analysis was conducted by the first author, experienced in interpreting and preparation of competitive regulations for youth competitions and occurred through the methodological triangulation[22] established between Content Analysis, following the steps of pre-analysis, exploration of the material and data treatment according to Bardin's proposal[17] and the process of data summarization and inductive categorization according to the Qualitative Content Analysis proposed by Mayring[23], resulting in a content analysis by data reduction, described below.

After the skimming and in-depth reading, excerpts representing adjustments to the official handball regulations[24] were selected to define our research *corpus* were used as context units.–In the exploration of the material, we used Mayring[23] summaring process, to reduce the material without losing its essential content, preserving the comprehensive overview contained in the basic material[23].

For this, we prepared paraphrases to generalize the analyzed content from the central theme of each chosen excerpt (first reduction process). In each regulation, similar paraphrases were reduced (second reduction process), allowing us to compress them into a single sentence, which were later categorized.

The categorization process relied on inductive approach, with categories created during the exploration of the material[23]. For methodological accuracy in the categorization[24], we used "pilot categorization" for the PHL regulation.

The categorization process was made line by line. From the abstraction of the summarized material, the definition of a category was accomplished by allocating the information in a pre-existing category or by creating a new category until the process was exhausted.

As the last stage of the material analysis and to observe the process reliability, after 30 days we carried out an intra-coder agreement test of all procedures employed, starting from skimming reading and ending with a new inductive categorization. This is a procedure for checking the stability level of the processes used, being a procedure highly recommended in qualitative analysis[23].

With the aid of QSR Nvivo 11 software, the reliability of the analyses was verified by comparing the codifications of the two analyses performed at different times, and reached an agreement of 0.89 in the Kappa test, an excellent level according to Landis and Koch[25]. This result confirms the analysis stability, ensuring reliability for the content analysis process employed.

Ethical procedures

This research is part of a larger project approved by the Ethics Committee of the University of Campinas (UNICAMP) under the number 57799916.1.0000.5404.

Results

Of eight regulations collected for this study, two were excluded. This shows that the use of the individual defensive system is a stable adaptation among the São Paulo handball competitions. Related to the individual defensive system category, we established a subcategory described as "structural-funcional aspects" and "chronological-temporal aspects". Figure 1 shows this as a fairly stable competitive modification, with only one of the regulations not requiring the mandatory use of the individual defensive system.

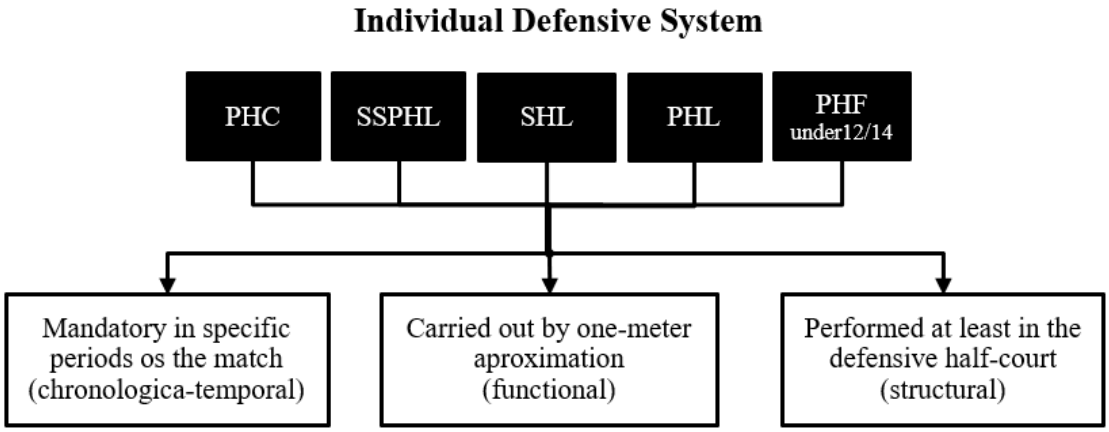

Figure 1. Chronological-temporal and Structural-functional aspectos of individual defensive system on regulations of youth handball competitions in the state of São Paulo, Brazil

Source: Elaborated by the authors

Analysis of strucutual-funcional aspects

For this study, the structural aspects concern the relation that the competitive modifications have with the spaces of the court that can be or not used during the matches. Functional aspects, however, concern how the regulations guide the possibility of players' action during the game.

The regulations describes the individual defensive system should be performed by at least 1 meter between defenders and attackers (functional aspect), indicates that it should be performed at least at the defensive half-court (structural aspect). Figure 2 illustrates how the estructural and functional relations, showing allowed, prohibited and mandatory situations according to the analyzed regulations.

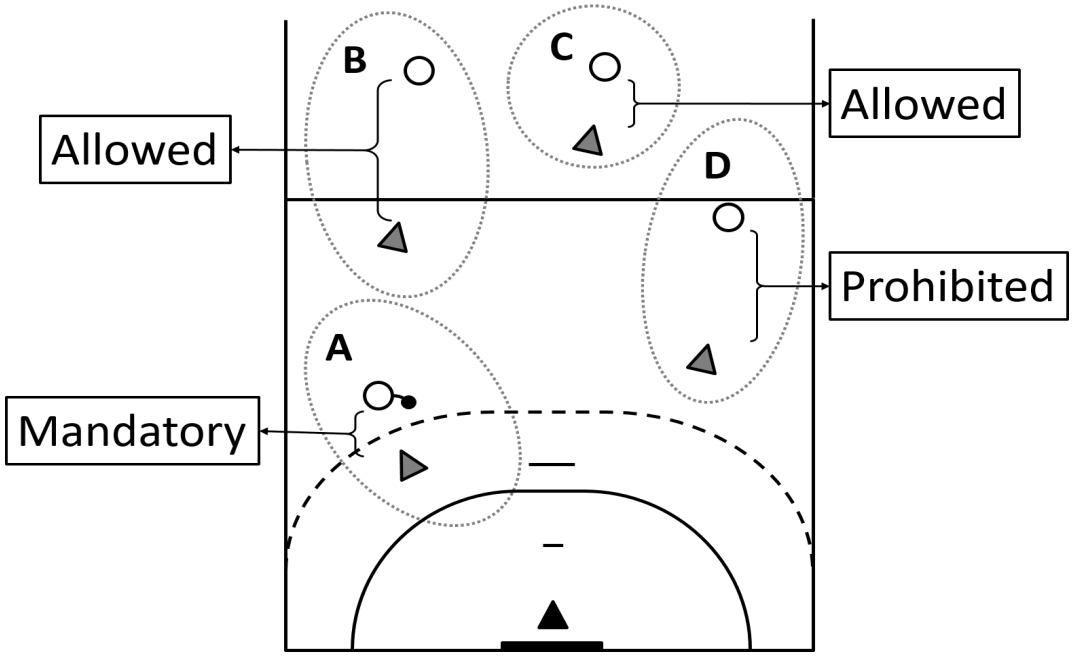

Figure 2. Relationship between defender-attacker proximity, depth of court and the compulsory use of the individual defensive system

Source: Elaborated by the authors

For being used at least in the defensive half-court, individual defensive system is no longer mandatory in the full court, enabling defense players to wait at the limit of their half-court for the arrival of their direct offensive player (Figure 2B), although defensive action may be used at any offensive court zone, with or without the prescribed regulatory distance, optional to defenders (Figure 2C). Mandatory individual defensive system by proximity occurs only at the defensive half-court (Figure 2A), with distances shorter than 1 meter between defender and direct attacker prohibited (Figure 2D).

An important aspect verified in the competitions PHC, SHL, PHL and PHF was the presence of punishments in case of noncompliance with this determinations of the mandatory use of the individual defense system. These penalties are manifested through the accumulation of progressive punishments to the coach, initiated by a verbal warning, yellow card and consecutive exclusions, in which the coach is punished and must remove an athlete from his team for a period of two minutes. In these competitions we also noticed that a seven-meter shot for the opposing team could be scored in case of multiple penalties for noncompliance with the use of the mandatory single defensive system. The SSPHL did not present any type of punishment for situations of this nature.

The application of punishments refers to the possibility that cheating and gamesmanship attitudes may occur due to the interaction between the functional and structural aspects that determine the use of the mandatory defensive system denoted by Figure 2.

Analysis of chronological-temporal aspects

For this study, the chronological aspects concern how the use of the individual defensive systems are proposed along the age groups of each competition. Temporal aspects, however, refer to the time expended throughout the games for the use of individual defensive system, indicating the total amount of time this defensive systems are used throughout a game.

Regarding the mandatory use of the individual defensive system and the target ages of each category, we noticed a decrease in the playing time dedicated to this modification in the age groups. Between 11 and 13 years, the use of individual defense is guaranteed for periods ranging from 66% to 50% of the total playing time, with a reduction for periods of less than 25% of the total playing time in competitions for 14 years old. We also found individual defensive system in similar amounts of time (50% of playing time) in SSPHL, competition that use the same regulation from under-12 and under-14 categories, as opposed to the trend observed in other competitions. These results show that the use of the individual defensive system tends to be proposed in great values of the playing time for youth handball competitions, as shown in Chart 2.

Chart 2. Importance degree of the individual defensive system according to age groups.

Regulations	Years of Age				Literal excerpt of the studied regulation	Playing time	Leve of Importance
	11	12	13	14			
PHL	X	X			Individual defensive system is mandatory in the first and second periods, and in the third period the use of the individual defensive system or two lines zone-based defensive system (5:1; 4:2 or 3:3) is allowed.	Mandatory in 66% of playing time	+++
PHC	X	X	X		Individual defensive system is mandatory in the first and second periods, and in the third period the use of the individual defensive system or two lines zone-based defensive system (5:1; 4:2 or 3:3) is allowed.	Mandatory in 66% of playing time	+++
SHL	X	X	X		[...] match time will be two 15-minute periods [...]. In the first 10 minutes of every game period the use of the individual defensive system is mandatory.	Mandatory in 66% of playing time	+++
PHF under-12	X	X			In the under-12 category matches will be three periods of 10 minutes [...]. In the first 5 minutes of each game period the use of the individual defensive system is mandatory.	Mandatory in 50% of playing time	++
SPHL	X	X	X	X	Match time will be [...] 20 × 20 minutes [...] teams should use the individual marking system in the first 10 minutes of each period.	Mandatory in 50% of playing time	++
PHF under-14			X	X	In the under-14 category matches will be three periods of 25 minutes, divided into 4 quarters of 12 minutes and 30 seconds each [...] 1st quarter, individual defensive system*.	Mandatory in 25% of playing time	+

Note: * In PHF under-14, the remaining periods of the match do not require the use of the individual defensive system.
Importance: +++ most of the time; ++ moderate amount of time; + decrease in the amount of time
Source: Elaborated by the authors

Discussions

From a pedagogical point of view, such competitive guidelines demonstrate the importance of learning the individual defensive system up to 14 years of age, since it allows the full development of perceptual, motor and cognitive abilities of the youth athletes, offering greater dynamics to offensive and defensive play through passing and scoring opportunities[14,26]. In basketball, a sport where youth competitions usually prohibit the use of zonal defenses, the use of the individual defensive system is also justified by learning motor and cognitive aspects[27]. This reinforces the pedagogical character of these modifications, as pointed out by Menezes, Sousa Santos and Braga[13].

Menezes, Marques and Nunomura[14] emphasize that learning from the individual defensive system can be positively transferred to the game with zonal defenses, which are more adjusted to the older categories, a factor that may justify the gradual decrease in the volume of compulsory time of the use of the individual defensive system in regulations, which presupposes the possibility of allowing the use of zonal defenses in competitions from 13 to 14 years of age.

The use of the defensive systems adapted for long periods of the game deserves attention in relation to the physical demands of the young athletes, mainly due to the absence of structural adaptations related to the size of the handball court in these regulations.

According to Nikolaidis et al.[28], in adult athletes, already fully developed as to the maturational aspects, the energetic and physiological wear due to individual defensive

systems is significantly higher when compared to the zonal defenses. In contrast, Matthys, et al.[29] show that between 11 and 14 years of age, neuromuscular abilities are still underdeveloped in handball athletes. Form these informations, we understand that the extended time dedicated to the individual defensive system (reaching values ranging from 66% to 50% of the total game in most of competitions tha use this defensive system) may not be compatible with the physical demands of the studied age group.

The entities that organize these competitions and the handball coaches of this age group may be search a balance between the pedagogical aspects intended by this regulatory modification and the physical demands, so that the use of the individual defensive system in the ages can achieve their expected goals.

From the structural-functional point of view, the types of defensive marking establishes interdependence with the different defensive systems, because it can be defined as the individual behavior associated to the defensive system adopted by the team[30].

The marking in handball can be classified into two types:

1) The proximity marking, in which the defender maintains close proximity to his direct attacker, seeking to neutralize his actions, so that he can control body contact, if necessary. It is a type of tactical action more indicated against the attackers near the zones of greater danger of the game[30], near the areas of six and nine meters[31]; and
2) The distance or observation marking, in which the defender observes the opponent while keeping a distance from his direct attacker, controlling it at a distance since his direct attacker is not close to the danger regions of the game[30].

In view of the above, the different types of marking (by proximity or by observation) must manifest themselves during the use of the individual defensive system, in function of different objectives that the defender has and in relation to the danger offered by his direct opponent, according of the defensive game logic.

Contradicting this, the studied regulations force the individual defensive system by proximity at the edges of the defensive half-court, near the center of the court, places where the opponent does not pose imminent danger to the target because it is far from the scoring regions, which results in a large opening of defensive spaces.

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The entities that organize these competitions and the handball coaches of this age group should be search a balance between the pedagogical aspects intended by this regulatory modification and the physical demands, so that the use of the individual defensive system in the ages can achieve their expected goals.

This knowledge allows us to understand that adopting individual defense by proximity can culminate in the loss of the pedagogical potential of this system if the coach is guided to victory at all costs and promotes rules transgression attitudes, showing the need for more flexible individual defense to prevent situations like these. We consider it fundamental that the regulations should not be limited to describing that the individual defensive system should be used functionally by proximity, but that it should conceptualize what is expected in

functional terms of the youth athletes, since individual defense can be done either by proximity or by observation, and there are moments more apt for the use of each marking.

Conclusions

This study described how the São Paulo competitions organize the compulsory use of the individual defensive system for young people between 11 and 14 years of age in relation to chronological-temporal and structural-functional aspects. It shows a scenario of valorization of this defensive system and its use exclusively by proximity marking, that due to the absence of adaptations of the size of the court, can demand physical wear of the youth athletes and open the possibility that gamesmanship attitudes can be used in function of the ample defensive spaces provided by the structural-functional relations described, raising the existence of punishments in its regulations.

Although we are limited by the possibilities of a documentary study, since it is difficult for inferences to be elaborated by this type of study, as justifies Bardin[17], we believe that these findings contribute with information to foment of future researches that has in this study a solid reference to emerging problems of interactions between sport pedagogy and youth handball competitions. In order to encourage these further studies, this research can raises any questions:

- Whats the theoretical bases that support the competitive defense adaptations?
- What are the pedagogical goals that support their application?
- How coaches deal with the physiological and energetic demands of their athletes exposed to long periods of play using the individual defensive system?
- Does the use of mandatory individual defensive system by proximity in defensive half-court promotes a motivational climate to cheating and gamesmanship attitudes?

This study also contributes to the presentation of the documental research on youth competitions regulations as an important and potential source of information, whose systematization and organization from data analysis using qualitative methodologies can contribute with new scenarios for studies in sport pedagogy.

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