Analysis of spatial-temporal orientation in competitive motor performance in rhythmic gymnastics, infantile and pre-infantile

ABSTRACT: The objective of this study was to analyze the spatial orientation in competitive motor performance in Rhythmic Gymnastics. According to the methodology used, which has a descriptive nature, it was analyzed the motor performance in a sample of 16 gymnasts, including pre-infantile and infantile categories. After filming the competition, the choreographic space movements were graphically adapted in files and data obtained were presented in a table, where the variables were inserted and classified. The results pointed out some problems regarding the teach-learning process of spatial orientation in competitive area: the majority of the individual exercises presented incorrections of choreography, and it was observed that the teachers did not follow most requirements of Gymnastics Code.

Keywords: gymnastics, spatial orientation, competition.
The Science of Human Motricity studies the man in superation movement, mainly because the subject through the oppressive social structures, is always in evidence.

Dantas points in Henri Walon (Enfance, 1956), in chapters “Importance du mouvement dans reads developpement psychologique de l’enfant” and in “Spaces postural et Spaces environnant”, the importance of the paper of corporal practices for the development of cognitive functions; Merleau-Ponty, with the Phenomenology of the Perception (1995, p.XIII), evidenced the “intencional effective” that makes the natural unit and antipredictive of the world and of our life.

Considering Gallahue and Ozmun (2005) that the perception is “the process of organizing new information with information already stored, what takes a pattern modified reaction” and in Barbanti (2005), who says, “as larger the motor repertoire, larger is the capacity to learn and to execute other movement”, we left of the intencional supposed that beginners teachers and gymnasts participates in competitive activities in gymnastics, to approach the perception of the space orientation as a fundamental psychomotor aspect in the displacements in competition area for these participants, developing a study of verification of the motor acting presented by them.

The norms of the Punctuation Code that govern the sporting experience are also approached, however without forgetting that the experience can be configured as a “transcendence” of the Being of the gymnast in evidence in the most intimate objectives.

Starting from XIX century, the development of the Gymnastics presented, in Europe, nationalist trends that accompanied the unfolding of the pedagogic progress, integrating the process of creation of education methodology for women using movement and rhythm.

Muts (1759-1839), Ling (1776-1838) and, then, Delsart (1811-1871) represent a characterization of the expression of the feelings humans through the corporal movements, increased by Dalcrose (1865-1950).

Bode (1881-1971) emphasized the fluency of the movements, the contraction and the muscular casualness, exploring directions, plans, that constitute the base of the displacements in gymnastics. In that sense, Medau (1890-1974) introduced the combined machines to music in the feminine exercises.

In that perspective, Russell (1980) points out that the modifications in the Gymnastics appeared starting from the exhibitions, that demanded formalition of rules and standardization of equipments; in spite of those modifications, the gymnastics sports coexisted with the European physical education systems.

[…] the most useful aspect of the gymnastic activity is the beginning of teaching to a student to control his own body in a variety of movement situations […] also learning how to execute abilities with the body and later added of an implement […].

The Rhythmic Gymnastics (RG), as any physical-sport activity, presents their specificities. Like this, the machines were just considered tools of aid, work equipment; however, with the evolution of the sporting culture, these objects passed to to be used in competitions, reminding that the body, the music and the machines should work together in a delimited area.

In Brazil it tried to accompany the crescent European competitive development, with the European teachers’ aid that reviewed the important bases that based the pedagogic learning in Europe.

For Barros and Neldiakova (2000), the objectives of RG are intimately linked to the child’s psychomotor development. And Pereira (2000) reveals that RG has as one of their objectives work the space perception.

Like this, it is observed that the development of the psychomotor space is a point of reference that can be used in studies about the initial competitions of young gymnasts, since the human motricity
involves the sporting culture and the evolutionary existence of the technical regulations.

The Environmental Theory of Havighurst (1979) considers the development of a child as an interaction among biological, social and cultural forces, through which the individuals increase their abilities continually to work in the society; as, for instance, to execute a series of tasks (move, game and physical activity) according to a structure of time to assure the appropriate progression; exist appropriate moments for the teaching, when the body is ready and the society requests the conclusion of a task.

Gallahue and Ozmund (2005) increase that the space structure is a basic component of the perceptive-motor development and can be divided in two subcategories: the one of knowledge of how much space the body occupies indeed in the space and the ability of projecting the body in the external space.

**JUSTIFICATIVE**

Existence of few scientific works on the Rhythmic Gymnastics. Existence of few works on children and about the orientation temporal space.

**OBJECTIVE**

**General Objectives**

Analyze the space-temporal orientation of the gymnasts from 9 to 12 years of age, in the competition area.

**Specific objectives**

- To verify the repetitions of the initial and final positions of the routines of exercises in levels and location.
- To discover the displacements in straight line or sinuous.
- To count the number of space directions contained in each series.

**STUDY HYPOTHESIS**

**Substantive hypothesis**

Flaws exist in the process of choreographic creation, in the item space occupation in their displacements and levels, in the offered time of the routine of exercises of the gymnasts in competition.

**DELIMITATION OF THE STUDY**

It was used in the study the State Championship of Rhythmic Gymnastics, in 1st phase, Advanced level II, happened in June of 2005, in the School Santa Adame, municipal district of Vila Velha, in the Espírito Santo. The choice of that level happens for being the earliest in execution and for the experience of the gymnasts, in the suitable age group, in competitions in the year of 2005.

**THEORETICAL REFERENCIAL**

To the succession of movements and coordinated corporal elements with the handling of the manual machine, both submitted to musical attendance, gives the name of Choreography - that lasts long as organized model of movements created for be witnessed by spectators.

Estés elementos son la base indispensable en la formación de las gimnastas y realizados [… ] constituyen para los jueces criterios de apreciación de los ejercicios […] Estos elementos codificados y con valor propio, se atienen a un diseño formal con un padrón motor establecido […]. ALBIZÚ (2001)

The author also fire the attention for the Mechanisms of Intrinsic Motive Execution, in that the sensorial-motive chain in the group to the perception mechanisms, decision and execution.

As for the mechanism of decision, the author increases that “recordar y memorizar situaciones nuevas provoca incertidumbre en la toma de decisión, variando em gran medida el ajuste temporoespacial […]”.

With the analysis of the Space-temporal Orientation in the competitive motor acting, is justified the theme of this article, since the item is part of the aspects of the child’s psychomotor development, phase in that biological, cognitive and affectionate transformations happens; besides, according to Galahue and Ozmund (2005), to “supply opportunities to the children so that develop the space perception is important attribute of a good program of Physical education […] “.

Feitosa (1999), in the chapter “A pedagogic approach - a dialectics of the knowledge”, suggests us that, as for the gymnastics, it is “necessary to update the sense of the exercises and of the individual disciplines.” The fact is that with the development of the space-temporal structuring, the child distinguishes the succession of the events, making possible the organization of the world that rounds them.

Starting from the presupposition that the space used in the Gymnastics Rhythmic can related to an extension of time and their intervals, since the sequence of executed exercises obeys a pre-certain time and proposed for the competitive presentations, is pertinent to return to Galahue and Ozmund (2005), according to the ones which, “everything that we do possesses an element time. There are an initial point and a final point […], there is a period of measurable time among these two points.”

Studies in Fonseca (1988) indicate that “the space as autocratie of the own independence of the human person, will allow to the child the discovery of his creation world and satisfaction.” This author gets the attention, still, for the fact that a child’s space adaptation involves 3 domains: the structuring (retention and execution of the exercise), the organization (calculus of the otic-motor) and the representation (topographical memory).
Coste (1981) notices us that “ [...] a child’s evolution doesn’t take place in a regular way, progressive [...] “. This author mentions that the ages of the gymnasts are in the denominated phase of “intelectual projective space”, between 7 and 12 years of age, when external point of reference exist to the own body, being this space with conception built by the experiences lived by them, with the own body and with the interference of the external world, in the case, the teachers’ help composing the competitive exercise in the regulated space.

As for the pedagogic aspect, Carreiro da Costa (1988), in doctorate theory, highlights, [...] the study of the pedagogic effectiveness in the general teaching it has been coming to evidence not only that the maximization of the educational effects elapses [...] of the pedagogic competence revealed by the teacher, [...] and it is related intimately with the context in that the teaching grows.

In what it concerns to the space orientation, that as psychomotor aspect grows in the childhood, we would have the following items as variables the be observed: direction, use of the space in the paths and in the levels and modalities.

This space composition would be equal in Le Boulch (1983) to the outstanding evolutions in his book The Education By Movement: Psychokinetics in the school age.

Besides the space structure, we still found, in Gallahue and Ozmund (2005), the Directional Orientation, that is commonly divided in: laterality and directionality, and also the Temporal Orientation and its basic aspect, the rhythm.

Palmer (2003) also stands out when referring to the displacements in the space orientation:

“A good understanding of spatial awareness early on will enable them to apply that knowledge in a safe manner later when they are given the opportunity to use hand apparatus”. [...] “Good routine choreography will include a change of time in the routine, use of both sides of the body, dynamic and energetic movements along with good use of the floor area”.

Taking as base Charles (1989), that focuses Piaget, it is possible to include in the analyzed age groups, the beginning of the apprenticeship of the concrete operations and the entrance in the stage of formal operations, moment in that a fort competition sense emerges, in that the child, individually, can want to transpose the competitive rules, but it won’t accept that other child makes it.

Nunes (2004), in his theory of doctorate Analysis of two methodologies of teaching differentiated in the learning of a sport technique. Study of the measurable cognitive variables, affec-
tionate and motive associated to the students, presents us an investigation form about the effectiveness of the use of filmings in the teaching of the physical activities for the verification of the students’ motor acting.

Adapting that technique to the sport theme of our interest, the Gymnastics, opted to evidence an important aspect: the space orientation of the gymnast in competition.

### METHODOLOGY

After the competition, a video ribbon was acquired for the exploratory analysis of the sample in the chosen level; were prepared, in advance, records with the delimitation of the competitive area divided in 9 equal quadrants, identified by the letters of the alphabet, to aid in the drawing of the defined paths for the teachers and carried out by the children. At the same time, with the intention of marking the quadrant of the initial and final position and in that level was established the position of the body, as well as for to facilitate the observation, in the graphic indication, of the quadrants no used in the course of each one of the observed children.

### SAMPLE

16 gymnasts were observed in the total, that make part of the Advanced level II, in the pre-infantile and Infantile categories, using the machines:

- rope (9 gymnasts);
- strip (7 gymnasts).

### STUDY PROCEDURE

It is analyzed in this article the limited superficial extension of the rug of RG, 13x13m and with exploratory characteristic as the composition of the exercise in the space-temporal dimension. 1.9.1 the space orientation before the Code of Punctuation - FIG.

The composition of an exercise of RG in competitions is focused in the Code of Punctuation, in the section regarding the Artistic, with a stipulated value of 2.00 pts for the composition of base involving different types of displacements, different types of movements etc.

The initial position of the exercise should be in agreement with the following movements of the machines. Should exist, among other demands, a work balance among right and left hand, rhythmic steps and a variety in the following aspects that interest her it objectively this research: dynamism and use of the space with emphasis in directions (esq., dir., front, behind), paths (sinuous and straight line), levels (high, medium and low) and modalities (varied forms of displacements).

The penalizations foreseen for the concerning demands to this work are the following ones:

All of the varieties of displacements are penalized in 0.10 each, including: lack of dynamism and direction, bad use of the space in the paths and in the levels and modalities.

It’s important to stress that these punctuations are accomplished in gymnasts only above 16 years (category adult); however, as these principles are also used in the lowest age groups, this knowledge seen as simple, because the penalties are little taking in consideration the code, acquired in the beginning of the competitive,
when the space formations in the group and the individual space orientation of the gymnast should obtain consistence.

### RESULTS DISCUSSION

Among so many possible variables, we opted for that were closer of the theme of Space Orientation, in the elapsed time of the series, among 1'15'' e 1'30''.

### CONCLUSION

The data obtained in the research reveal that the temporary space orientation in the competitive motor development of gymnasts of the pre-infantile and infantile categories, in the 1st phase of the State Championship of RG, presents the following aspects:

1. Of the sample of 16 gymnasts, only 04 gymnasts (2 in the apparel rope and 2 in the apparel strip) made use of the totality of the competitive area.

2. Of the 04 gymnasts with use of the totality of the competitive area, 03 presented only straight displacements.

3. Of the sample of 16 gymnasts, only 01 gymnast presented mixed space displacement and occupied the competitive area in totality.

4. The coaches prefer to begin the space choreographic composition of the gymnasts in vertical position, in other words, stand.

5. The coaches prefer the space choreographic composition of the gymnasts to conclude in flexibility positions (in the sense of demonstrating this still quality) and in equal number in the seating position (reception probability of a release, since this constitutes a risk to be avoided in the middle of the series).

6. The placement of the gymnast in the begin and finalization of his choreographic space orientation has the intention, most of the time, of obtaining visual centralization of the gymnast as for the referees and, consequently, of reducing the risks that the apparel gets out of the competitive area.

7. Refering the demands of the Code of Punctuation in Rhythmic Gymnastics, before the obtained results and in relation to the gymnasts that occupied the first placements in the pre-infantile category, only 01 made mixed displacements and none of those classified made spacial use of the totality of the competitive area.
8 - In the infantile category, as for the demands of the Code of Punctuation and before the obtained results, among the gymnasts that occupied the first placements, only 01 gymnast made total spatial use of the competitive area, but all with straight displacements.

9 - The index of 05 changes of direational spaces in the series indicates series with flaws and without complexity in relation to the spatial orientation. The index of 09 changes of direational spaces indicates series with a larger complexity degree. Most of the compositions obtained index of 07 direational changes in the competitive area as for the spatial orientation.

10 - Among the best classified are those that presented complex exercises in space orientation and in the number of taken directions; in spite of only 01 gymnast of this composition presented a real space use of the competitive area.

The reality of the results, in face of the proof of the study, indicates that most of the choreographic sequences, in the use of the space-time orientation, since this is the general objective of the work, it demonstrated flaws in its composition on the part of the teachers and coaches in its assembly-teaching-learning, since these are the responsible for the pedagogic orientations given to the gymnasts.

On the other hand, also should exist flaws in the judgement, as for the marked items, on the part of the ones that compose the arbitration, given the importance for the initial ages of an space-time orientation correct, that will facilitate the work of displacements in the evolution of the sporting life of any child, with the safeguard that other aspects exist to be observed in the judgement of the exercises of Rhythmic Gymnastics.

As conclusion, we suggested that the involved teachers should retains the attention to the theoretical perspectives of the motor development and to use them as base for their actions, should be attentive to the efficiency with that child executes this space orientation, if not dropping in the temptation of ignoring an incorrect form of teaching, just because the initial competitive result was satisfactory.

Therefore, the children's participation in the process of refinement of the sporting abilities before they have reached ripe levels is not a wise attitude.

**BIBLIOGRAPHY**


