18 - LATERALITY AND RHYTHM BY GENDERS IN PRE-ADOLESCENT STUDENTS – JARDIM/MS

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1. INTRODUCTION

Thought as a whole act of the body, precise, economical and harmonious, Motor Education is a science that does not have the same interest of researchers yet, when compared to other sciences. Gallahue (2003) considers this matter as a process of changing of the motor behavior, which takes place in function “of specific environmental factors of opportunities to practice, encouragement, instruction and ecology”. LêBoulch (1982) adds: motor education is responsible for the formation of the indispensable basis of every normal or special child (with problems or high skills) and to ensure the functional development of the human being.

The leading objective of this study is to assess the children ability in controlling their bodies, in right and left shifts and rhythmic structure. Specifically, it aims to recognize children's skills on laterality at starting the test, as ascertainment of facts that are the search of answers to our concerns, regarding students' abilities.

The hypothesis to be checked refers to the evidence in which boys are more active than girls, since they get involved with ballgame just after they learn to walk, so, they are supposed to have higher motor performance by carrying the body with greater control in space.

2. THEORETICAL

The motor development is a phenomenon worthy of study for its own sake, though the primary push of the research on the development motor comesfrom branches of Psychology, with potential influences on other areas of behavior (GALLAHUE, 2003).Jersild (1961) remarks that the process of motor development should make us remind constantly theapprentice individuality. The psychomotor control, according to Edwards (1979), depends on the organic and neurological maturation and child motor integration in relation to the environment.In this context, according to Le Boulch (1982), arises the children's innate lateral control, because the person is an "equipment" of six sides: the top, the bottom, the back, the front, the left and the right ones. The child is an absolute universe of action and sensation.

Our own body sides are not identical. Researchesattest until the age of three years there is an innate lateral dominance; between four and five years old, occurs the formation of a consciousness of the body axis, having it two sides; at the age of seven, the child expands the laterality in space; at eight years old,in the other, and at nine years old and above, if this process has not occurred, probably, there will be a case of laterality disorder to be nursed.

According to Fonseca (1989), the laterality is a key process in the relation between the human movements (motricity)and the psychic-sensorial organization, symbolically predisposed on both of the body sides, right and left, whatpresumes the notion of the body midline. Negrine(1986) points out this midline must be well defined over the years, and it may be determined by social factors.

The approach of the rhythm in motor development is an important tool for associating and understanding the rhythm, which is a support to conscience formation in education, since the rhythm requires the basic forms of human locomotion throughout its existence.If the child has not developed the motricityspontaneously, harmonious and rhythmic, it should precede a temporal work to motor games practice in the pre-school education, reinforces Le Boulch (1982), and Verderi (2000) emphasizes that, in themusic, the rhythm is determined by the melody, and can be slow, half-speeded and accelerated. The listening experience is essential to the analysis and comprehension of the rhythm, for themisunderstanding of a melodic phrase often brings forth difficulties at following a rhythmic sequence.

3. METHODOLOGY

The Tests of Agility and Rhythm have been applied to pre-adolescents from both genders. They study at three schools located within the urban area of Jardim-MS, and were allowed by their parents and other responsible, via informed consent term, to take part in the study. In the weight and height measurements of the body, it was observed the protocol indications by Tanner (1985), with the use of a hundred-gram precision balance, and a measuring tape fixed to the wall, graduated in centimeters and tenths of centimeters, and a square rule.

For Test of Agility (Three-Line Shuttle Run Test) and Rhythm, it were used the protocols described by Johnson & Nelson (1979), inMarins&Giannichi (1998). In order to verify the pre-teens abilities in bodily mastery, four variables of responses were analyzed (Test of rhythm-time to perform the Three-Line Test, start the test correctly and restart the test), in relation to three control variables (gender, weight and height).

The results of the variables have been tabulated and analyzed by means of techniques of descriptive data analysis, and the hypotheses were tested by Student's t test, with bilateral significance for differences in media, and the test $c^2$to check the dependency between the categorical variables.

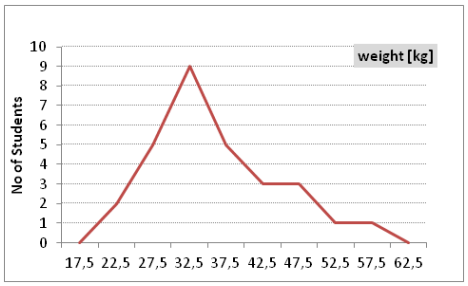
4. RESULTS AND DISCUSSION

Out of the twenty nine adolescents of the study, ten (34.48%%) were female, and nineteen (65.52%), male; in relation to body mass, sixteen (55%) weighed less than 35kg and thirteen (45%), weighed more than 35kg. In General, the distribution of the weights may be seen on Table1.

Table 1 – Weight frequency of the participants of the study onrhythm and laterality.

Weight	No ofstudents	%
17,5	0	0
22,5	2	7
27,5	5	17
32,5	9	31
37,5	5	17
42,5	3	10
47,5	3	10
52,5	1	3
57,5	1	3
62,5	0	0

Figure 1 – Distribution of the number of students per weight proximity, in kilogram.



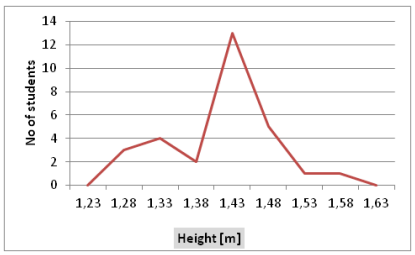
The distribution of the students' weights has shown positive asymmetry, i.e., there was a higher concentration of students with lesser weights, and, while the weight was increasing, the frequency of students decreased.

In relation to the students height, it was found that nine of them (31%) are shorter than 1.41 meters and twenty (61%) are taller than this measure, according to the table 2.

Table 2 – Frequency distribution of study participants' statures.

Height (m)	No of Students	%
1,23	0	0
1,28	3	10
1,33	4	14
1,38	2	7
1,43	13	45
1,48	5	17
1,53	1	3
1,58	1	3
1,63	0	0

Figure 2 - Distribution of the students' heights.

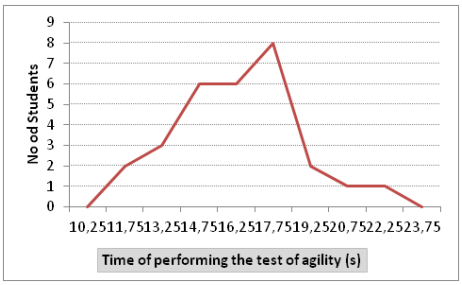


It has not been noticed a pronounced asymmetry in this distribution, so that the height of the students can be considered normally distributed. In relation to the time spent by students to perform the test of agility(Three Line), it was found that seventeen (59%) took less than 16.5 seconds to run it, and twelve (41%) spent more than 16.5 seconds, Table 3.

Table 3- Distribution of the number of students, per time interval used to run the test of agility (three-line)

Time (sec.)	NoofStudents	%
10,25	0	0
11,75	2	7
13,25	3	10
14,75	6	21
16,25	6	21
17,75	8	28
19,25	2	7
20,75	1	3
22,25	1	3
23,75	0	0

Figure 3 –Distribution ofthe time performance of the test of agility(three-line)



It is seen that the distribution of the time required by the students to perform the test has presented a slight asymmetry. That is, a larger number of students took longer to run the test, what may suggest the existence of many students who are less prepared to perform this exercise.

In relation to the test of rhythm, Time 1, it was noted, Table 4, a high number of adolescents, eighteen (62.1%), who did not get to run the test on the rhythm, among them, six (60%) are female teenagers and 12 (63.2%), male. This difference was not statistically significant ($c^2(1) = 0.028$; $p = 0.868$), i.e., the individuals belonging to the two samples differed in relation to the Test 1 (Laterality).

At Time 2, eleven teenagers failed to perform the test on the rhythm (38%), and eight of these (37.9%) are male, and three (30%), female, what means a difference statistically not significant ($c^2(1) = 0.408$; $p = 0.523$). At Time 3, the number of teenagers who also failed to perform the test on the rhythm e was too high, twenty-six (89.65%) – seventeen (89.5%), male and nine (90%), female –, denoting a difference not significant ($c^2(1) = 0.002$; $p = 0.965$), so that the results of running the laterality test on the rhythm do not depend on gender.

The listening experience is fundamental to the analysis and comprehension of the rhythm, considering that the misunderstanding of a melodic phrase often brings forth difficulty of following rhythmic sequences.

Table 4- Number of students who performed,on the rhythm, the test to measure the number of times they were off the rhythm, by sex, weight and height.

Test Rhythm	Result of the Test	Adolescents (n = 29)											
		Gender				Weight [kg]				Height [m]			
		Female(n = 10)		Male (n = 19)		Lessthan 35(n=16)		More than 35(n=13)		Below 1,41(n=14)		Above 1,41(n=15)	
		N	%	n	%	n	%	N	%	n	%	N	%
T1	onrhythm[a]	4	40	7	36,8	4	25	7	53,8	3	21,4	8	53,3
	offrhythm[b]	6	60	12	63,2	12	75	6	46,2	11	78,6	7	46,7
T2	onrhythm[a]	7	70	11	62,1	8	50	10	77	6	42,9	12	80
	offrhythm[b]	3	30	8	37,9	8	50	3	23	8	57,1	3	20
T3	onrhythm[a]	1	10	2	10,5	3	18,8	0	0	1	7,1	2	13,3
	offrhythm[b]	9	90	17	89,5	13	81,3	13	100	13	92,9	13	86,7

[a]includes the categories in the rhythm and moderately off; [b]includes the categories sharply off or totally off; T1 = Time 64 (vel. 12); T2 = Time 120 (vel. 22); T3 = 184 Time (vel. 32)

Similarly, with respect to the variable weight, no significant difference was found ($p > 0.100$) in any of the three times ofthe tests of rhythm, so that, walking in rhythm does not depend on the weight of the adolescent. However, concerning the height, the same is not valid. In the test with time 1, among students shorter than 1.41 m, 61% adolescents were off the rhythm, comparing to the 39% who measured more than 1.41 m, and that is a marginally significant difference, ($c^2(1) = 3.131$; $p = 0.077$). In the test with Time, 73% of the students of shorter stature did not perform the test in the rhythm, differently from the 27% taller, what means a statistically significant difference, ($c^2(1) = 4.24$; $p = 0.039$). In the test with time 3, the difference was not significant, ($c^2(1) = 0.299$; $p = 0.584$).

> If "[...] a skill acquisition does not depend on early initiation, but on learning at the right moment", (TANI .1988), it is necessary do the approach of the rhythm, as a tool for teachers, in motor education training.

By evaluating the performance in test of agility (Three-Line), it was taken as control variables, the gender, weight and height, and their respective results, as well, shown in table 5.

Table 5 – Influence of the variables gender, weight and height in the average time to running the test of agility.

Variables	Adolescent	N	Average Time	SatandardDeviation	t (p)	Sig.
Gender	Male	19	16,01	2,36	1,16(0,274)	Ns
	Female	10	17,39	4,35		
Weight	Below 35 kg	16	17,80	3,24	2,739(0,011)	*
	Above de 35 kg	13	14,87	2,32		
Height	Shorterthan1,41 m	14	16,36	1,87	-0,206(0,835)	Ns
	Tallerthan 1,41 m	15	16,60	4,12		

It is observed that the average times of performance in the test of agility did not differ significantly, ($t(27) = 1.16$; $p = 0.279$), between the genders. The average time for running the test was significantly different ($t(27) = 2.739$; $p = 0.011$) regarding the variable "weight", in which, the lighter took longer, on average, to run the test. The height did not interfere significantly in the test execution mean time ($t(27) = -0.206$; $p = 0.835$).

The results in table 6 indicate the variable "start the test of lateral motion by the right side, right/left", did not depend on the variables gender, weight and eight. Moreover, the data revealed a very high number of students,90%, who started the test of agility from the correct side.

Table 6 – Number of adolescents who started the test of lateral dislodgment from the correct side, by category of the variable control and statistical significance.

Control Variables		If the adolescent started by the side:			
		Wrong	Correct	Bilat. Exact Significance(p)[1]	Sig.
Gender	Male	2(11%)	17(89%)		
	Female	1(10%)	9(90%)	1,000	Ns
Weight	Below 35 kg	2(13%)	14(88%)		
	Above de 35 kg	1(8%)	12(92%)	1,000	Ns
Height	Shorterthan1,41 m	2(14%)	12(86%)		
	Tallerthan 1,41 m	1(7%)	14(93%)	0,598	Ns

[1]Fisher Exact Statistic

The data presented in table 7 show that 18 adolescents (62%) did not fail in performing lateral movement, and 11 (38%) had to restart the test at least once. The significance tests show that whether the adolescent restart or not the test does not depend on gender, weight or height($p > 0.10$).

Table 7 – Number of teenagers who took the test of lateral displacement, by category of variable control and statistical significance.

Variables of Control		Restarted the test			
		No	Yes	χ^2(p)	Sig.
Gender	Male	10(53%)	9(47%)		
	Female	8(80%)	2(20%)	2,084(0,149)	Ns
Weight	Below 35 kg	9(56%)	7(44%)		
	Above 35 kg	9(69%)	4(31%)	0,513(0,474)	Ns
Height	Below 1,41 m	7(50%)	7(50%)		
	Above 1,41 m	11(73%)	4(27%)	1,675(0,196)	Ns

The psychomotor control, according to Edwards (1979) depends on the organic and neurological maturation, and motor integration of the child in relation to the environment.

CONCLUSION

If the data show that the rhythm is not dependent on weight,nor gender of the students surveyed, they recall the difficulties faced by them, regarding the real work with music to develop their selves rhythmic of movements.

The weight has interfered in the average time of performing the test of agility, and the height influenced the rhythm. In the other cases analyzed, it was not found significant differences. The study revealed that there is a need for a temporal work to the practice of motor activities, beginning at preschool.

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LATERALITY AND RHYTHM BY GENDERS IN PRE-ADOLESCENT STUDENTS – JARDIM/MS

ABSTRACT

The main objective of this study was to verify the children's ability in corporal mastery in movement shifts to the right and the left and rhythmic structure. Specifically, it aimed to verify the children's skills on lateral control when starting the test, as facts ascertainment, which is the search for answers to our concerns regarding the motor skills of adolescents from three schools of the urban area of Jardim-MS. The adolescents were allowed by their parents and other guardians to integrate the study. The hypothesis under verification is related to three facts: if gender, weight and stature interfere in rhythm, time, identification of right and left, and start the test correctly. It was found that the gender did not interfere on accomplishing the test of rhythm, unlike weight, which interfered in the performance average time of the test of agility, and the height interfered in the rhythm. The other cases analyzed, no significant differences were found.

LATÉRALITÉ ET RYTHME PAR SEXES EN ÉLÈVES PRÉADOLESCENTS – JARDIM/MS

RÉSUMÉ

L'objectif principal de cetteétudeétait de vérifierquel'aptitude des enfants à corporelledomaine en déplacevers la droite et la gauche, et structure rythmique. Plus précisément, connaîtrelesdomainelatéraldesenfants lorsdémarrageletest, commelaconstatationdesfaits, qui est larecherche de réponses à nos inquiétudesconcernantleshabiletésmotricesdespréadolescents de troisécoles de la zone urbaine de Jardim-MS. Lesadolescentsontétéautorisés par leursparents et autrestuteurs à participer à l'étude. L'hypothèsesousvérification est liée à troisfacteurs: Si sexe, poids et hauteurs'immiscerenlerythme, letemps, identification de droite et de gauche et relancerletestcorrectement. Il a étéconstaté que lesexe n'empiétaitlaréalisation de testdurythme, à ladifférence de poids, quiintervenaitenletempsmoyen de exécutiondutest d'agilité, et lahauteurinterféraitenlerythme.Dans d'autrescasanalysés, sansdifférencessignificatives.

LATERALIDAD Y RITMO POR GÉNEROS EN ESTUDIANTES ADOLESCENTES – JARDIM/MS
RESUMEN

El objetivo principal de este estudiofue verificar lacapacidad de losniñoseneldominio corporal endesplazamientos para laderecha y laizquierda, y laestructura rítmica. En concreto, percibirloconocimiento de losniñosenelcontrol de la lateralidade, al iniciar laprueba, como constatación de hechos que es labúsqueda de respuestas a nuestras inquietudes encuanto a lashabilidadesmotrices de preadolescentes de tresescuelas de la zona urbana de Jardim-MS. Los jóvenesfueron permitidos por los padres y otros tutores a participar enelestudio. La hipótesis bajo verificaciónse refiere a treshechos: Si sexo, peso y estatura interfirieronen ritmo, tiempo, identificación de derecha y izquierda, y comenzarlapruebacorrectamente. Se encontró que el género no interfirióenllevar a cabo lapruebadel ritmo, a diferencia de peso, que interfirióeneltiempopromedio de laejecución de laprueba de agilidad, y la estatura interfirióenel ritmo. Enlosotros casos analizados, no se encontraron diferencias significativas.

LATERALIDADE E RITMO POR GÊNEROS EM ESTUDANTES PRÉ-ADOLESCENTES – JARDIM/MS.
RESUMO

O objetivo principal do estudo foi verificar a habilidade de crianças no domínio corporal em deslocamentos para direita e esquerda, e de estrutura rítmica. Especificamente, perceber o conhecimento das crianças sobre domínio de lateralidade ao iniciar o teste, como constatação de fatos, que é a busca de respostas às nossas inquietações quanto às habilidades motoras dos pré-adolescentes, de três Escolas Municipais, situadas no perímetro urbano de Jardim-MS.Os jovens foram autorizados pelos pais e outros responsáveis a participar do estudo. A hipótese submetida à verificação diz respeito a três fatos: se o gênero, o peso e a estatura interferem no ritmo, tempo, identificação de direita e esquerda e iniciar o teste corretamente. Verificou-se que o gênero não interferiu na execução do teste de ritmo, diferentemente do peso, que interferiu no tempo médio de execução do Teste das Três Faixas e, da altura, que interferiu no ritmo. Nos demais casos analisados, não se constataram diferenças significativas.