

61 - COMPARISON AMONG DERMATOGLYPHICS, SPEED AND STRENGTH OF GIRLS FROM SETTLEMENT AND FROM URBAN PERIMETER IN BAHIA-BRAZIL

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INTRODUCTION

In Santaluz, county of the State of Bahia, there are the settlements Antônio Conselheiro and Rose. In these two, most of children study in schools, which has no orientation of a Physical Education Professional certified to work on his profession. In this environment, children do physical activities only in accordance with their own cultural and rural experiences. In the urban perimeter, even being a small county, the study and also life conditions are more comfortable, because exist a better accessibility structure to consume goods and information.

Dermatoglyphia from Latin, dermo, which means skin and from Greek, glypha, which means carve, propose by Cummins and Midlo (1961) at the 42^a Annual Meeting of the American Anatomist Association which was held on April 1926, is the study of the fingerprints. It has received the classification of method in the area of Medical Science according to Fernandes Filho (1997). It is utilized in Physical Education to determine the predisposition of an individual to perform a specific sport modality because, through the dermatoglyphics profile analysis, it can indicate which physical quality of that individual, with training help, will be develop to reach better results.

Linhares (et al., 2009) has studied children when are related with Dermatoglyphia and physical qualities.

Weineck (2003) affirms that speed is the result of psychic, cognitive, coordinative and the conditioning capacity, and subject to genotype and phenotype influences and suggests that the elementary requisites of speed must be developed during the infancy and adolescence, mainly, from 8 to 16 years.

Strength is the physical quality that capacitates an individual to produce a tension and to oppose against a resistance by the muscular activity (TUBINO; MOREIRA, 2003). According to França (et al., 1984), concomitant to the increase of the individual's height and body mass there is the increase of muscular strength. For Bee (2003), several physical changes in puberty leads to the increase of strength, speed and coordination of the young individual.

The study objective was to compare the dermatoglyphics characteristics Arch (A), Loop (L), Whorl (W), Index Delta (D10), Total Sum of Lines Quantities (TSLQ) and the physical qualities speed and strength of girls from 9 to 11 years from the settlements Antônio Conselheiro and Rose with the urban perimeter of the Santaluz – Bahia city.

MATERIALS AND METHODS

The transversal study of descriptive and comparative approach has evaluated girls from 9 to 11 years (THOMAS; NELSON; SILVERMAN, 2007). The sample was composed by two groups: the first one, 18 girls living and studying in the settlements Rose and Antônio Conselheiro of the Santaluz city; the second one, 21 girls living in the urban perimeter of the Santaluz city. This group study at morning at the Nilton Oliveira Santos Educational Center, school that absorbs almost the totality of children who have enough age to study in city, because school at night is designated to individuals from rural area. The work was submitted and approved by the Ethic Committee of the Maria Milza Faculty under the protocol n° 247480, because has attended all the Norms Related to Researches in Human Beings – Resolution 196/96 of the National Healthy Council on October 10th, 1996.

In the first step, girls were evaluated in their bodies composition in the following items: height and body mass. (FERNANDES FILHO, 2003).

For measuring height a Sanny compact estadiometer with precision of 0,1cm has been utilized and the body mass was determined with a Mondial Bella Forma digital scale with precision of 100g.

The fingerprints obtaining and processing were done with the Cummins and Midlo (1961) Dermatoglyphic protocol.

The dermatoglyphic characteristic were evaluated as following: the quantity of draws from each type for the ten fingers, Arch (A), Loop (L), Whorl (W), Index Delta (D10), and the Total Sum of Lines Quantities (TSLQ).

In sequence was done the Sargent Jump Test to give data about the strength of the girls. The result was registered in centimeters, measuring the distance between the first and the second mark. Three tentative were allowed. The materials utilized were a wooden strip with a 1 meter ruler divided in millimeters and color chalk. (ADAMS, 1921 apud FERNANDES FILHO, 2003).

After that, the Speed Protocol- 30 meters dash (JOHNSON and NELSON, 1979). The result was the time expend to run the 30 meters, registered in decimals of seconds. Materials: chronometers and 50m yardstick.

The descriptive statistic treatment was done containing mean and deviation pattern (\pm SD) for the quantitative variables. The qualitative variables (A, L, W), were show in percentage (%). The inferential statistic was done with the t Test to compare the quantitative mean utilizing the BioEstat 5.0 software. The Mann-Withney Test was utilized to determine the significance of the comparison of the qualitative variables with the GraphPad Prism 4 program. The level of significance adopted was ($p < 0,05$).

RESULTS AND DISCUSSION

It was verified a higher value of height (cm)=(144.8 \pm 7.22), body mass (Kg)=(36.6 \pm 7.6) and BMI (Kg/m²)=(17.3 \pm 2.4) in girls from city than settlements: height (cm)=(141.1 \pm 5.9), body mass (cm)=(32.4 \pm 5.3) and BMI (Kg/m²)=(16.3 \pm 1.9), however, it wasn't statistically significative. The result found in the qualitative dermatoglyphics variables is showed in Table 1.

Table 1 – Dermatoglyphics characteristics A, L e W in percentage of girls from settlements Antônio Conselheiro and Rose, and from urban perimeter of Santaluz - Bahia city.

	Settlements			City		
	A	L	W	A	L	W
n	18	18	18	21	21	21
%	20.0	48.9	31.1	24.3	58.6	17.1

Table 2 Shows the girls digitals formulas distribution:

Table 2 – Digitals formulas distribution in percentage of girls from settlements Antônio Conselheiro and Rose, and from urban perimeter of Santaluz - Bahia city.

Settlements	AL	ALW	10L	L=W	10W	L>W	W>L	10A
n	18	18	18	18	18	18	18	18
%	33.3	22.2	5.6	0.0	11.1	11.1	16.7	0.0
City								
n	21	21	21	21	21	21	21	21
%	28.6	14.3	14.3	4.8	0.0	14.3	14.3	9.5

Table 3, Shows the Dermatoglyphic quantitative results.

Table 3 - Dermatoglyphic statistics results of the D10 and TSLQ characteristic of girls from settlements Antônio Conselheiro and Rose, and from urban perimeter of Santaluz - Bahia city.

	D10		TSLQ	
	Settlements	City	Settlements	City
n	18	21	18	21
$\bar{X} \pm SD$	11.1 \pm 5.09	9.3 \pm 5.01	100.3 \pm 56.09	95.8 \pm 53.55

*t Student (*p<0.05).*

Significative differences weren't detected in the genetic characteristics order, as it can be observed in the groups comparison result of Table 4.

Table 4 – Comparison result of dermatoglyphic characteristic of the girls from settlements with from the city.

Dermatoglyphics Variables	p-Value
A	1
L	0.2533
W	0.2439
TSLQ	0.9103
D10	0.4298

*Mann-Withney (*p<0.05).*

In the result of the physical qualities test was found a significative difference only in the 30m dash test utilized to calibrate speed, $p=0.0285$. But there was a difference of 1.27cm in the vertical jump test utilized to evaluate the strength of the young individuals, however, it wasn't statistically significative, $p=0.3290$, Table 5.

Table 5 – Results of the statistics tests of physical qualities speed and strength of girls from settlements Antônio Conselheiro and Rose, and from urban perimeter of Santaluz - Bahia city.

	Speed (seconds)		Strength (centimeters)	
	Settlements	City	Settlements	City
n	18	21	18	21
$\bar{X} \pm SD$	6.81 \pm 0.55	6.46 \pm 0.41*	28.08 \pm 3.85	26.81 \pm 4.14

*t Student (*p<0.05).*

The girls from urban perimeter are higher (141.1 \pm 5.9 / 144.8 \pm 7.22) and heavier (32.4 \pm 5.3 / 36.6 \pm 7.6) than from the settlements. Duarte (1993), based upon brazilians and internationals author's studies, affirms that the socio-economical and nutritional conditions can influence in the physical development of the children. Comparing girls from public and private schools, Matsudo (et al., 2003) have also found higher height index in girls from private schools, pointing in the same perspective.

In the dermatoglyphics evaluation of both groups was found a significative quantity of Arch. In the settlements: AL=33.3%, ALW=22.2%, 10L=5.6%, 10W=11.1%, L>W=1.1% and W>L=16.7%; from the city were: AL=28.6%, ALW=14.3%, 10L=14.3%, L=W=4.8%, L>W=14.3%, W>L=14.3%, 10A=9.5, D10=(11.1 \pm 5.09 / 9.3 \pm 5.01) and TSLQ=(100.3 \pm 56.09 / 95.8 \pm 53.55). In sports which have a superior demand of resistance and coordination, the common is that the dermatoglyphics characteristics have a tendency to a inferior quantity of Arch (tendency to zero) and a increase of the TSLQ, D10 and consequently, Whorl; in activities which speed and power are asked there is a predominance of Loops in relation to Whorl and also a decrease of Arch quantity. (FERNANDES FILHO, 1997).

Collected data from Brazilian Rhythm Gymnastic National Team confirms that information: quantity of A=0%, L=70%, W=30%, D10=13 \pm 0.58, TSLQ=173.43 \pm 21.62. (MENEZES, 2006). The Brazilian Women Volleyball National Team also shows a inferior quantity of Arch: A=11%, L=60% e W=29%. (FONSECA, et al., 2008).

Then, the girls from city, in theory, should be stronger than the girls from settlements because, as França (et al., 1984) affirms, concomitant to the increase of height and body mass of the individual there is the increase of the muscular strength. However, in opposite to the previous information and even not being a significative statistically difference, the girls from the settlements show being stronger. This fact can have occurred because of a higher presence of Whorl (31.1% / 17.1%), TSLQ (100.3 \pm 56.09 / 95.8 \pm 53.55) and D10 (11.1 \pm 5.09 / 9.3 \pm 5.01) in the group from settlements, because in the performed movement in the Sargent Jump Test coordination is also very important and this physical quality is confirmed in the study of Dermatoglyphia rightly in the arising of a higher quantity of D10 and TSLQ. (NOGUEIRA, et al., 2005; LINHARES, 2009).

In the 30m dash already, the girls from city excel on a significative way (6.46 \pm 0.41 / 6.81 \pm 7.6*). A higher speed is identified in the Dermatoglyphia in people who show a superior quantity of Loops and a decreasing in the quantity of Whorls. 14.3% of the girls from city show L>W and 14.3% show 10L, whereas only 11.1% show L>W and 5.6% 10L in the settlements. Presents characteristics in the groups comparison corroborate with this information: L% (48.9 / 58.6*).

Supporting the found result, Monteiro (et al., 2004) found lowers times in the speed test in people who had L>W e 10L.

CONCLUSION

Comparing Dermatoglyphia, speed and strength of girls from Santaluz city, it can be concluded that the girls from settlements are stronger than girls from city because of a higher quantity of W% (31.1 / 17.1), TSLQ (100.3 \pm 56.09 / 95.8 \pm 53.55) and D10 (11.1 \pm 5.09 / 9.3 \pm 5.01) and also because the fact that the test chosen to evaluate strength requisites also a coordination

component in its execution. And the superior speed found in girls from city is because of a significative higher quantity of L% (48.9 / 58.6*).

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COMPARISON AMONG DERMATOGLYPHICS, SPEED AND STRENGTH OF GIRLS FROM SETTLEMENTS AND FROM URBAN PERIMETER IN BAHIA-BRAZIL

ABSTRACT

The objective of the present study was compare the dermatoglyphic characteristic (A, L, W, D10 and TSLQ) and the physicals qualities (speed and strength) of girls from the settlements called Antônio Conselheiro and Rose, and from the urban perimeter of a brazilian city, which belongs to the State of Bahia, called Santaluz. The sample was based upon 18 girls from the settlements and 21 from the urban perimeter. The methodology: transversal study of descriptive and comparative approach; the t Test was utilized to compare the quantitative variables and the Mann-Whitney Test to compare the qualitative one. The Dermatoglyphia was utilized to determinate the dermatoglyphics characteristics; for testing speed the 30m dash has been utilized and strength was tested by the Sargent Jump Test. Girls have shown the following characteristics: (settlement /city) height (cm)=(141.1±5.9 / 144.8±7.22), body mass (Kg)=(32.4±5.3 / 36.6±7.6) and BMI (Kg/m²)=(16.3±1.9 / 17.3±2.4). The qualitative dermatoglyphics characteristics of the settlements have been: AL=33.3%, ALW=22.2%, 10L=5.6%, 10W=11.1%, L>W=1.1% and W>L=16.7%; of the city have been: AL=28.6%, ALW=14.3%, 10L=14.3%, L=W=4.8%, L>W=14.3%, W>L=14.3% and 10A=9.5%; the quantitative have been: D10=(11.1±5.09 / 9.3±5.01) and TSLQ=(100.3±56.09 / 95.8±53.55). The results of the physicals qualities tests have been following: strength (cm)=(28.08±3.85 / 26.81±4.14). A significative difference was found only in the result of the speed (sec)=(6.81±0.55 / 6.46±0.41*), p=0.0285. In the statistic treatment a level of significance has been adopted (p<0,05). It can be conclude that the significative difference in the result of the physical quality speed test in girls from city (6.81±0.55 / 6.46±0.41*) point to a higher quantity of L% (48.9 / 58.6).

KEYWORDS: Dermatoglyphia, speed, strength.

COMPARAISON ENTRE DERMATOGLYPHIE, VITESSE ET FORCE DE PETITES FILLES DES COLONIES ET DU PERIMÈTRE URBAIN L'BAHIA-BRÉSIL

RÉSUMÉ

L'objectif de la présente étude est de comparer les caractéristiques dermatoglyphiques (A, B, T, D10 et SCTL) et les

qualités physiques (vitesse et force) de petites filles des colonies Antônio Conselheiro et Rose, et du périmètre urbain de la ville bahianaise, Santaluz. L'échantillon est constitué de 18 petites filles des colonies et 21 du périmètre urbain. La méthodologie: étude transversale d'approche descriptive et comparative; il a été fait usage du Test t pour comparer les variables quantitatives et le Test de Mann-Whitney pour les variables qualitatives. La Dermatoglyphique a été utilisée pour déterminer les caractéristiques dermatoglyphiques; pour tester la vitesse on a fait usage d'une course de 30m et la force a été testée par le Sargent Jump Test. Les petites filles ont présenté les caractéristiques suivantes: (colonie / ville) taille (cm)=(141,1±5,9 / 144,8±7,22), masse corporelle (Kg)=(32,4±5,3 / 36,6±7,6) et IMC (Kg/m²)=(16,3±1,9 / 17,3±2,4). Les caractéristiques dermatoglyphiques qualitatives des colonies ont été: AB=33,3%, ABT=22,2%, 10B=5,6%, 10T=11,1%, B>T=1,1% et T>B=16,7%; celles de la ville ont été: AB=28,6%, ABT=14,3%, 10B=14,3%, B=T=4,8%, B>T=14,3%, T>B=14,3% et 10A=9,5%; les quantitatives ont été: D10=(11,1±5,09 / 9,3±5,01) et SQTL=(100,3±56,09 / 95,8±53,55). Les résultats des qualités physiques ont été les suivantes: force (cm)=(28,08±3,85 / 26,81±4,14). Une différence significative a été trouvée uniquement dans le résultat de vitesse (seg.)=(6,81±0,55 / 6,46±0,41*), p=0,0285. Pour le traitement statistique il a été fait usage du niveau de signifiante (p<0,05). On en a conclu que la différence significative dans le résultat du test de qualité physique vitesse chez les petites filles de la ville (6,81±0,55 / 6,46±0,41*) indique une plus grande quantité de B% (48,9 / 58,6).

MOTS-CLÉ: dermatoglyphique, vitesse, force.

COMPARACIÓN ENTRE DERMATOGLIFIA, VELOCIDAD Y FUERZA DE LAS NIÑAS DE LOS ASENTAMIENTOS Y DEL PERÍMETRO URBANO EN BAHÍA-BRASIL

RESUMEN

El objetivo del presente estudio ha sido comparar las características dermatoglíficas (A, L, W, D10 e SQTL) y las cualidades físicas (velocidad y fuerza) de las niñas de los asentamientos Antônio Conselheiro y Rose, y del perímetro urbano de la ciudad de Santaluz- Brasil. La muestra ha sido constituida por 18 niñas de los asentamientos y 21 del perímetro urbano. La metodología: estudio transversal de abordaje descriptiva y comparativa; ha utilizado el Teste t para comparar las variables cuantitativas y el Teste de Mann-Whitney para las cualitativas. La Dermatoglifia ha sido utilizada para determinar las características dermatoglíficas; para testar la velocidad ha sido utilizada la carrera de 30m y la fuerza ha sido testada con el Sargent Jump Test. Las niñas han presentado las respectivas características: (asentamiento / ciudad) estatura (cm)=(141,1±5,9 / 144,8±7,22), masa corporal (Kg)=(32,4±5,3 / 36,6±7,6) e IMC (Kg/m²)=(16,3±1,9 / 17,3±2,4). Las características dermatoglíficas cualitativas de los asentamientos han sido: AL=33,3%, ALW=22,2%, 10L=5,6%, 10W=11,1%, L>W=1,1% e W>L=16,7%; de la ciudad han sido: AL=28,6%, ALW=14,3%, 10L=14,3%, L=W=4,8%, L>W=14,3%, W>L=14,3% e 10A=9,5%; las cuantitativas han sido: D10=(11,1±5,09 / 9,3±5,01) e SQTL=(100,3±56,09 / 95,8±53,55). Los resultados de los testes de las cualidades físicas han sido los siguientes: fuerza (cm)=(28,08±3,85 / 26,81±4,14). Ha sido encontrada diferencia significativa solamente en el resultado de la velocidad (seg.)=(6,81±0,55 / 6,46±0,41*), p=0,0285. En el tratamiento estadístico ha sido adoptado nivel de significancia (p<0,05). Se concluye que la diferencia significativa en el resultado del teste de cualidad física velocidad en las niñas de la ciudad (6,81±0,55 / 6,46±0,41*) apunta para una mayor cantidad de L% (48,9 / 58,6).

PALABRAS CLAVE: Dermatoglifia, velocidad, fuerza.

COMPARAÇÃO ENTRE DERMATOGLIFIA, VELOCIDADE E FORÇA DE MENINAS DE ASSENTAMENTOS E DO PERÍMETRO URBANO NA BAHIA

RESUMO

O objetivo do presente estudo foi comparar as características dermatoglíficas (A, L, W, D10 e SQTL) e as qualidades físicas (velocidade e força) de meninas dos assentamentos Antônio Conselheiro e Rose, e do perímetro urbano da cidade baiana, Santaluz. A amostra foi constituída por 18 meninas dos assentamentos e 21 do perímetro urbano. A metodologia: estudo transversal de abordagem descritiva e comparativa; empregou-se o Teste t para comparar as variáveis quantitativas e o Teste de Mann-Whitney para as qualitativas. A Dermatoglifia foi utilizada para determinar as características dermatoglíficas; para testar a velocidade utilizou-se a corrida de 30m e a força foi testada com o Sargent Jump Test. As meninas apresentaram as respectivas características: (assentamento / cidade) estatura (cm)=(141,1±5,9 / 144,8±7,22), massa corporal (Kg)=(32,4±5,3 / 36,6±7,6) e IMC (Kg/m²)=(16,3±1,9 / 17,3±2,4). As características dermatoglíficas qualitativas dos assentamentos foram: AL=33,3%, ALW=22,2%, 10L=5,6%, 10W=11,1%, L>W=1,1% e W>L=16,7%; as da cidade foram: AL=28,6%, ALW=14,3%, 10L=14,3%, L=W=4,8%, L>W=14,3%, W>L=14,3% e 10A=9,5%; as quantitativas foram: D10=(11,1±5,09 / 9,3±5,01) e SQTL=(100,3±56,09 / 95,8±53,55). Os resultados dos testes das qualidades físicas foram os seguintes: força (cm)=(28,08±3,85 / 26,81±4,14). Foi encontrada diferença significativa somente no resultado da velocidade (seg.)=(6,81±0,55 / 6,46±0,41*), p=0,0285. No tratamento estatístico foi adotado nível de significância (p<0,05). Concluiu-se que a diferença significativa no resultado do teste da qualidade física velocidade nas meninas da cidade (6,81±0,55 / 6,46±0,41*) aponta para uma maior quantidade de L% (48,9 / 58,6).

PALAVRAS-CHAVE: dermatoglifia, velocidade, força.

PUBLICAÇÃO NO FIEP BULLETIN ON-LINE: <http://www.fiepbulletin.net/80/a1/61>