

DERMATOGLYPHICS: FINGERPRINTS AS A CHARACTERISTIC MARKER IN HIGH-PERFORMANCE FEMALE FUTSAL PLAYERS IN BRAZIL

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Introduction

The sports talent development process considers individual and biological characteristics, so that athlete recruitment targets each type of activity (3). Dermatoglyphics is a possible method that considers these biological characteristics to develop sport talent and identify neuromotor abilities, based on the analysis of genetic potential and fetal development. Purpose: To analyze the dermatoglyphic profile of high-performance female futsal players in Brazil.

Method

The sample consisted of 152 women, divided into two groups observing sex and age: GA, composed of 76 professional female futsal players and GB, 76 randomly selected non-athletes. The GA individuals are players from 5 top national futsal teams, and members of under-20 and adult squads that compete at the international level. The protocol selected for fingerprint analysis was Dermatoglyphics, proposed by Cummins and Midlo (1), and for fingerprint capture, processing and analysis, the Dermatoglyphic Reader ®, validated by Nodari Júnior (2). For statistical analysis, the significance level was set at $p \leq 0.05$. The Kolmogorov-Smirnov test was used to compare the number of lines between GA and GB, in order to check the normality of distribution. As an inference, the non-parametric Mann-Whitney test (for variables with non-normal distribution) and the parametric t-test (for variables with normal distribution) were applied to compare continuous variables. The Chi-square test was used to compare the following categorical variables: Arch (A), Loop Radial (LR), Loop Ulnar (LU), Whorl (W) and, when significant differences were found, Adjusted Residual Analysis ($R_{aj} > 1.96$) was conducted.

Results

The results demonstrate that when comparing numerical variables, the number of lines on the fingerprint patterns was significantly higher in GA than in GB, on the following fingers: index finger of the left hand (MESQL2, $p=0.001$), middle finger of the right hand (MESQL3, $p=0.030$), index finger of the right hand (MESQL5, $p=0.012$) and ring finger of the right hand (MDSQL1 $p=0.039$) in addition to the sum total of lines on the right hand (SQTLE, $p=0.023$) and sum total of lines (SQTL, $p=0.028$).

Fingers	Abbreviation	Group A	Group B	p
Index finger of the left hand	MESQL2	10.70±5.51	7.46±5.71	0.001
Middle finger on the left hand	MESQL3	10.71±5.44	9.14±5.86	0.030
Index finger of the right hand	MESQL5	10.49±6.37	8.24±5.43	0.012
Ring finger of the right hand	MDSQL1	14.07±5.78	12.67±4.95	0.039
Sum total of lines on the right hand	SQTLE	62.43±20.49	55.33±17.61	0.023
Sum total of lines	SQTL	121.76±39.17	108.32±35.42	0.028

When the qualitative variables are observed, that is, the type of pattern, there are significant differences between GA and GB, with a larger number of W ($R_{aj} = 2.3$) on the index finger of the left hand (MESQL2, $p=0.007$); higher number of W ($R_{aj} = 2.1$) on the little finger of the right hand (MDT5, $p=0.034$); larger number of LR ($R_{aj} = 3.2$) on the index finger of the right hand (MDT2, $p=0.002$).

		Fingerprint Patterns			
		A	LR	LU	W
		Raj (n)	Raj (n)	Raj (n)	Raj (n)
MET2	Female Futsal	-1.7	1.8	-2.7	2.3
	Control Group	1.7	-1.8	2.7	-2.3
MDT2	Female Futsal	-0.9	3.2	-2.8	1.3
	Control Group	0.9	-3.2	2.8	-1.3
MDT5	Female Futsal	0.0	0.0	-2.1	2.1
	Control Group	0.0	0.0	2.1	-2.1

Conclusions

The results found in this study demonstrated that the dermatoglyphic profile of high performance female futsal players differs significantly from the non-athlete population, showing that dermatoglyphics, based on genetic analysis and fetal development, can be used as a tool to advance sport talent. The following indicators should be observed for the number of lines:

Larger number of lines on the index finger of the left hand (10.70±5.51), middle finger of the left hand (10.71±5.44), index finger of the left hand (10.49±6.37), ring finger of the right hand (14.07±5.78), sum total of the lines on the right hand (62.43±20.49), Sum total of lines (121.76±39.17). With respect to rare markers, the presence of the following patterns should be observed: W on the index finger of the left hand and little finger of the right hand, and LR on the index finger of the right hand.

References

- Cummins H, Midlo CH. Finger Prints, Palms and Soles an Introduction to Dermatoglyphics. Dover Publications, New York 1961
- Nodari Junior RJ, Heberle A, Ferreira-Emygdio R, Knackfuss MI. Dermatoglyphics: correlation between software and traditional method in kineanthropometric application. *Rev Andal Med Deporte* 2014; 7(2): 60-65
- Zakharov A, Gomes AC. Ciência do treinamento desportivo. 2a ed. Rio de Janeiro: Grupo Palestra; 2003.