



## DERMATOGLIFIA: CARACTERÍSTICAS OBSERVADAS EM ATLETAS DE FUTEBOL DE RENDIMENTO POR POSIÇÃO EM CAMPO

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### Introduction

Athletes have physical characteristics that differ them in the different positions in the soccer field. The evaluation through anthropometric tests, as well as physical capacity and biological individualities, enables a greater efficiency in the role performed during the game. Dermatoglyphics consists of an analysis method of the fingerprints as fetal development marks and its relationship with neuromotor capacities.

### Objective

To describe the dermatoglyphic marks present in soccer players according to the position in the field present in high level athletes from the basic categories to the professional.

### Method

Study with n=98 individuals professional male soccer players who play for the Chapecoense Football Association in the Sub 15, Sub 17, Sub 20, Sub 23 and professional categories, divided into seven groups defined by the position they play in the field, with 21 attackers, 2 center forward, 11 goalkeepers, 12 side, 17 midfielders, 18 holding midfielders and 17 defenders. The groups were compared by the Dermatoglyphic method proposed by Cummins and Midlo (1961)<sup>1</sup> and for finger print capture, processing and analysis, the Dermatoglyphic Reader®, validated by Nodari Júnior and Heberle<sup>2</sup>. For the statistical analysis the level of significance  $p \leq 0,05$  was established. The Kolmogorov-Smirnov test was used to compare the number of lines between, aiming to verify the normality of the distribution. As inference, Kruskal Wallis non-parametric test and parametric *Anova* were applied in order to compare the continuous variables. The Chi-squared test was used to compare the categorical variables: Arch (A), Radial Loop (LR), Ulnar Loop (LU), and Whorl (W).

### Results

98 soccer athletes classified according to the position they play in the field with the following mean ages ( $\bar{x} \pm SD$ ) in attackers ( $14.77 \pm 2.688$ ), center-backers ( $13.80 \pm 1.924$ ), goalkeepers ( $14,50 \pm 2,460$ ), side ( $14.56 \pm 2.289$ ), midfielders ( $14.62 \pm 2.109$ ), holding midfielder ( $14.95 \pm 2.747$ ), defender ( $14.85 \pm 2.498$ ).

The results demonstrate that the number of lines in the fingerprints is significantly different between the fingers of the athletes in the different positions during the game. On left index finger (MESQL2  $p = 0.010$ ), left hand

ring finger (MESQL3  $p = 0.049$ ), summation of the total number of right hand lines (SQTLD  $p = 0.044$ ) and quantity deltas (D10  $p = 0.025$ ).

	<b>Attackers (n=21)</b> ( $\bar{x} \pm SD$ )	<b>Center forward (n=2)</b> ( $\bar{x} \pm SD$ )	<b>Goalkeepers (n=11)</b> ( $\bar{x} \pm SD$ )	<b>Side (n=12)</b> ( $\bar{x} \pm SD$ )	<b>Midfielder (n=17)</b> ( $\bar{x} \pm SD$ )	<b>Holding midfielder (n=18)</b> ( $\bar{x} \pm SD$ )	<b>Defenders (n=17)</b> ( $\bar{x} \pm SD$ )	<b>p</b>
<b>MESQL2</b>	11,90±4,85	9,00±1,41	9,73±6,00	6,25±6,44	5,71±4,75	11,78±5,99	10,65±6,83	<b>0,010*</b>
<b>MESQL3</b>	12,81±3,94	13,00±7,07	10,82±6,52	8,52±6,30	7,47±5,53	11,56±4,99	12,00± 7,13	<b>0,049*</b>
<b>SQTLD</b>	70,90±16,72	61,50±19,09	61,45±21,06	55,25±23,99	52,12±23,80	70,83±16,91	68,41±20,50	<b>0,044*</b>
<b>D10</b>	13,81±2,89	11,50±0,70	11,36±2,29	12,25±3,72	10,65±4,01	14,00±2,76	12,65±3,85	<b>0,025*</b>

In the comparison between pairs, it is observed that when there is significant difference, these occur for MESQL2 between attacking midfielder and defensive midfielder, attacking midfielder and defender, attacking midfielder and forward, right and left-back and defensive midfielder, right and left-back and forward, to MESQL3 between attacking midfielder and defensive midfielder, midfielder attacking and defending, midfielder attacking and forward, right and left-back and forward, to SQTLD between attacking midfielder and defensive midfielder, attacking midfielder and defender, attacking midfielder and forward, right and left-back and defensive midfielder, forward and right and left-back and for D10 between attacking midfielder and forward, goalkeeper and defensive, midfielder and goalkeeper and forward.

For the comparison of the categorical variables, fingerprint figures, a significant difference was observed in the right index finger (MDT2  $p = 0.037$ ), with the presence of Whorl S (WS) for forward, Arc (A) for midfielder and Whorl (W) for defensive midfielder.

MDT2	<b>Arc (A)</b>	<b>Ulnar Loop (LU)</b>	<b>Radial Loop (LR)</b>	<b>Whorl (W)</b>	<b>Whorl S (WS)</b>	<b>p</b>
<b>attackers</b>	-1,1	-2,0	0,4	0,6	<b>2,6</b>	0,037
<b>Center forward</b>	1,8	-1,0	1,0	-0,8	-0,5	
<b>Goalkeeper</b>	-0,2	1,6	0,6	-1,2	-1,3	
<b>side</b>	0,6	-0,6	0,4	-1,3	1,4	
<b>Midfielders</b>	<b>2,6</b>	0,3	0,4	-1,3	-1,7	
<b>Holding midfielder</b>	-1,7	0,1	-1,1	<b>2,3</b>	-0,2	
<b>Defenders</b>	-0,8	1,4	-1,0	0,6	-0,9	

## Conclusions

The study demonstrated that high-performance soccer athletes, when observed they positions in the soccer field, have more quantity of lines on the MESQL2, MESQL3, SQTLD and deltas quantity (D10). Dermatoglyphics is a tool like a auxiliary method for the evaluation and guidance process of high-performance athletes, in the search for the best performance in diferente position field in the soccer. For the comparison of the categorical variables, fingerprint figures, a significant difference was observed in the right index finger (MDT2  $p = 0.037$ ), with the presence of Whorl S (WS) for forward, Arc (A) for midfielder and Whorl (W) for defensive midfielder.

## References

1. Cummins H, Midlo CH. Finger Prints, Palms and Soles an Introduction to Dermatoglyphics. Dover Publications, New York, 1961.
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