99 - DERMATOGLIFICO PROFILE OF HIGH NATIONAL PERFORMANCE TABLE-TENNIS

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Abstract:

The objective of this study was to analyze the dermatoglyphic profile of table tennis players through the collection of fingerprints. The sample consisted of 24 athletes, 16 males with mean age of 27 ± 5.4 years; And 8 (eight) females with 23.2 ± 5.1 years, all of them national level in the Absolute A category. Descriptive statistics were used with measures of central tendency (mean) and dispersion (standard deviation). The Shapiro Wilk test demonstrated normality among the investigated variables, thus opting for parametric tests. The comparative of the samples was given by Student's t-test for independent samples, adopting significance level p0,05. The Pearson coefficient matrix was used for correlation of the investigated variables and the coefficient of determination, adopting Anova One Way significance level p0,05. Class II became more frequent in table tennis players (52%) for both genders. Analyzed from the first to the fifth of the national ranking there was higher frequency in class II for males, five athletes and four for females. In male athletes, it was shown that the higher the LQTS (r = 0.78), the worse the ranking (A = Arcs) showed better placement (r = -0.66). For the findings of the female athletes, the higher the number of D10 the worse their placement (r = 0.78) and the higher the presence of L (loops) the better their placement (r = -0.78), the W increases (Werticilos) worsens its placement (r = 0.78). It can be concluded that the investigated athletes possess potentiated strength and potentiable coordination, being in class II of somato-functional valences. It is noteworthy that these athletes do not occupy the best international placements, either world-wide or Olympic.

Key words: Table tennis, high performance and dermatoglyphics.

Introduction

The origin of the ping pong, based on Marinovik (2006), comes from the practice of officers of the English colonial army, who, in service in India, in their time off, practiced tennis, however, since they could not play in courts, Adapted to tables. This improvisation gave rise to table tennis. At that time, the rackets were of cardboard, wood, or animal gut, often covered by fabric, sandpaper or cork. The table was divided with a hammock, and to play, they used balls of cork. Thus, was created the game popularly known as Ping-Pong because of the sound it made when the ball hit the table and the rackets. Ping-pong grew worldwide when a US gaming company, Parker Brother, patented and began manufacturing the game's equipment.

A few years later, the ping pong or table tennis racket changed. It was still made of wood; however, it was then coated with a layer of granulated rubber, and the ball was replaced by a plastic ball (MARINOVIK et al., 2006). Nowadays, because it is a very fast game, the materials continue to evolve, an example: the ball has been changed from celluloid to plastic, and with this the rubbers are also accompanying this change; All this to make the sport a little slower, thus improving its visibility.

But the innovation was not only in the materials used in sports. The innovations today comprise analyzing the rules, fundamentals, techniques of the sport, going deeper understanding the characteristics of the practitioners of this modality. And in this sense, dermatoglyphics became an ally to professionals in Physical Education. It is understood as a simple tool to diagnose the physical abilities of young athletes (ABRAMOVA et al., 1995), analyzing the fingerprints through the types of drawings: bow, loop, and whorl. One can then identify the genetic potential through the types of these drawings.

This article focuses on analyzing the characteristics of the fingerprints of tennis players, both quantitatively and qualitatively, dermatoglyphic drawings, characterizing their designs and comparing with the classes arranged in the literature. We thus seek to supply this information, bringing to the public the profile of the best table tennis athletes in Brazil, so that they serve as reference for the emergence of new sports talents.

According to McPhernson et al (1989, apud DE ROSE JUNIOR et al, 1999, p. 217), high-performance sport is one that demands intense dedication from the athlete to obtain the best levels of performance, that is, the Personal victories ". Gomes (2009) states that high performance must be a rule-regulated activity, with the development of physical, technical, and tactical abilities, accompanied by many years of systematized and specialized training, the athlete achieves high performance. For Lima (1990, apud DE ROSE JUNIOR et al., 1999), high-performance sport is to overcome great levels of demands (physical, technical, tactical, psychological and others), thus being able to have a sports career. To be this type of athlete, the requirements are much higher and there is a need to exceed your limits more intensely than any other ordinary person.

In this work, the sport we will deal with, focusing on high performance sports, is table tennis. For Marinovic et al. (2006), while high-performance table tennis is very complex as it has a very large requirement of its athletes both in the specific motor skills part, such as knowing how to analyze the effect that the opponent puts and thus, correctly counter the ball on the table; But also in the physical part, requiring of its practitioners much power, strength, agility among other physical valences.

Today it is observed that the great world potential of the modality is China, with expressive Olympic and world results. But this is not by chance, as there is a great investment in the genetic potential of athletes. Athletes, from a young age, are pre-selected to join their modality according to their genetic potential, so there is a possibility of sports growth of athletes increase greatly.

One of the tools that we have at professional disposal, whose objective is genetic evaluation, is dermatoglyphics. Fernandes Filho (1997) explains about dermatoglyphics, dealing with genetic potentials, which are of great importance for the development of the athlete, helping in the progression of the same in the sports environment. And with tools such as dermatoglyphics, which aid in the discovery of these potentials, both the strongest and the weakest, high-performance athletes can be trained even more by improving sports performance.

According to Dantas (2004), "dermatoglyphia originates from Latin, dermo, meaning" skin "; And from the Greek, glypha, "to engrave" - is a term proposed by Cummins and Midlo ". This study tool aims to observe motor skills and sports performance, but it is a recent tool. He has several researchers around the world, especially a Brazilian, called, José Fernandes Filho. Fernandes Filho, in 1998, brought to Brazil the proof that science could be used to assist in orienteering and sports selection. Machado (2010) further concludes that for the use of dermatoglyphics, it is necessary to have fingerprints; This tool

helps to demonstrate the main physical qualities of everyone, such as: "speed, strength, motor coordination, endurance, agility and the aerobic to anaerobic metabolic pathways" through the collection of these impressions.

Porto (1997, p. 129) teaches us that dermatoglyphs are "[...] the dermal ridges drawn on the fingers, palms of the hands and soles of the feet ...". From these crests, we have the designs known as fingerprints. Fernandes Filho (2010) concludes that, from the dermatoglyphics can show the relationship between the predisposition for some physical qualities such as motor coordination, strength, speed, and endurance.

Porto (1997) states that dermatoglyphia can be easily obtained in the following way: spread a special black ink for fingerprints with a roller at the fingertips; After that, the individual rests his fingertips on a sheet. And with the use of a large magnifying glass the prints can already be analyzed and classified, such as Arches (A), Leash (L) and Verticilo (W).



Figura I - Arco (A) Figura II -Presilha (L) Figura III - Verticilo (W)

Fonte: Medina e Fernandes Filho (SD)

After finding few studies related to table tennis and dermatoglyphics, it is understood that this work will have great importance, since it will contribute a lot in the sports senario after obtaining the profile of the best national athletes, thus helping in the emergence of new sports talents.

Methods

The population was composed of table tennis players with data collected in a stage of the Brazilian summer table tennis championship, held in the city of Lauro de Freitas - BA. The sample consisted of 24 individuals, eight females, and 16 males, aged between 18 and 45 years. The study participants signed the free and informed consent term and with the approval of the ethics committee on protocol 1,286,402.

The protocol of Cummins and Midlo (1961, apud FERNANDES FILHO; FERREIRA, 2008) was used to determine the dermatoglyphic characteristics. To obtain fingerprints, a fingerprint registration form was used.

The proposal of Cumins and Midlo (1943 apud FERNANDES FILHO; FERREIRA, 2008) distinguishes fingerprints in:

- Arc "A", where the design does not have deltas, that is, trirrádios that compose crests that cross the digital cushion;
- "L", is characterized by the presence of a delta, where the design is half closed and the crests of the skin begin from one end of the finger, curl, distally, and do not approach the other;
- Verticilo "W" and "S" drawing, is characterized by the presence of two deltas where the figure is closed and the central lines are concentrated around the core of the drawing.

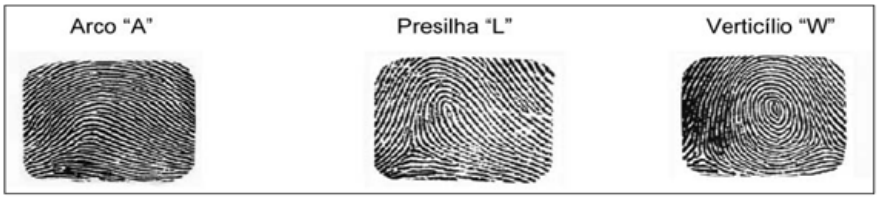


Figura 1 - Desenho Dermatoglífico (DANTAS et al. 2004)

The table below shows the five classes, according to fingerprint analysis of futsal players.

Tabela 8. Classificação do conjunto dos índices dermatoglíficos e dos índices, somato-funcionais de jogadores no futsal (n=51.

CLASSES	D10	SQTL	MÍNIMO	MÁXIMO
I	6,0	22,0	COORDENAÇÃO RESISTENCIA DE VELOCIDADE AGILIDADE E RESISTENCIA	FORÇA
II	9,1	86,2	COORDENAÇÃO RESISTENCIA DE VELOCIDADE E RESISTENCIA	VELOCIDADE E FORÇA
III	11,1	119,1	CORRDENAÇÃO, RESISTENCIA	VELOCIDADE FORÇA EXPLOSICA
IV	14,1	139,6	VELOCIDADE E FORÇA	COORDENAÇÃO RESISTENCIA DE VELOCIDADE AGILIDADE
V	16,1	150,1	FORÇA	COORDENAÇÃO RESISTENCIA DE VELOCIDADE AGILIDADE E RESISTENCIA

SILVA DANTAS, ROQUETTI FERNANDES E FERNANDES FILHO (2004)

Results Analysis

For the analysis and interpretation of the data, descriptive statistics were used with measures of central tendency (mean) and dispersion (standard deviation). The Shapiro Wilk test demonstrated normality among the investigated variables, thus opting for parametric tests. The comparative of the samples was given by Student's t-test for independent samples, adopting significance level p0,05. The Pearson coefficient matrix was used to correlate the investigated variables and the coefficient of determination, adopting Anova One Way significance level p<0.05.Table 1- Characterization of the sample of table tennis players of high performance of the national ranking.

Variáveis	Total		Masculino		Feminino	
		SD	Ẋ	SD	Ẋ	SD
Idade	25,6	5,5	27,0	5,4	23,2	5,1
Estatura	170,4	6,8	174,1	5,1	164,0	4,2
Peso	65,8	10,2	70,5	9,3	57,6	5,2

Ẋ= average, SD= standard deviation

In table 1 we see characterization of sample with age, height and weight. The average age of males was 27 ± 5.4 and female was 23.2 ± 5.1. The male stature was 174 ± 5.1, and female 164.0 ± 4.2 and finally the weight, where the males had average 70.5 ± 9.3 and female 57.6 ± 5.2.

Table 2-analysis of the absolute and relative frequency of table tennis athletes of high national income, according to the dermatoglíficas classes (n = 25).

Classes	Frequency	Frequency%
I	3	12%
II	**13**	**52%**
III	6	24%
IV	1	4%
V	2	8%

Table 2 shows the frequency of table tennis players that make up the national rank. Class II became more incident in investigated Group (n = 25) for both genders, demonstrating that, in this class, the athletes have physical Valances potentiated as speed and strength and potencializáveis as coordination, speed and endurance.Table 3 - Analysis of frequency by gender among the dermatoglific classes among table tennis players of high performance by ranking.

Genus	Ranking		Classes				
		n	I	II	III	IV	V
Male	1 a 5	8	0	**5**	**3**	0	0
Female		4	0	**4**	0	0	0
Male	6 a 10	2	**1**	0	**1**	0	0
Female		2	0	**1**	0	0	1
Male	11 a 15	2	**1**	**1**	0	0	0
Female		2	**1**	0	**1**	0	0
Male	16 a 20	2	0	0	**2**	0	0
Female		2	0	**1**	0	0	0

Table 3 shows the ranking of male and female athletes, the first ranked the 5th placed, has a higher frequency in class II, which according to Dantas and Fernandes Filho (2002), athletes have physical Valances potentiated as speed and strength and potencializáveis as coordination, speed and endurance.

Table 4- Correlation between the ranking of table tennis athletes among genders and the quantitative dermatoglyphic findings

Genus	n	D10		SQTL		A		L		W	
		r	r^2	r	r^2	r	r^2	r	r^2	r	r^2
Total	25	0,13	2%	0,051	0%	0,096	1%	-0,166	3%	0,149	2%
Male	16	-0,05	0%	0,21	4%	0,08	1%	0,06	6%	-0,06	0%
Female	25	**0,48**	23%	-0,26	7%	0,13	2%	**-0,54**	29%	0,51	26%

r = correlation coefficient *Pearson*; r^2= coefficient of determination

In table 4 it is observed that in the masculine gender that there is no correlation, in the female the index of deltas (D10) features with a correlation (r = 0.48), stating that the higher the (D10), the worse will be the ranking of athletes; another note, the higher rate of latch (L) in athletes, the better the ranking, confirming what reveals that the modalities for the sport of speed and strength are: in the field of low values of D10 and SQTL.Table 5 - Correlation between the ranking of table tennis players of high national income of the female gender (n = 9) and the quantitative dermatoglyphic findings .

Classes	n	D10		SQTL		A		L		W	
		r	r^2	r	r^2	r	r^2	r	r^2	r	r^2
I	1	-	-	-	-	-	-	-	-	-	-
II	7	**0,78**	61%	-0,11	1%	-0,04	0%	**-0,78**	60%	**0,78**	61%
III	0	-	-	-	-	-	-	-	-	-	-
IV	0	-	-	-	-	-	-	-	-	-	-
V	1	-	-	-	-	-	-	-	-	-	-

r = correlation coefficient *Pearson*; r^2= coefficient of determination

In table 5 the observed higher incidence of athletes is in class II, it was observed that the Delta index (D10) features with a correlation (r = 0.78), stating that the higher the (D10), the worse will be the ranking of athletes; another note, the higher rate of latch (L) in athletes, the better the ranking, confirming what. reveals that the modalities for the sport of speed and strength are: in the field of low values of D10 e do SQTL.

Table 6- Correlation between the ranking of table tennis players of high national income of the masculine gender (n = 16) and the quantitative dermatoglyphic findings.

Classes	N	D10		SQTL		A		L		W	
		r	r^2	r	r^2	r	r^2	r	r^2	r	r^2
I	2	1	100%	-1	100%	-1	100%	1	100%	1	100%
II	6	**0,35**	12%	**0,73**	53%	**-0,66**	44%	**-0,13**	2%	**0,26**	7%
III	6	-0,18	3%	-0,56	32%	0,57	32%	0,06	0%	-0,13	2%
IV	1	-	-	-	-	-	-	-	-	-	-
V	1	-	-	-	-	-	-	-	-	-	-

r = correlation coefficient *Pearson*; r^2= coefficient of determination

In table 6 it is observed that the male athletes are in class II and correlation between SQTL and the ranking (r = 0.73) demonstrating that the greater the amount of lines found in the distal phalanges worst placement in the national ranking. Class II, which according to Dantas and Fernandes Filho (2002) athletes have physical Valances potentiated as speed and strength and potencializáveis as coordination, speed and endurance. We also observed that have correlation between the arch and the ranking, the greater the presence of Arcos, the better the ranking of athletes.

Conclusion

The survey showed that 13 athletes, 52% of investigated Group (n = 24), the table tennis players that make up the

national rank, class II became more incident for both genders. Demonstrating that in this class athletes have physical Valances potentiated as speed and strength and potencializáveis as coordination, speed, and endurance. In addition, the rate of female deltas (D10) features with a correlation (r = 0.48), stating that the higher the (D10), the worse will be the ranking of athletes; another note, the higher rate of latch (L) in athletes, the better the ranking. In males, it is observed that there is correlation between SQTL and the ranking (r = 0.73) demonstrating that the greater the amount of lines found in the distal phalanges worst placement in the national ranking. We also observed that have correlation between the arch and the ranking, the greater the presence of Arcos, the better the ranking of athletes.

Referências bibliográficas

ABRAMOVA, T. F.; NIKITINA T.M.;OZOLIN N.N. Possibilidades de utilização das impressões dermatoglíficas na seleção deportiva. Teoria e prática da cultura física. n.3, p.10-15, 1995.

ANDRADE, Maria Margarida de. Introdução á Metodologia do trabalho Científico. 10 Ed. São Paulo: Atlas S.A, 2010.

DANTAS, Paulo Moreira Silva; FERNANDES FILHO, José. Identificação dos perfis genéticos, de aptidão física e somatotípico que caracterizam atletas masculinos de alto rendimento, participantes do futsal adulto no Brasil. Fitness & Performance Journal, v.1, n.1, p.28-36, 2002.

DANTAS, P. M. S.; ALONSO, L.; FERNANDES-FILHO, J. A dermatoglifia no futsal brasileiro de alto rendimento. Fitness & Performance Journal, v. 3, n. 3, p. 136–142, 2004.

GOMES, Antonio Carlos. Treinamento Desportivo: Estruturação e Periodização. 2 Ed. São Paulo: Artmed, 2009.

MACHADO, Alexandre Fernandes. Manual de Avalição Física. São Paulo: Icone, 2010.

Medina, M.F.; Fernandes Filho, J. Identificação dos perfis genético e somatotípico que caracterizam atletas de voleibol masculino adulto de alto rendimento no Brasil. Fitness & Performance Journal, v.1, n.4, p.12-19, 2002.

MARINOVIC, Wel ber; IIZUKA, Cristina Akiko; NAGAOKA, Kelly Tiemi. Tênis de mesa. São Paulo: Ph, 2006.

MELLO, M.V.; FILHO, J.F. Perfil dermatoglífico, somatotípico e de composição corporal de judocas brasileiras de alto rendimento. Fitness & Performance Journal, v.3, n.6, p. 340-349, 2004.

PORTO, Celmo Celeno. Semiologia Médica. Rio de Janeiro: Guanabara Koogan S.A. v.1, n.4, p.12-19, 2002.

ROSE JUNIOR, Dante de. et. al. Situações causadoras de "stress" no basquetebol de alto rendimento: fatores competitivos. Revista Paulista de Educação Física, São Paulo, p.217-217, 1999.

DERMATOGLIFICO PROFILE OF TABLE TENNIS PLAYERS OF HIGH NATIONAL INCOME

Abstract:

Table tennis, being a very fast game, enhances their materials to continue evolving, the ball was switched from celluloid to plastic, and with it the rubbers are also accompanying this change; all this to leave a little slower the sport, thus improving its visibility. With the progress in improvements, there is also the need to characterize the athletes have physical skills to the game the objective of this study was to analyze the dermatoglífico profile of table tennis players by collecting the fingerprints. The sample was composed of 24 athletes, being 16 males with an average age of 27 ± 5.4 years; and 8 (eight) female with 23.2 ± 5.1 years, being all national level in Absolute category a. descriptive statistics was used with measures of central tendency (media) and dispersion (standard deviation). Class II became more frequent in the table tennis players 13 (52%) for both genders. Analyzed from the first to the fifth rank.

Key words: Table tennis, high performance and dermatoglyphics.

DERMATOGLIFICO PROFIL DES JOUEURS DE TENNIS DE TABLE DE REVENU NATIONAL ÉLEVÉ

Résumé:

Tennis de table, étant un jeu très rapide, améliore leur matériel pour continuer à évoluer, le ballon est passé de celluloïd au plastique, et avec elle les caoutchoucs accompagnent également ce changement ; tout cela pour laisser un peu plus lentement le sport, afin d'améliorer sa visibilité. Avec les progrès dans l'amélioration, il y a aussi la nécessité de caractériser les athlètes ont les aptitudes physiques du jeu l'objectif de cette étude était d'analyser le profil dermatoglífico des joueurs de tennis de table en recueillant les empreintes digitales. L'échantillon était composé de 24 athlètes, soit 16 mâles avec un âge moyen de 27 ± 5,4 ans ; et 8 (huit) femelle avec ± 23,2 5,1 ans, tous de niveau national en statistiques descriptives a. catégorie absolue a été utilisé avec mesures de tendance centrale (médias) et de dispersion (écart-type).

Classe II est devenu plus fréquent chez les joueurs de tennis de table 13 (52 %) pour les deux sexes. Analysées à partir de la première à la cinquième place.

Mots clés: tennis de table, de rendement élevé et de dermatoglyphes.

DERMATOGLIFICO PERFIL DE JUGADORES DE TENIS DE MESA DE ALTO INGRESO NACIONAL

Resumen:

Tenis de mesa, siendo un juego muy rápido, mejora sus materiales para continuar evolucionando, cambiaron la pelota de celuloide al plástico, y con él las gomas también acompañan este cambio; todo ello para dejar un poco más lento el deporte, mejorando su visibilidad. Con el progreso en la mejora, también hay la necesidad de caracterizar los atletas tienen habilidades físicas para el juego el objetivo de este estudio fue analizar el perfil dermatoglífico de jugadores de tenis de mesa por la recogida de las huellas dactilares.La muestra estuvo integrada por 24 atletas, siendo 16 varones con una edad promedio de 27 ± 5.4 años; y 8 (ocho) mujer con 23.2 ± 5.1 años, siendo todo el nivel nacional en a. estadística descriptiva categoría absoluta fue utilizado con las medidas de tendencia central (media) y dispersión (desviación estándar).

Clase II se convirtió en más frecuente en los jugadores de tenis de mesa 13 (52%) para ambos sexos. Analizado desde el primero al quinto lugar. Palabras clave: tenis de mesa, alto rendimiento y cephalometric.

PERFIL DERMATOGLIFICO DE MESA-TENISTAS DE ALTO RENDIMENTO NACIONAL

Resumo:

O tênis de mesa, por ser um jogo muito rápido, aprimora seus materiais para que continuar evoluindo, a bolinha foi trocada de celuloide para plástico, e com isso as borrachas também estão acompanhando essa mudança; tudo isso para deixar um pouco mais lento o esporte, melhorando, assim, a sua visibilidade. Com o avanço nas melhorias, também há a necessidade de se caracterizar os atletas possuidores de valências físicas para a modalidade O objetivo deste estudo foi analisar o perfil dermatoglífico de mesa-tenistas através da coleta das impressões digitais. A amostra foi composta por 24 atletas, sendo 16 do sexo masculino com média de idade de 27±5,4 anos; e 8 (oito) feminino com 23,2±5,1 anos, sendo todos de nível nacional na categoria Absoluto A. Foi utilizada a estatística descritiva com medidas de tendência central (media) e dispersão (desvio padrão). A classe II se tornou mais frequente nos mesa-tenistas 13 (52%) para ambos sexos. Analisados do primeiro ao quinto do ranking nacional.

Palavras Chaves: Tênis de mesa, alto rendimento e dermatoglifia.