69 - IDENTIFICATION OF DIGITAL DERMATOGLIPHY PROFILE IN THE 100M, 800M AND 3000M RACE ATHLETS IN THE 17° JOGUINHOS ABERTOS DE SANTA CATARINA

ANDRIGO STANKIEVICZ ZAAR
University of Contestado - UnC, Campus Concórdia, SC, Brazil
andrigozaar@yahoo.com.br

ABSTRACT

The sportive success depends mainly to the qualities prexistent in the athletes, the reserch of genetic indication become inevitable to the efficacy in the sportive activity. The Dermatogliphy studies the relief of the tip of the fingers of the hands and feet, being widely used for the detention of sportive talents and in the medicine to disclose anomalies, as hereditary shunting lines of behavior and problems. The purpose of the research was determine by a simple and reliable method, the athletes genetic aspect (Dermatoglyphic) of the 17th Mini Open Games of Santa Catarina at the competitions of 100m, 800m and 3000m dash. The protocol chosen for identification of the profile of Digital Dermatogliphy was the Protocol of Digital Dermatogliphy of CUMMINS & MIDLO (1942). The results of the research had shown the following profile of Digital Dermatogliphy. 100m dash: AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%; A= 12,5%; L= 66,2%; W= 21,2% e D10= 10,8. In 800m dash: AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%. A= 18,7%; P= 65%; W= 13,7% e D10= 9,5.To the 3000m dash: AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%; A= 10%; P= 55%; W= 35%; e D10= 12,5.

Keywords: Athletes, Profile, Digital Dermatogliphy.

INTRODUCTION

In Track and Field, as well as in any other kind of sport the conquer of a prize, the surpass of an opponent, or obtaining of a expressive mark in a certain competition, express the evolution and the sport result.

But the outstanding in the sport performance depends on the whole factors linked mainly to the genetic heritage and training.

The direct and proved genetic laws show us the possibilities of the education through the exercises aren't limited because their limits aren't determined by hereditary constitution (genotype), of the person in question. Definitely, any organism evidence depends on the heritage as much as the environment. Adverse environment refrain latent hereditary possibilities, and leads to the underdevelopment and pathologies.

According to Fernandez et al., 2002, the factors connected to human biology are little changeable, however the consequences of the age or from a genetical predisposition influence around 40% in athletic income.

A favorable environment clears the way to all potential possibilities of hereditary constitution, developing within its limits. But the limits, as superior or inferior, of the hereditary possibilities from a person exist, and absolutely any exercise or education, any unfavorable or favorable condition of development become acquainted with the influences, in other words, it is the hereditary bases of the organism in which they act.

Even the child having the ideal genetic characteristic to certain activities, lacking external influences or conditions, there won't be the development of its potential, as well as, when there is lack of genetic disposition of determined characteristic, even under strong environmental influences, the child won't be a successful in his activity either.

The great genetic variability is going to cause the emergence of populational extrems, that is, people who have characteristics over the average. It is the genetical variability which determines the emergence of endowed, mainly because these show great conditions, not only in a deviation, but in a group of them; which are the genetic combinations extremely rare.

According to MATSUDO 1996, some deviations seem to be highly dependant on the genetic constitution, as height, weight, adiposity, muscle strength, speed and anaerobic power.

Knowing the genetic power allows to make the difference between the physical components, weak and strong, predictable (prognosis), from the athlete's possibilities and respectively, the active improvement of strong components in the proper preparation, as well as his sport orientation.

Elite athletes are probably those who start with superior levels from the necessary characteristics to success in his sport and that show superior fiting of these characteristics after the training (SKINNER, 2002).

DERMATOGLYPHICS AND GENETIC

Dermatoglyph is the science that studies the inferiors surfaces of hand and feet. The term Dermatogliphyc (writing on the skin) was created by Harold Cummins in 1926, at the 42° annual meeting American Anatomist Association, being the first to found Dermatoglyphics stigmas at Down Syndrome, together with Charles Midlo, published the book Fingerprints, palms and soles, in 1943.

The fingerprints have intrigued the human being since the early ages and through times have been a study purpose to physiologists, geneticists, anthropologists, anatomists and doctors.

The Dermatoglyphics patterns are formed by the same skin layer (ectoderm) from the human embryo in which the nervous system is formed within the intrauterine phase from 3 to 6 months of age and are inalterable. Nowadays, the Dermatoglyphic patterns are highly used in seeking talents methodology to several sport modality (FERNANDES FILHO, 1997).

DERMATOGLYPHY AND ITS SPORT APPLICABILITY

The diagnosis of genetic potential, at training methodology, is the essential problem, in the theory and practice of modern sport selection.

It was shown that the complexity of drawings can suit as signs of prognostic of a final constitution. At Sport Laboratory of Anthropology, Morphology and Genetic of VNIIFK in Moscow, the researches are accomplished in two directions: the fingerprints connected to the kind of physical qualities and the fingerprints connected to the kind of sport activity (ABRAMOVA, et al 1995).

Most of the authors distinguish three groups of drawings: Arch, loop, and whorl. The drawing shapes establish a qualitative characteristic. The assessment of the intensity of drawings is made from presence of deltas and then it is calculated the named delta index - D10, Arch (A) - no delta drawing; Loop (L) one delta drawing; Whorl (W) - two delta drawings; according to corresponding evaluation - 0, 1, 2, that is, maximum evaluation - 20 and minimum - 0 (the sum of deltas in 10 fingers), the most

simple drawing is the Arch and the most complex are the Whorls (GLADVOKA, 1966)

ABRAMOVA; NIKITINA; OZOLIN; 1995, researched a scheme of principles of association between fingerprints with physical qualities.

•Speed and explosive strength: Loop increasing (>7), whorl decreasing (<3), presence and increasing of arches.

•Aerobic capacity, endurance and activities of complex motor combination: arch decreasing (up to 0) and of Loop (<6), whorl increasing (>4).

It is necessary that the trainer himself has the control of simpler methods in diagnosing genetic power, to start the orientation, the selection and the finding of talents at sport application and at the athlete's specific training in developing endurance, speed, strength quality and actions of complex coordinations. (ABRAMOVA, T.F. NIKITINA T.M., OZOLIN, N.N. and col, 1995)

After obtaining the fingerprints, there is a preliminary process which determines it as the standard method Cummins and Midlo, 1942.

The purpose of the research was determine by a simple and reliable method, the athletes genetic aspect (Dermatoglyphic) of the 17th Mini Open Games of Santa Catarina at the competitions of 100m, 800m and 3000m dash.

METHODOLOGY

The research sample was composed by 8 athletes of each competition, totalizing 24 male athletes.

The research was accomplished in three phases:

At the first phase of the research, were collected the fingerprints of the individuals of the sample.

At the second phase of the research, were analyzed the Dermatoglyphic index of the individuals of the sample.

At the third phase of the research, were drawn the Digital Dermatoglyphics Profiles to the corresponding competitions.

The protocol used for these intents was the Protocol of Cummins & Midlo, 1942. According to this Protocol it should be identified the following Dermatoglyphic index:

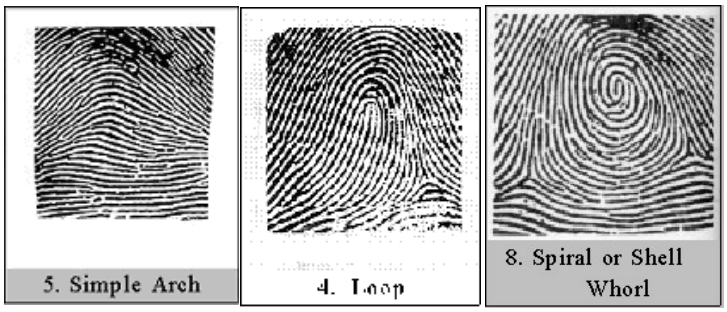
•Arch (A) is the drawing without deltas (Pic. 1)

•Loop (L) is the drawing of one delta (Pic. 1)

•Whorl (W) is the drawing of two deltas (Pic. 1)

•Quantity of drawings of these types in ten fingers (D10)

•Drawing complexity in ten fingers (D10), calculated by the equation: D10 = EL + 2Wm where the Arch (A) is a point and therefore it isn't in the equation, the Loop (L) is one point and the Whorl (W) is 2 points.



Picture 1 - Fingerprints and its characteristics.

a) Percentage of the following digital formula types:

•AL is the presence of Arch and Loop in any combination;

•ALW is the presence of Arch, Loop and Whorl in any combination;

•10L is the presence of ten Loops;

•LW is the presence of Loop and Whorl with the condition that the number of Loops be higher or equal to five;

•WL is the presence of Whorl and Loop with the condition that the number of Whorls be higher than five;

•D10 is the total quantity of Deltas.

b) To accomplish this research it was used the following instruments:

•Protocol of Cummins and Midlo, 1942.

•Fingerprint ink pad (Nykon)

•Glass Magnifier

•At the statistic application it was used the descriptive statistic methods (average and percentage).

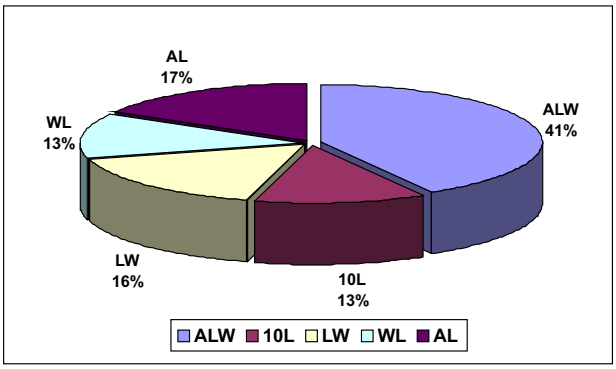
RESULTS AND ARGUMENTATION

CHART 1 - Digital Formula Distribution

Competition / Digital Formula	100m dash	800m dash	3000 dash
AL	25%	12,5%	12,5%
ALW	37,5%	50%	37,5%
WL	12,5%	-	25%
LW	12,5%	12,5%	25%
10L	12,5%	25%	-

Chart 1 - To the athletes in the competitions of 100, 800 and 3000m dash the predominant digital formula is type ALW.

To the competition of 800m it wasn't found the digital formula WL, as well as the 10L to the athletes in the competition of 3000m dash.



PICTURE 2 - Distribution of digital formulas of athletes at Mini Open Games of Santa Catarina.

Data of picture 2 shows the general distribution of digital formulas.

At the works accomplished by ABRAMOVA, et al, (1995) and FERNANDEZ (1997), the analogy with this study was also confirmed related to the average rate obtained by the Olympic team of Russia at the inconstant percentage of frequency of the drawings L (62,7%) and W (31,2%) and D10 (13,7%).

CHART 2 - Average of General Rates of the components A, L e W

Competition			
gital Drawing	100m dash	800m dash	3000m dash
Arch (A)	12,5%	18,7%	10%
Loop (L)	66,2%	65%	55%
Whorl (W)	21,2%	13,7%	35%

At Chart 2, are showed the rates of Arch (A), Loop (L) and Whorl (W) to the different competitions.

CHART 3 - Total of Deltas

Index D10			
Competition	Minimum	Maximum	Average
100m dash	7,0	16,0	10,8
800m dash	3,0	13,0	9,5
3000m dash	6,0	18,0	12,5

At chart 3, there are rates corresponding to the index D10 of each group of tested athlete.

CONCLUSION

In the identification of genetic profile it was elaborated the characteristics of fingerprints pattern of the athletes at the competitions of 100m, 800m and 3000m dash during the 17th Mini Open Games of Santa Catarina. The following digital formula were found in the competition of 100m dash: AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%; A= 12,5%; L= 66,2%; W= 21,2% e D10= 10,8. In 800m dash: AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%. A= 18,7%; P= 65%; W= 13,7% e D10= 9,5.To the 3000m dash: AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%; A= 10%; P= 55%; W= 35%; e D10= 12,5.

The result of this study has established Dermatoglyphic parameters to the efficiency prognostic, in the practice of male competitions of 100m dash, 800m dash and 3000m dash. This research shown just one degree when compared to the necessity of new studies concerning to the identification of athletes genetic profile at Track and Field.

REFERÊNCIAS

ABRAMOVA, TF; NIKITINA, TM; OZOLIN, NN. Possibilidades de utilização das impressões dermatoglíficas na seleção desportiva. **Teoria e Prática da Cultura Física.** n. 3, 1995.

CUMMINS, H; MIDLO, CH. **Palmar and plantar dermatoglyphics in primates.** Philadelphia,1942.

FERNANDES FILHO, J. **Impressões dermatoglíficas:** marcas genéticas na seleção dos tipos de esporte e lutas. 1997. Tese (Douturado). Moscou. Rússia: VNIIFK.

FERNÁNDEZ M., *et al.* **Treinamento físico-desportivo e alimentação:** da infância a idade adulta. Porto Alegre: Artmed, 2002.

GLADKOVA, ID. **Estudos dos desenhos das impressões digitais nas mãos e dos pés dos homens e dos primatas.** Moscou, 1966.

MATSUDO, VKR. **Detecção de talentos.** CELAFISCS. SP. 1996.

SKINNER, SJ. **Sport science exchange.** São Paulo: Martins Fontes; 2002.

R: Itália, 435 ap. 02
B: Centro
Erechim RS
CEP 99 700 000
F: 54 3522 7218
e-mail: andrigozaar@yahoo.com.br

IDENTIFICATION OF DIGITAL DERMATOGLIPHY PROFILE IN THE 100M, 800M AND 3000M DASH RACE ATHLETS IN THE 17° JOGUINHOS ABERTOS DE SANTA CATARINA

ABSTRACT

The sportive success depends mainly to the qualities prexistent in the athletes, the reserch of genetic indication become inevitable to the efficacy in the sportive activity. The Dermatogliphy studies the relief of the tip of the fingers of the hands and feet, being widely used for the detention of sportive talents and in the medicine to disclose anomalies, as hereditary shunting lines of behavior and problems. The purpose of the research was determine by a simple and reliable method, the athletes genetic aspect (Dermatoglyphic) of the 17th Mini Open Games of Santa Catarina at the competitions of 100m, 800m and 3000m dash. The protocol chosen for identification of the profile of Digital Dermatogliphy was the Protocol of Digital Dermatogliphy of CUMMINS & MIDLO (1942). The results of the research had shown the following profile of Digital Dermatogliphy. 100m dash: AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%; A= 12,5%; L= 66,2%; W= 21,2% e D10= 10,8. In 800m dash: AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%. A= 18,7%; P= 65%; W= 13,7% e D10= 9,5.To the 3000m dash: AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%; A= 10%; P= 55%; W= 35%; e D10= 12,5.

Keywords: Athletes, Profile, Digital Dermatogliphy.

IDENTIFICATION DES PROFILS DE DERMATOGLIPHIE DIGITAL CHEZ LES ATHLÈTES DES COURSES DE 100M, 800 ET 3000M AUX 17° JOGUINHOS ABERTOS DE SANTA CATARINA

RESUMEE

Le succès sportif dépend des qualités préexistentes chez les athlètes, la recherche d'indices genétiques deviennent alors inévitables à l'éfficacité de l'activité sportive. La Dérmatogliphie étudie le relief du bout des doigts des mains, et elle est largemant utilisée pour la détection des talents sportifs et aussi dans la médicine pour dévoiler des anomalies et des problèmes héréditairs. Le cible de cette recherche a été l'identification du profil Dermatogliphique des Athlètes dans les compétition des courses de 100m, 800m et 3000m aux 17° Joguinhos Abertos de Santa Catarina, compétition où se rencontrent les plus importants athlètes jusqu'à 18 ans venus de Santa Catarina. L'objet d'étude a été composé pour des champions des courses dans les catégorie masculines, en faisant 24 athlètes. Le protocolus pour l'identification du profil Dermatogliphique a été celui de CUMMINS & MIDLO, 1942. Les résultats de la recherche ont montré le suivant profil de Dermatogliphie Digital chez les athlètes des courses de 100m: D10= 10,8; AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%; Dans les courses de 800m on a trouvé: D10= 9,5; AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%; Dans le courses de 3000m le profil trouvé a été: D10= 12,5; AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%.

Mots Clés: Profil, Dermatogliphie Digital, Athlètes.

IDENTIFICACION DE LOS PERFILES DE DERMATOGLIFIA DIGITAL EN LOS ATLETAS DE LAS PRUEBAS DE CARRERA DE 100M, 800M Y 3000M DE LOS 17° JOGUINHOS ABERTOS DE SANTA CATARINA

RESUMEN

El suceso desportivo depende fundamentalmente de las cualidades prexistente en los atletas, la busca de indicios genéticos son entonces inevitables para la eficacia de la actividad desportiva. La Dermatoglifia estudia el relevo de la punta de los dedos de la mano, siendo ampliamente usada para detección de talentos desportivos y también en la medicina para revelar anomalías y problemas hereditarios. El objetivo de esta encuesta fue de identificar el perfil Dermatoglifico de los atletas en las pruebas de carrera 100m, 800m y 3000m de los 17° Joguinhos Abertos de Santa Catarina, competición donde se encuentran los principales atletas de hasta18 años venidos de Santa Catarina. La muestra de la encuesta fue compuesta por los finalistas de las respectivas pruebas en la categoría masculina, hacendose un total de 24 atletas. El protocolus por la identificación del perfil Dermatoglifico fue el Protocolus de Dermatoglifía Digital, de CUMMINS & MIDLO, 1942. Los resultados de la encuesta han mostrado el seguiente perfil de Dermatoglifía Digital en los atletas de la prueba de carrera de 100m; D10= 10,8; AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%. En la pruba de 800m hemos encontrado; D10= 9,5; AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%. En la prueba de 3000m el perfil encuentrado fue; D10= 12,5; AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%.

Palavras llaves: Perfis, Dermatoglifia Digital, Atletas.

IDENTIFICAÇÃO DOS PERFIS DE DERMATOGLIFIA DIGITAL NOS ATLETAS DAS PROVAS DE 100, 800 E 3000M RASOS DOS 17° JOGUINHOS ABERTOS DE SANTA CATARINA

RESUMO

O sucesso esportivo depende grandemente das qualidades pré-existentes nos atletas, a busca de indícios genéticos tornam-se então inevitáveis para a eficácia da atividade esportiva. A Dermatoglifia estuda o relevo da ponta dos dedos das mãos, sendo amplamente utilizada para a detecção de talentos esportivos e na medicina para revelar anomalias e problemas hereditários. O objetivo desta pesquisa foi identificar o perfil Dermatoglífico dos Atletas nas provas de 100m, 800m e 3000m rasos dos 17° Joguinhos Abertos de Santa Catarina, competição na qual, reúne os principais atletas catarinenses até 18 anos. A amostra da pesquisa foi composta pelos finalistas das respectivas provas no naipe masculino, totalizando 24 atletas. O protocolo para identificação do perfil Dermatoglífico foi o Protocolo de Dermatoglifia Digital, de CUMMINS & MIDLO, 1942. Os resultados da pesquisa mostraram o seguinte perfil de Dermatoglifia Digital nos atletas da prova de 100m rasos: D10= 10,8; AL= 25%; ALW= 37,5%; 10L= 12,5%; LW= 12,5%; WL= 12,5%. Na prova dos 800m rasos encontramos: D10= 9,5; AL= 12,5%; ALW= 50%; 10L= 25%; LW= 12,5%; WL= 0%. Na prova dos 3000m rasos o perfil encontrado foi: D10= 12,5; AL= 12,5%; ALW= 37,5%; 10L= 0%; LW= 25%; WL= 25%.

Palavras chave: Perfis, Dermatoglifia Digital, Atletas.