88 - A COMPARATIVE ANALYSIS OF THE DERMATOGLYPHICS THROUGH PHYSICAL TESTS TO VERIFY THE INNATE PHYSICAL CAPACITIES

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1 - INTRODUCTION

Physical Aptitude according to Caspersen (cited per Boldori, 2000), is defined as capacity to carry through physical activities, and depends on characteristics innate and/or acquired by the individual. The innate ones, the genotype, are the total combination of the genes inside of the human body and represent the genetic potential (PG). Already the acquired ones, suffer influence from the way, mainly it training (SIKNNER, 2002).

This aptitude consists of the physical capacities, some of them is the resistance, understood as psychophysics property to support the fatigue and/or to recover quickly of the physical effort, having it oxygen as end acceptor of the oxidative combustion (aerobic), or not having, leading to a latic or unlatic energy mobilization (anaerobic). Speed is the capacity to answer to a stimulations, with an action in the lesser possible time. Coordination is the harmony in the movement, that allows execution with the lesser possible energy great expense. Agility is a fast direction change during the displacement (GRECO and BENDA, 1998).

Is anticipated or not it existence of the correlation between the genetic characteristics, with the physical qualities, therefore, in accordance with Fertile valley et al. (2003), with knowledge of the genetic potential is allowed to differentiate the positive and negative athlete points, allowing to adjust to the necessity and PG direction. Already, Skinner (2002), affirms that knowing the genotype, is not possible esteem with precision the reply of the individual to the training, therefore these, probably they had initiated with superior levels of the necessary characteristics, and had presented superior adaptations after-exercise, essential to the success.

The objective of this study is to compare the physical capacities, resistance, speed, coordination and agility with the PG.

2 - LITERATURE REVISION

The Dermatoglyphs - of the Latin, dermo = skin, of the Greek, glypha = to record - is a term considered for Cummins and Midlo (cited for Son, 2003). The dermatoglyphics indices forms in the man in the intrauterine state in first the three months of the development and are permanent.

One distinguishes three groups from drawings in agreement Cummins and Midlo (cited for João and Filho, 2002): (a) arc, (l) fastener and (w) verticilo. The form of the drawings constitutes a qualitative characteristic, while the lines total summatory amount (SQTL), represents quantitative characteristics. The intensity evaluation of drawings is effected, initially, in presence deltas, calculating itself the index of deltas (D10) being able to be, at the very least "0" and in maximum "20", it represents It the drawing, without deltas; the L, the drawing of 1 delta; the W and the S-drawing, the drawing of 2 deltas. The types of digital formulas indicate the representation of the different types of drawings in the individuals. They are they; **AL -** the presence of arc and fastener in any combination; **ALW -** the presence of arc, fastener and verticilo in any combination; **10L -** ten fasteners; **LW -** verticilo and the fastener being it = 5; **WL -** the fastener and verticilo being it > 5.



Is expressive the research developed in last the 20 years, for the Laboratory of Anthropology, Morphology and Sportive Genetics of the VNKIIFK of Moscow, in accordance with Abramova et al. (cited for Medina and Filho, 2002). In the fingerprints (ID), physical qualities are studied, aiming at the type of sportive activity and of muscular fiber.

Nikitchuk et al. (cited per Son, 2003), had associated the ID with the physical qualities; Speed and Explosive Force = L (> 7), W (< 3) and Complex presence of aerobic Capacity, Resistance and Motor Combinations = L (< 6), W (> 4) and absence of, that sportive modalities characterized by high power and short time of accomplishment had demonstrated low levels of D10, increase of the parcel of simple drawings (, L) and reduction of the parcel of complicated drawings (W, S) and of the SQTL they had characterized sportive modalities of coordination and resistance of speed. The modalities of force and speed sports become related it values of basses D10 and SQTL, the sports of resistance the intermediate values and the modalities that possess complex coordination the high values.

How much to phenotype, this is the responsible one for the potential or the evolution of the involved capacities in the genotype. In this if it in such a way includes the development of the capacity of adaptation to the effort and of the sportive abilities, as also the individual extension learning capacity (GRECO & BENDA, 2001).

This biotypologic capacity of the individual as Skinner (2002) is determined by many of its structural, functional characteristics and of performance before the training. Of trainings adjusted, with rest and nutrition. Of the speed and degree of adaptation of these characteristics and control of technique and tactics in its sport.

3 - METHODOLOGY

This present study has the comparative matrix, between the innate physical capacities and the Dermatoglyphic variables, through the application of physical tests and analysis of the ID.

In this work, it was used as sample, welded of the masculine sex, of the CIA School of 2° Military Body Firemen Battalion of Minas Gerais State of, N=26 with age 23,5 $\pm$ 2,85. Where all had passed for the same criteria of training and evaluation.

The material of collection of the fingerprints the same was used by the Public Security Secretary of Minas Gerais and the analysis carried through for a papilloscopic professional. In the track of PMMG Officers Club athletes, in neutral regular conditions term, the tests had been carried through speed race; Test of 40m _ competes in measurers the time for determined distance, and aerobic resistance; Test of Cooper _ to verify in the distance covered in the time of 12 minutes and later esteem the ($VO_{2máx.}$). After one week in the track of 2° BBMMG, the tests of agility; Shuttle Run _ the time the time expense to cover 9,14m taking alternatingly two wooden objects of a side for the other, coordination; Burpee _ I number it of repetitions to verify the coordination between superior and inferior members in a time of 10s and anaerobic resistance; Test of 300m _ the time expense in the determined distance, with the same climatic characteristics.

For comparison of the samples the test of Kruskal-Wallis with level of significance of 0,05 was used. Used the descriptive statistics, structuralizing in average values and its derivatives, for the variable of continuous matrix.

4 - RESULTS PRESENTATION AND QUARREL

In the presentation and quarrel of the results had been observed for the Dermatoglyphs profile the joined values are in TABLE 1.

TABLE 1 – DERMATOGLYPHS RATING S

	SQTL	D10
AL	52,83 ± 24,28	6,17 ± 2,23
ALW	74,50 ± 40,68	10,67 ± 2,89
10L	105,33 ± 24,38	10
LW	123,73 ± 26,20	11,73 ± 0,79
WL	160,83 ±15,61	17 ± 1

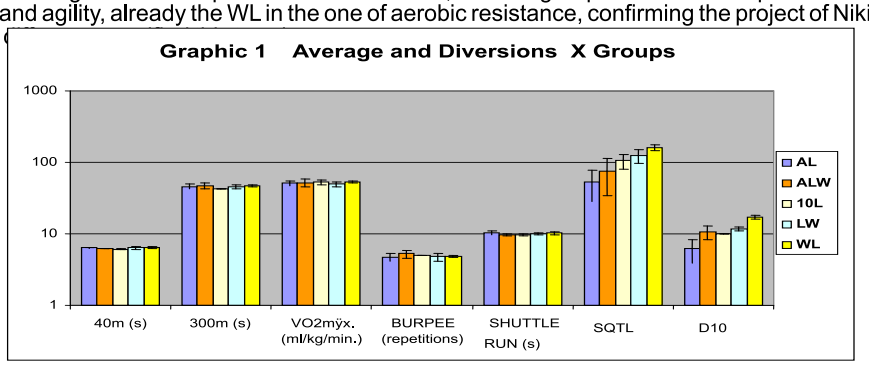
TABLE 2 - TEST RESULTS

	40m (s)	300m (s)	$VO_{2máx.}$ (ml/kg/min.)	BURPEE (repetições)	SHUTTLE RUN (s)
AL	6,33 ± 0,15	45,95 ± 3,84	51,19 ± 3,96	4,71 ± 0,62	10,32 ± 0,7
ALW	6,25 ± 0,07	47,04 ± 4,58	52,31 ± 6,35	5,25 ± 0,66	9,74 ± 0,36
10L	6,08 ± 0,09	42,72 ± 0,28	52,63 ± 3,57	5	9,67 ± 0,29
LW	6,37 ± 0,25	45,47 ± 3,18	49,42 ± 4,19	4,77 ± 0,59	10,06 ± 0,4
WL	6,37 ± 0,21	46,94 ± 2,09	53,21 ± 0,90	4,83 ± 0,14	10,18 ± 0,38

In the application of the test of Kruskal-Wallis, between the groups had presented for each physical quality the following ones given; 40m _ p = 0,2006; 300m _ p = 0,1982; ($VO_{2máx.}$). _ p = 0,4461; Burpee _ p = 0,6029; Shuttle Run _ p = 0,275. Not having significant difference, to a level of significance of 0,05.

It is verified through the results presented in GRAPH 1, that the group 10L better had performance in the speed tests, anaerobic resistance and agility, already the WL in the one of aerobic resistance, confirming the project of Nikitchuk et al., although not to have significant

Graphic 1 Average and Diversions X Groups



5 - CONCLUSIONS AND RECOMMENDATIONS

Can be observed in the research for the presented results, the influence of phenotype, therefore exactly presenting differentiated genetic characters, the sample presented similar performances, not being able to be foreseen the reply to the evaluation, contributing with Skinner (2002), where bigger genetic influence in the structural components is verified, that in the functionaries, these, they suffer great influence from the training and the environment. In accordance with the presented results that had tended to confirm the project of Nikitchuk et al. (cited for Son, 2003) the Dermatoglyphic is suggested then as tool to be used to optimize a physical evaluation, however new research, relating it with the physical capacities must be carried through. Not being possible esteem with precision the answers of the individual to the training, the findings of this study agree to citations of Skinner (2002), when affirming that successful athletes are those that, had initiated its training with superior levels of the necessary characteristics and/or had presented superior adaptations after exercise, essential to the success.

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A COMPARATIVE ANALYSIS OF THE DERMATOGLYPHICS THROUGH PHYSICAL TESTS TO VERIFY THE INNATE PHYSICAL CAPACITIES

SUMMARY

The objective of this study is to compare the physical capacities, resistance, speed, coordination and agility (GRECO and BENDA, 1998), to the genetic potential (SKINNER, 2002). In this work, it was used as sample, welded of the masculine sex, of

the CIA School of 2º Military Body Firemen Battalion of Minas Gerais State, N=26 with age 23,5 ± 2,85, where all had passed for the same criteria of training and evaluation. The protocols had been considered by Santos and Filho (2004), in the attainment of the genetic profile, used it Dermatoglyphics and in the evaluation of the physical capacities; aerobic resistance ($VO_{2máx.}$)_ test of Cooper; coordination _ Burpee; agility _ Shuttle Run: already anaerobic resistance _ test of 300m and speed race _ test of 40m, by Macedo (1999). The sample was divided in respective digital formulas, where each group possess specific physical characteristics as Abramova et al. (cited by Santos and Filho, 2004). In the comparison of the samples the test of Kruskal-Wallis with p=0,05. was used having significant difference does not enter the results of the carried through tests. The research evidenced the influence of phenotype, helped out with Skinner (2002), where bigger genetic influence in the structural components is verified, that in the functionaries, these, they suffer great influence from the training and the environment. In accordance with the average values and shunting line-standard (10L<40m and WL>$VO_{2máx.}$), the applied tests had tended to confirm the project of Nikitchuk et al. (cited for Filho, 2003). The Dermatoglyphs is suggested then as tool to be used to optimize a physical evaluation, however new research, relating it with the physical capacities must be carried through. Not being possible esteem with precision the answers of the individual to the training, the findings of this study they agree with citations of Skinner (2002), when affirming that successful athletes are those that, had initiated its trainings with superior levels of the necessary characteristics and/or had presented superior adaptations after-exercise, essential to the success.

WORDS KEYS: Dermatoglifia, phenotype, genotype

UNE ANALYSE COMPARATIVE DE LA DERMATOGLYPHIE à TRAVERS DES TESTS PHYSIQUES POUR SE VéRIFIER LES CAPACITéS PHYSIQUES INéES.

RÉSUMÉ

L´objectif de cette étude, c'est de comparer les capacités physiques : la résistence, la vélocité, la coordination et l'agilité (GRECO ET BENDA, 1998) au potentiel génétique (SKINNER, 2002). Dans ce travail on a utilisé comme échantillons des soldats du sexe masculin de la CIA École du 2ème Bataillon du Corps de Pompiers Militaires de l'État de Minas Gerais, N= 26, à l'âge de 23,5 plus ou moins 2,85 où tous se sont passés par les mêmes critères d'entraînement et d'évaluation. Les protocoles ont été proposés par SANTOS ET FILHO (2004). Pour l'obtention du profil génétique on a utilisé la dermatoglyphie et à l'évaluation des capacités physiques, résistence anaérobique (VO 2max.), test de Cooper ; coordination Burpee; agilité Shuttle Run ; déjà la résistence anaérobique - test de 300 m et une course de vélocité- test de 40 m, par MACEDO (1999).L'échantillon a été divisé selon les respectives formules digitales où chaque groupe possède des caractéristiques physiques spécifiques conforme Abramova et al. (Santos et Filho, 2003). Pour la comparation des échantillons le test de Kruskal-Wallis a été utilisé avec p=0,05. Il n'y avait pas de différence entre les résultats des tests réalisés. À travers la recherche on a constaté l'influence du phénotype en accord avec Skinner (2002) où on vérifie une plus grande influence génétique tant aux composants structurels qu'aux composants fonctionnels. Ceux-ci subissent de grande influence de l'entraînement et de l'environement. En accord aux valeurs moyens et les détournements-modèle (10 L<40m et WL> $VO_{2max.}$) les tests appliqués ont montré une tendence à confirmer le schèma de Nikitchuk et al.(selon Filho, 2003). On suggère alors, la dermatoglyphie comme un outil a être utilisé pour optimiser une évaluation physique donc de nouvelles recherches en proposant un rapport entre celle-ci et les capacités physiques doivent être réalisées. Devant l'impossibilité de préciser les réponses de l'individu en entraînement, les résultats de cette étude s'accordent avec les citations de Skinner (2002) quand il affirme que les athlètes de succès sont ceux-là qui ont initié leurs entraînements aux niveaux supérieurs des caratéristiques nécessaires et / ou ont présenté des adaptations supérieures post-exercices indispensables au succès. CLEFS DE MOTS: dermatoglyphie, phénotype, génotype

UN ANÁLISIS COMPARATIVO DEL DERMATOGLIFIA A TRAVÉS DE LAS PRUEBAS FÍSICAS PARA VERIFICAR LAS CAPACIDADES FÍSICAS NATURALES

RESUMEN

El objetivo de esse estudio és comparar las capacidades físicas, resistência, velocidad, cornenación y agilidad (GRECO Y BENDA, 2003), al potencial genético (SKINNER, 2002). Em este trabajo, usouse como muestra, soldados del sexo masculino, de la CIA Escuela Del 2º Batallón Del Cuerpo Del Bomberos Militares del Província de Minas Gerais, N = 26 com edad 23,5 ± 2,85, donde todos pasaran por los mismos critérios de entreinamiento y avaliación-los protocolos fuéran propuestos por Santos y Filho (2004), em la obtención Del perfil genético, usouse la Dermatoglifia y em la avaliación de lãs capacidades físicas; resistência aeróbica teste de Cooper; cordenación_Burbee, agilidad_Suttle Run; ya resistência anaeróbica_ teste de 300m y carrera de velocidade_ teste de 40m por Macedo (1999). La muestra fué dividida em lãs respectivas fórmulas digitales, donde cada grupo tiene caracteres físicos específicos conforme Abramova et al. (citado por Santos e Filho, 2003). En la comparación de lãs muestras fué usado el teste de Kruskal-Wallis com p=0,05. No tenendo diferencia significativa entre los resultados de los testes realizados. La pesquisa constatou la influencia del fenótipo, corroborando com Skinner (2002), donde verificase influencia del entreinamiento y del ambiente. De acuerdo com los valores médicos y desvios-patrón, los testes aplicados tenderam a confirmar lo esquema de de Nikitchuk et al. (citado por Filho, 2003). Sugerese entonces la Dermatoglifia como herramienta para ser usada para optimizar uma avaliación físisca, aún nuevas pesquisas, relacionando ella com las capacidades físicas devem ser efectuadas. No sendo posible estimar al cierto las respuestas del individuo al entreinamiento, los encontrados de este estudio concordan con las citaciones de Skinner (2002), al asegurar que atletas bién sucedidos san aqueles que, comenzaran suyos entreinamientos com nível superior de las características necesarias y/o presentaran adaptaciónes superiores pós-ejercicios, imprescindibles al suceso. LLAVES DE LAS PALABRAS: Dermatoglifia, fenotipo, genotipo

UMA ANÁLISE COMPARATIVA DA DERMATOGLIFIA ATRAVÉS DE TESTES FÍSICOS PARA SE VERIFICAR AS CAPACIDADES FÍSICAS INATAS

RESUMO

O objetivo deste estudo é comparar as capacidades físicas, resistência, velocidade, coordenação e agilidade (GRECO e BENDA, 1998), ao potencial genético (SKINNER, 2002). Neste trabalho, utilizou-se como amostra, soldados do sexo masculino, da CIA Escola do 2° Batalhão do Corpo de Bombeiros Militares do Estado de Minas Gerais, N=26 com idade 23,5 ± 2,85, onde todos passaram pelos mesmos critérios de treinamento e avaliação. Os protocolos foram propostos por Santos e Filho (2004), na obtenção do perfil genético, utilizou-se a Dermatoglifia e na avaliação das capacidades físicas; resistência aeróbica ($VO_{2máx.}$)_ teste de Cooper; coordenação_ Burpee; agilidade_ Shuttle Run: já resistência anaeróbica_ teste de 300m e corrida de velocidade_ teste de 40m, por Macedo (1999). A amostra foi dividida nas respectivas fórmulas digitais, onde cada grupo possui características físicas específicas conforme Abramova et al. (citado por Santos e Filho, 2003). Na comparação das amostras foi usado o teste de Kruskal-Wallis com p=0,05. Não havendo diferença significativa entre os resultados dos testes realizados. A pesquisa constatou a influência do fenótipo, corroborando com Skinner (2002), onde verifica-se maior influência genética nos componentes estruturais, que nos funcionais, estes, sofrem grande influência do treinamento e do ambiente. De acordo com os valores médios e desvios-padrão (10L<40m e WL>$VO_{2máx.}$), os testes aplicados tenderam a confirmar o esquema de Nikitchuk et al. (citado por Filho, 2003). Sugere-se então a Dermatoglifia como ferramenta a ser usada para se otimizar uma avaliação física, no entanto novas pesquisas, relacionando ela com as capacidades físicas devem ser realizadas. Não sendo possível estimar com precisão as respostas do indivíduo ao treinamento, os achados deste estudo concordam com as citações de Skinner (2002), ao afirmar que atletas bem sucedidos são aqueles que, iniciaram seus treinos com níveis superiores das características necessárias e/ou apresentaram adaptações superiores pós-exercício, imprescindíveis ao sucesso.

PALAVRAS CHAVES: Dermatoglifia, fenótipo, genótipo.