64 - DERMATOGLYPHICS AS DISCRETIONARY ELEMENT OF THE SBP, DBP, MAP AND HR OF 18 HYPERTENSIVE WOMEN AT REST, DURING AND AFTER AN AEROBIC ENDURANCE EXERCISE PROGRAM

RONIVALDO LAMEIRA DIAS
WALCIR JÚLIO DE MATOS COSTA
DIEGO SARMENTO DE SOUSA
JONE LUIZ QUEIROZ DE OLIVEIRA
JOSÉ FERNANDES FILHO
UNIVERSIDADE CASTELO BRANCO – UCB – RIO DE JANEIRO – BRASIL
Escola de Educação Física e Desporto – LABIMH/UFRJ-CNPqBRASIL
prof_roni@yahoo.com.br;walcir@cardiol.br; Diego_uepa@hotmail.com;
jonelqoliveira@hotmail.com; jff@cobrase.org.br

INTRODUCTION

The Hypertension, besides its renowned high prevalence and its associated danger, according to Braunwald et al, (2003) remains inadequately treated in mostly patients.

The Hypertension can be classified by its origin, as primary and secondary. The Primary Hypertension has its origin unknown until this moment. The Secondary Hypertension is derived of some diseases as the kidney's arterial stenosis and aortic coarctation (McArdle et al, 2008); (BORESTEIN, 1999).

According to information found on September 2008 in Municipal Medical Facility of Santarém city– BRAZIL, there were files which have registered 2000 people with Hypertension, and it is only the files related with the urban perimeter.

In this work, through the investigation and the development of the basic elements of Human Motricity, the blood pressure behavior has been researched in a relationship among the hypotensive effects of the medium and long duration aerobic exercises (endurance) and the genetic markers, dermatoglyphic whorl (W), arch (A) and loop (L).

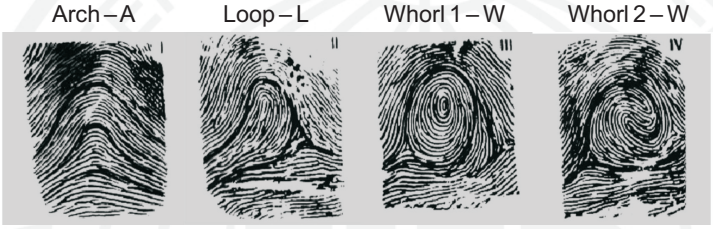


Figure 1 – Types of Digital Draws
Source: FERNANDES FILHO (2004)

Dermatoglyphics utilizes the fingerprints as a discrete variable becoming, therefore, as a high spectrum genetic marker to be utilized in association with the basic physical qualities and also with the typology of the muscular fibers (BEIGUELMAN, 1995); (FERNANDES FILHO,1997); (DANTAS et al, 2002).

Table 1 - Schema of the association principles of fingerprints with the physicals qualities.
Source: FERNANDES FILHO (2004).

a) The Speed and Explosive Strength – increasing of loops (L >7), diminishing of whorls (<3), presence and increase of arch and reduction of the total of ridge count (TRC).
b) The aerobic capacity, resistance, and the complex motor activities – diminishing of arch (until 0) and loops (<6), increasing of whorls (>4) and increasing of TRC.

By this way, Fernandes Filho (1997) affirms that the fingerprint model leads to a more suitable specialization in sport, all related with the perspective of optimization of the individual talent. The author also affirms that this presuppose is an excellent available toll for teams to determine the position of a player during a match, previously recognizing its performance.

One of this study's hypothesis is that the leading to the specialization and performance can also optimize the hypotensive effects of the endurance exercises in individuals genetically specified with dermatoglyphic whorls (W), which are qualitative associated with a higher aerobic and endurance resistance.

Therefore, several researches with hypertensive people relating that the medium and long aerobic training reduce as the rest heart rate as the heart rate during exercises performed with a sub maximum charge.

MATERIALS AND METHODS

The handling of the training program of endurance and aerobic exercises has been done at the CEE&CMH – Santarém/Brazil. The ergo cycle exercises was elaborated by a Physical Education Professor and a Cardiologist. The equipments and instruments utilized were: 18 BP digital measurers, measuring method: Oscillometric device (IMETRO approved); 02 Blood pressure aneroid device (IMETRO approved); 06 HOUSTON ergo cycle CEB2; 01 Fingerprint collector ; 01 Cardio Defibrillator (automatic external).

The data was collected on June, July and August 2009 by the following manner:- Measured the SBP , DBP and HR before exercise – at rest - during exercise, 3min after the beginning and with 15, 30 and 60 min. of exercise, 3 min. of calming down; and after exercise, 4 hours later at home.

RESULTS

Table 01:Mean and Deviation Pattern

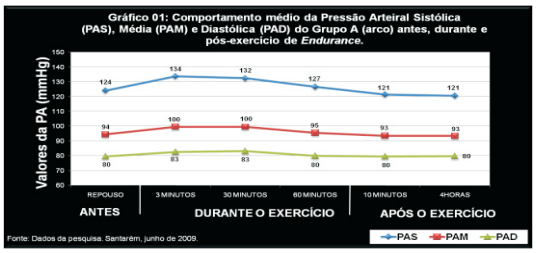
	ARCH	LOOP	WHORL
N	06	06	06
TRC	24,3±12,9	101±13,8	119,7±10,5
D10	2,8±2,3	10±2,2	16,3±1,4

The Table 01 shows the TRC and D10, the dermatoglyphic profile of 18 women, being 06 Arch (A>L); 06 Loop (L>A>W) and 06 Whorl (W>A>L). In frequency of AL with 25%, AW with 25% and LW with 50% and the individual frequency, being A 25%; L 25% and W 50%.

Table 02: Mean and Deviation Pattern of AGE, Maximum Heart Rate(HRmax), Target Zone (Karvonen) and Ergonometric test of Oxygen Maximum Volume (ET).

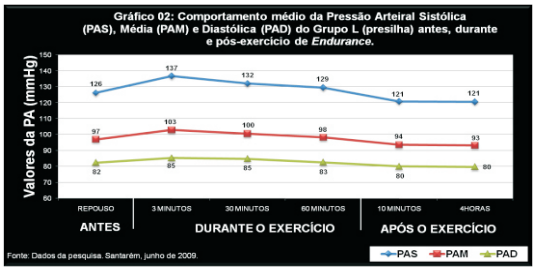
GROUPS	AGE	HRrest	HRmax	ZONA ALVO (Karvonen)		VO2 max (ET)
				60%	80%	
Arch (A)	45 ±1,7	63,3±7,5	175,0±1,7	130,3±2,0	152,7±0,4	29,5±1,2
Loop (L)	45±1,5	62,2±4,4	175,5±1,5	130,2±1,5	152,8±1,1	30,1±1,2
Whorl (W)	45±1,8	66,7±5,7	175,5±1,8	132,0±1,6	153,7±0,9	29,5±1,5

Test results ANOVA: one criterion for VO2 max (ET). Arch x Loop (p= 0, 6186); Arch x Whorl (p= 0, 2376); Loop x Whorl (p= 0, 5508).



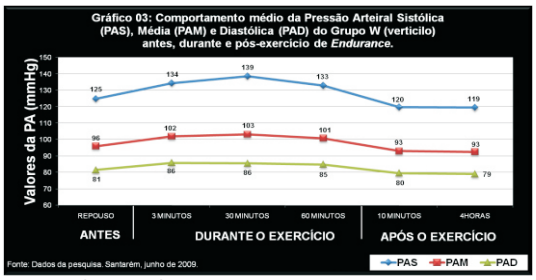
Test results ANOVA: criterion (p<0,05)

The grafic 01 shows the Arch (A) group, the behavior of SBPrest124±2.6, MAPrest 94±2.3 DBPrest80±2.3, following by the measures during the exercise 3min SBP 134, 30min 132 and 60 min. 127, post-exercise took in 10 min. 121, after 4 hours 121. 3min MAP 100, 30min 100 and 60 min. 95, post-exercise took in 10 min. 93, after 4 hours 93. 3min DBP 80, 30min 83 and 60 min. 80, post-exercise took in 10 min. 80, after 4 hours 80.



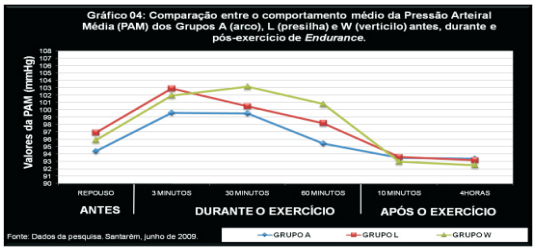
Test results ANOVA: criterion (p<0,05)

O grafico 02 mostar o group Loop (L), o comportamento da SBPrest126±2.2; MAPrest 97±1.1 DBPrest82±1.4, following by the measures during the exercise 3min SBP 137, 30min 132 e 60 min. 129, post-exercise took in 10 min. 121, post 4 hours 121. 3min MAP 103, 30min 100 and 60 min. 98, post-exercise took in 10 min. 94, post 4 hours 93. 3min DBP 85, 30min 85 and 60 min. 83, post-exercise took in 10 min. 80, post 4 hours 80.



Test results ANOVA: one criterion (p<0,05)

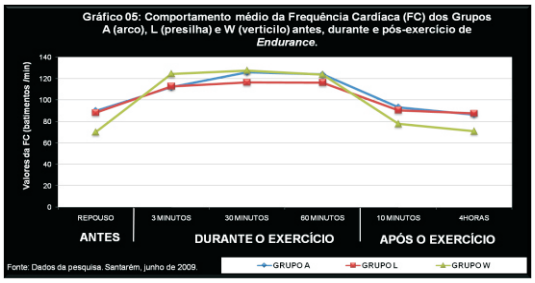
The grafic 03 shows the Whorl (W) group, o comportamento da SBPrest125±2.9; MAPrest 96±1.5 DBPrest81±1.0, following by the measures during the o exercise 3min SBP 134, 30min 139 e 60 min. 133, post-exercise took in 10 min. 120, post 4 hours 119. 3min MAP 102, 30min 103 e 60 min. 101, post-exercise took in 10 min. 93, post 4 hours 93. DBP 3min 86, 30min 86 and 60 min. 85, post-exercise took in 10 min. 80, post 4 hours 79.



Test results ANOVA: one criterion

The grafic 04 shows the comparison among the comportamentos of the mean arterial pressure Mean (MAP) among

the groups A (arch), L (loop) and W (whorl), in periods of rest, during and after endurance and aerobic exercise.



Test results ANOVA: one criterion

The graphic 05 shows the average behavior of HR of the arch, loops and whorl groups and theirs correlation, being: Arch x Loop (F= 5, 1702, p= 0, 0403); Arch x Whorl (F= 1,3575, p= 0,2660); Loop x Whorl (F= 2,3592, p= 0,1478)

DISCUSSION

According to observation of the graphics01, 02 and 03, the post-exercise hypotensive effect was identified in all individuals with genetic markers arch (A), loop (L) and whorl (W), significance of (P<0.05).

The acute hypotensive physical post-exercise (the physiological effects of the physical exercise can be classified as immediate acute, which occurs in pre and post-periods of the physical exercises) detected in this work. Rondon et al. (2002), corroborate with this study, when they have observed in their works that a low intensity physical exercise session (50% of VO2máx. or 60% of HRmáx) in 24 patients with hypertension, with average age of 69 years old, has started a significative reduction in the blood pressure, for a 22 hours post-activity period.

Another important factor that can justify the acute physical post-exercise hypotension is a diminishing in the vascular resistance and in the plasmatic levels of norepinephrine after a 30 minutes session with 50% of VO2máx in hypertensive individuals (Cleroux et al, 1992). These results suggest that a reduced nervous activity, as observed in the diminished plasmatic concentration of norepinephrine, would be involved in the reduction of the cardiovascular resistance.

In relation to the chronic physical exercise, it has been suggested that the physical training has an important role in reducing the blood pressure in hypertensive individuals (Tsai et al., 2004; Horta et al. 2005; Pinheiro et al., 2007).

In their study, Tsai et al. (2004) have observed that the moderated regular physical activity, 03 times a week during 10 weeks, has been capable of promote the BP reduction in individuals with moderate hypertension. As the study made by Tanaka et al. (2003), which the hypertensive group submitted to the physical training has show a significative reduction in the blood pressure.

Kenney et al (1993); Mcardle et al, (2008) explain that these effects seems to be related to the reduction of the sympathetic hyperactivity, increasing of the parasympathetic activity, change in the cardiac pacemaker or even an improvement of the systolic function. Among others studies Boyer, (1970) has already confirmed that physical training reduce the rest blood pressure and also during the sub maximum exercise.

When the graphic 04 is analyzed, it has been verified that in different periods between rest, exercise and post exercise the MAP´s behavior had a correlation, p< 0.05, among the groups A, L and W. In the case A x L at rest, it can be observed that the hypotension of the exercise in this group bring then to the late acute effect promoted by the exercise, maintaining the tensional post-exercise level controlled during several hours(Forjaz et al, 1998; Negrão & Barreto, 2003).

During 30 min of exercise. Hypotension effect correlation between A x W and L x W p< 0.05, With 60min correlation between A x L; A x W; L x W, p< 0.05. After 4 h, hypotension post-exercise correlation between the groups A x W and L x W, p< 0.05

The graphic 05 shows the fear behavior of the HR. There is significance between A x L; A x W, p < 0.05 at rest. During 30 min of exercise A x L; L x W, p< 0.05. With 60 min. A x L; L x W, p< 0.05. There was significance in the first 10 min. and 4h after the exercise for the groups: A x W; L x W, p< 0.05, e A x W; L x W, p < 0.05, respectively.

The graphic 05 analysis shows that the aerobic exercise had its endurance characteristic, by the maintenance of the exercise till 60 min., that is the temporal limit of the individual in maintaining the work, the muscular contractions (skeletal); observing the lungs and heart capacity of receive and transport adequate quantities of oxygen for the actives muscles, allowing an aerobic activity involving cardio-respiratory system and/or the neuron-muscular function (KENNEY et al ,1993); (McARDLE et al, 2008).

CONCLUSION

The objective of this topic was to show a perspective related to the problematic that involve some aspects that can improve the life quality of hypertensive individuals in their daily activities and also to control of such levels through a treatment which doesn't involve medicaments, as an example the physical exercise.

It has been suggested that one of the possible mechanisms responsible for the reduction of blood pressure, after a physical exercise session, would be changing in the hemodynamic factors. Rondon et el. (2002) had observed that the post-exercise hypotension, in hypertensive patients, is associated to the reduction of the final diastolic and systolic volume.

The evaluated data has shown statistically the hypotensive effect for all groups (arch, loop and whorl) of hypertensive ones during the proposed period. For this reason, the optimization of the hypotensive effects has appeared in the frequency of AL with 25%, AW with 25% and LW with 50% and the individual frequency, being A 25%; L 25% and W 50%.

It can be conclude that the individuals, who have been participated in this study, 06 hypertensive women, genetic marker whorl (W), graphic, have obtained an optimization of the hypotensive effect of the aerobic endurance exercise, in relation to the hypertensive ones , genetic marker arch (A) 25% e loop (L) 25%.

By this way, it has been verified that qualitatively the whorl group, according to Fernandes filho (2004), table 01, refer to a higher aerobic and resistance capacity and also have a predisposition in maintain the endurance work and possibly the optimization of the hypotensive effect studied.

REFERENCES

BEIGUELMAN B. Dinâmica dos genes nas famílias e nas populações. Revista brasileira de genética. 2ª. ed. Ribeirão Preto, 1995.

BORENSTEIN, M. S. (Org.). Manual de Hipertensão. Porto Alegre: Editora Sagra Luzzatto, 1999.

BOYER, J. L. Exercise therapy in hypertensive men. JAMA, 1970

BRAUNWALD, Eugene, ZIPES, Douglas P. & LIBBY, Peter. Tratado de Medicina Cardiovascular. 6 ed. VI 2. Roca.São Paulo, 2003.

CLEROUX, J., KOUAME, N., NADEAU, A., COULOMBE, D., LACOURCIERE, Y. Baroreflex regulation of forearm vascular resistance after exercise in hypertensive and normotensive humans. Am J Physiol. 263: H1523-31, 1992.

DANTAS P.M.S, FERNANDES FILHO, J. Identificação dos perfis, genético, de aptidão física e somatotípico que caracterizam atletas masculinos, de alto rendimento, participantes do futsal adulto, no Brasil. Fit. & Perform. 2002.

FERNANDES FILHO, J. Impressões dermatoglíficas - marcas genéticas na seleção dos tipos de esporte e lutas (a exemplo de desportista do Brasil). Tese de Doutorado. Moscou, 1997.

_____. Treinamento desportivo. Descoberta de Talentos. CD-ROM, vol. I, número 2, Versão2.0,SHAPE. RJ, 2004.

FORJAZ, C.L., SANTAELLA, D.F., REZENDE, L.O., BARRETTO, A.C., NEGRÃO, C.E. Effect of exercise duration on the magnitude and duration of post-exercise hypotension. Arq Bras Cardiol. 70 (2): 99-104, 1998.

HORTA, P.P., CARVALHO J.J., LACERDA, C.A.M. Exercise training attenuates blond pressure elevation in the aorta of spontaneously rats. Life Sciences. 77: 3336-3346, 2005.

ISHIKAWA-TAKATA, K., OHITA, T., TANAKA, H. How much exercise is required to reduce blood pressure in essential hypertensive: a dose-response study. Am J Hypertens. 16 (8): 629-33, 2003.

McARDLE, W.D. KATCH, F. I. & KATCH, V. L. Fisiologia do Exercício: energia nutrição e desempenho humano. 5 ed RJ: Guanabara Koogan, 2008.

KENNEY, M. & SEALS, D. R. Post exercise Hypotension: Key features, mechanisms, and clinical significance. hypotension, 1993.

PINHEIRO, A.R., CUNHA, A.R., AGUILA, M.B., MANDARIM-DE-LACERDA, C.A. Beneficial effects of physical exercise on hypertension and cardiovascular adverse remodeling of diet-induced obese rats. Nutr Metab Cardiovasc Dis. 17 (5): 365-75, 2007.

RONDON, M.U.B., ALVES, M.J., BRAGA, A.M., TEIXEIRA, O.T., BARRETO, A.C., KRIEGER, E.M., NEGRÃO, C.E. Post exercise blood pressure reduction in elderly hypertensive patients. J Am Coll Cardiol. 39 (4): 676-82, 2002.

TSAI, J.C., YANG, H.Y., WANG, W.H., HSIEH, M.H., CHEN P.T., KAO, C.C., KAO, P.F., WANG, C.H., CHAN, P. The beneficial effect of regular endurance exercise training on blood pressure and quality of life in patients with hypertension. Clin Exp Hypertens. 26 (3): 255-65, 2004.

RONIVALDO LAMEIRA DIAS
Centro de Excelência em Educação & Ciência do Movimento Humano – CEE&CMH
Trav. Dom Amando, 801; Santa Clara – Santarém/PA; CEP 68 005 – 420
Tel.: Cel.: (93) 9142 23 00 / 8117 0840/8809 3225 / 3063 2050. prof_roni@yahoo.com.br

DERMATOGLYPHICS AS DISCRETIONARY ELEMENT OF THE SBP, DBP, MAP AND HR OF 18 HYPERTENSIVE WOMEN AT REST, DURING AND AFTER AN AEROBIC ENDURANCE EXERCISE PROGRAM

ABSTRACT

The objective of the present study was to analyze the dermatoglyphics of 18 hypertensive women (primary hypertension) as discretionary parameter for the analysis of the effects of the physical endurance in the arterial blood pressure (BP) of the hypertensive ones at rest before exercise, during exercise and after a 4 hours rest. The sample space of this study was 2000 individuals who have hypertension (HT), being 68.50% or 1370 female, who have been attended by the Municipal Medical Facility of Santarém city– BRAZIL. The sample was composed by 200 hypertensive individuals. This way, nearly 14.60% or 18 hypertensive individuals, in the age bracket from 40 to 48 years, all females, are the objective of this study. All have been participated freely, as an experimental group, being determinate by 06 individuals with genetic marker (dermatoglyphic) whorl (W), 06 with arch (A) and 06 loops (L). The exercises had the intensity of 60-80% of the HRmáx, 03 times a week, during 03 months, 60 min long, 13 sessions. All hypertensive females had effective use of 100% in the frequency. SBP and DBP MAP, HRrest, HRrexer and HR of returning to calm have been analyzed. The main analyzed variables have shown Means and Deviation Pattern/ of Whorl group (W) SBP125 ± 2.2; DBP 81±1.1; MAP 96 ± 1.4; HRrest 66.7±5.7; HRrexer 128 ± 2.9. Loops (L) SBP 126±2.9; DBP 82±1.0 MAP 97±1.5; HRrest. 62.2±4.4; HRrexer 117±3.5. Arch (A) SBP 124±2.6; DBP 80±2.3; MAP 94±2.3; HRrest 63.3±7.5; HRrexer. 126±2.2. The general physical condition of each individual have been verified through the evaluation and revaluation of the following components: DSBP Peak; DSBPrest and VO2máx (ET); HRrest, HRmáx (ECG) that a substantial improvement of the physical conditioning by the analysis of the studied variables has been occurred.

KEYWORDS: Dermatoglyphics, Arterial Hypertension, Endurance Exercise.

LA DERMATOGLYPHIQUE COMME ÉLÉMENT DESCRIPTIF DES TENSIONS ARTÉRIELLES SYSTOLIQUE ET DIASTOLIQUE, TENSION ARTÉRIELLE MOYENNE ET RYTHME CARDIAQUE DE 18 FEMMES HYPERTENDUES SÉDENTAIRES EN REPOS, PENDANT ET APRÈS UN PROGRAMME D'EXERCISES D'ENDURANCE AÉROBIQUE

RÉSUMÉ

Cette étude visait à analyser la dermatoglyphique de 18 femmes présentant une hypertension artérielle (hypertension essentielle) comme un paramètre discrétionnaire des effets d'un exercice d'endurance sur la pression artérielle de patients hypertendus au repos et soumis à un exercice, avant, pendant et après l'exercice, après 4h. La conception de l'univers des entités de cette étude appartiennent à un groupe de l'échantillon, parce que l'univers des individus se compose d'un total de 2000 personnes souffrant d'hypertension (HA), et 68,50%, 1370 femelles, vus au Centre Médical de le Département de la Santé dans la Municipalité de Santarém - PA. L'échantillon comprenait 200 patients hypertendus. Environ 14,60%, 18 patients hypertendus, âgés entre 40 et 48 ans, femmes, font l'objet d'étude. Tous ont participé de manière libre et éclairé, le groupe expérimental, et 06 personnes avec le marqueur génétique spécifique (dermatoglyphique) verticille (W), 06 avec voûte (A) et 06 boucles (L). Les exercices ont l'intensité de 60-80% de rythme cardiaque maximum, 03 fois par semaine pour 03 mois, 60 min, 13 sessions. Tous les patients hypertendus ont rendement de 100% de la fréquence. Nous avons analysé les tensions arterielles syastolique (PAS), diastolique (PAD) et moyenne (PAM), rythme cardiaque pendant l'exercise (FCrexer) et en repos (FCrrep). Rythme cardiaque (FC) rétournant au calme. Les principales variables analysées ont montré la moyenne et écart-type/ de groupe Verticille (W) PAS125 ± 2,2; PAD 81±1,1; PAM 96 ± 1,4; FCrrep 66,7±5,7; FCrexer 128 ± 2,9. Boucles (L) PAS 126±2,9; PAD 82±1,0 PAM 97±1,5; FCrrep. 62,2±4,4; FCrexer 117±3,5. Voûte (A) PAS 124±2,6; PAD 80±2,3; PAM 94±2,3; FCrrep 63,3±7,5;

FCrexer. 126±2,2. La condition physique générale de chaque individu a été vérifiée par l'évaluation et réévaluation des éléments suivants: PASD Maximum; PASDrep e VO2max (TE); FCrrep, FC max (ECG) avec une amélioration substantielle de forme physique forme globale pour l'analyse des variables étudiées.

MOTS-CLÉS: Dermatoglyphique, Hypertension, Exercice d'endurance.

LA DERMATOGLIFIA COMO ELEMENTO DISCRECIONAL DE LAS PASD, PAM Y FC DE 18 MUJERES HIPERTENSAS SEDENTARIAS EN REPOSO, DURANTE Y DESPUÉS DE UN PROGRAMA DE EJERCICIO DE RESISTENCIA AERÓBICO.

RESUMEN

El objetivo del presente estudio ha sido analizar la dermatoglifia de 18 mujeres Hipertensas (hipertensión primaria) como parámetro discrecional para la análisis de los efectos del ejercicio físico de resistencia en la PA de hipertensas en reposo y sometidas al ejercicio, antes , durante y 4h después de un ejercicio. El delineamiento del universo de los entes del referido estudio, pertenecen a un grupo de la muestra, pues el universo de eses individuos comprende un total de 2000 personas con hipertensión arterial (HA), siendo 68,50%, 1.370 do género femenino, atendidas en el Puesto Médicos de la Secretaria de Salud del Municipio de Santarém – BRASIL. La muestra ha sido compuesta de 200 hipertensos. Luego, aproximadamente 14,60%,18 individuos hipertensos, en la faja etaria entre 40 y 48 anos, del género Femenino, son el objeto del estudio. Todas han participado de forma libre y esclarecida, grupo experimental, siendo determinado 06 individuos con marcador genético (dermatoglifico) verticilo (W), 06 con arco (A) y 06 presillas (L). Los ejercicios han obtenido la intensidad de 60-80% de la FCmáx, 03 veces por semana, durante 03 meses, 60 min de duración, 13 sesiones. Todas las hipertensas han obtenido aprovechamiento de 100% en la frecuencia. Analizamos las PAS y PAD PAM, FCrrep, FCrexer. FC de vuelta a la calma. Las principales variables analizadas han demostrado promedias y desviación estándar / del grupo Verticilo (W) PAS125 ± 2,2; PAD 81±1,1; PAM 96 ± 1,4; FCrrep 66,7±5,7; FCrexer 128 ± 2,9. Presillas (L) PAS 126±2,9; PAD 82±1,0 PAM 97±1,5; FCrrep. 62,2±4,4; FCrexer 117±3,5. Arco (A) PAS 124±2,6; PAD 80±2,3; PAM 94±2,3; FCrrep 63,3±7,5; FCrexer. 126±2,2. La condición física general de cada individuo ha sido verificada mediante la evaluación y reevaluación de los siguientes componentes: PASD Pico; PASDrep y VO2máx (TE); FCrrep, FC máx (ECG) habiendo mejora substancial en la condición física general pela análisis de las variables estudiadas.

PALABRAS CLAVES: Dermatoglifia, Hipertensión Arterial, Ejercicio de Resistencia.

A DERMATOGLIFIA COMO ELEMENTO DISCRICIONÁRIO DAS PASD, PAM E FC DE 18 MULHERES HIPERTENSAS SEDENTÁRIAS EM REPOUSO, DURANTE E APÓS UM PROGRAMA DE EXERCÍCIO DE ENDURANCE AERÓBICO.

RESUMO

O presente estudo teve por objetivo analisar a dermatoglifia de 18 mulheres Hipertensas (hipertensão primária) como parâmetro discricionário para análise dos efeitos do exercício físico de endurance na PA de hipertensas em repouso e submetidas ao exercício, antes durante e pós-exercício 4h depois. O delineamento do universo dos entes do referido estudo, pertencem a um grupo da amostra, pois o universo destes indivíduos compreende um total de 2000 pessoas com hipertensão arterial (HA), sendo 68,50%, 1.370 do gênero feminino, atendidas no Posto Médicos da Secretaria de Saúde do Município de Santarém – PA. A amostragem foi composta de 200 hipertensos. Logo, aproximadamente 14,60%,18 indivíduos hipertensos, na faixa etária entre 40 a 48 anos, do gênero Feminino, são o objeto de estudo. Todas participaram de forma livre e esclarecida, grupo experimental, sendo determinado 06 indivíduos com marcador genético (dermatoglíficos) verticilo (W), 06 com arco (A) e 06 presilhas (L). Os exercícios tiveram a intensidade de 60-80% da FCmáx, 03 vezes por semana, durantes 03 meses, 60 min de duração, 13 sessões. Todas hipertensas tiveram aproveitamento de 100% na freqüência. Analisamos as PAS e PAD PAM, FCrrep, FCrexer. FC volta a calma. As principais variáveis analisadas demonstraram médias e desvio padrão/ do grupo Verticilo (W) PAS125 ± 2,2; PAD 81±1,1; PAM 96 ± 1,4; FCrrep 66,7±5,7; FCrexer 128 ± 2,9. Presilhas (L) PAS 126±2,9; PAD 82±1,0 PAM 97±1,5; FCrrep. 62,2±4,4; FCrexer 117±3,5. Arco (A) PAS 124±2,6; PAD 80±2,3; PAM 94±2,3; FCrrep 63,3±7,5; FCrexer. 126±2,2. A condição física geral de cada indivíduo foi verificada através da avaliação e reavaliação dos seguintes componentes: PASD Pico; PASDrep e VO2máx (TE); FCrrep, FC máx (ECG) havendo melhora substancial na condição física geral pela analise das variáveis estudadas.

PALAVRA CHAVE: Dermatoglifia, Hipertensão Arterial, Exercício de Endurance.

PUBLICAÇÃO NO FIEP BULLETIN ON-LINE: http://www.fiepbulletin.net/80/a1/64