27 - PHYSICAL ACTIVITY AND ITS IMPACT IN HEALTH: EXPERIENCE IN ESPÍRITO SANTO DO PINHAL, SP.

CRISTINA PORTO PINHEIRO FILIPONI; MARLI GABRIEL DE MELO ALMEIDA;
LOURDES CONCEIÇÃO MARTINS, ALFÉSIO LUÍS FERREIRA BRAGA.
Universidade Santo Amaro,São Paulo, S. P.,Brasil
coordenadora.saude@pinhal.sp.gov.br

Introduction: Regular physical activity is important to health promotion and its practice has been encouraged in programs developed to control chronic diseases. **Objective:** evaluate the impact of the "Se Mexe Pinhal" program in the participants' health. **Method:** From the clinical records of the 351 participants we obtained information on body mass index, cholesterol and glucoses serum levels, systolic and diastolic blood pressures in the initial, intermediary, and final periods of the study. Participants were classified in terms of their level of physical activity according to Matsudo Classification. To compare periods we adopted Friedman and Wilcoxon tests. **Results:** Among the participants, 52 (15%) were considered physically inactive and 298 (85%) irregularly active. Along the period of study, there were statistically significant decreases in the body mass index ($p < 0,001$) and in systolic ($p < 0,05$) and diastolic ($p < 0,001$) blood pressures. Glucose serum levels decreased from the beginning to the intermediary period (Wilcoxon test: $p < 0,005$) and returned to the initial levels in the final period ($p < 0,005$). **Conclusion:** The results showed the relevance of physical activity to prevent diseases, even though irregularly performed. Also, they can be seen as motivation to the implementation of program changes, so it can accomplish its goal in improving the participants quality of life.

I *Introduction*

The benefits of physical activity practice have been attracting great attention presently because they provide physical, mental and social (BOSCO, DEMARCHI, REBELO, et al.,2004, p. 56/62). Well-being, calling attention to its importance as one of the most important factors of health protection, mainly in cases of patients with degenerative-chronic diseases. Physical activity struggles with sedentariness which is one of the most important enemies of Public Health for it contributes to morbid-mortality in adulthood (BRAZÃO,2002). According to Caspersen (2004), physical activity is defined as any body movement produced by skeletal muscles resulting major energetic waste than those of rest levels.

Today, however, a change in behavior related to physical activity can be observed. The modern individual, generated by modernity and good financial conditions, always presents many excuses for not practicing physical activity such as: lack of time and/or conditions for the practice of regular exercises, besides the fact of his routine is made of economy in movements because of cell phones, elevators, escalators, not mentioning the daily hours dedicated to TV or computer. Unfortunately, this seems to be a phenomenon of worldwide dimensions (PORTO,2004).

"Se Mexe, Pinhal" program in Espírito Santo do Pinhal, state of São Paulo was created by Secretaria Municipal de Saúde in association with Departamento Municipal de Esporte e Lazer. It provides support to five (05) Health Units in town and chiefly aims to increase physical activity level of pinhalense population, encouraging an active life style which propitiates the raise of physical, mental and social health as an instrument to improve quality of life. Thus, its objective is to stimulate the modification in habits of life by the adding of regular practice of physical activities with moderated intensity as a strategy to reduce the risk of non- transmissible chronic diseases. It is related to the attention to Hypertension Blood Pressure (Brasil,2001), to Diabetes Mellitus (Brasil,2001, DULLIUS,2003), to Sedentariness(ELIAS,2005), and to Obesity (LEAL, PAMPANELLI, 1998), assuming an intersectorial action involving Health and Education.

The main objective of this paper is to evaluate the functioning of "Se Mexe, Pinhal" program after 04 years of its beginning, especially along the period 2001 to 2004, and of the accomplished results related to the participants´ health, as for example, the effects of regular physical activities on BMI (Body Mass Index), blood pressure, glycemia taxes, and adhesion to the program.

II *Methods*

This is a transversal study carried out through a given card containing information about the participants of the program since 2001 up to 2004. Moreover, in each of the physical activity session, some data were registered, even those taken sporadically, without a definite frequency and under the people's judgment. Some of them came from participants who sometimes reached only one activity, as for example: to verify blood pressure as well as from participants who accomplished all the procedures. According to the demand, cards were registered.

The classification of the physical activity level proposed by *Agita São Paulo* (1998), *program* was employed. Following this classification, created by Matsudo, (FI) Inactive Physically is the person who doesn't do any kind of physical activity at all; (IA) Irregularly Active is the person who does physical activity with any intensity.

Results from the variables were grouped in: Inactive, when the control card showed only one result; Intermediate, when the control card showed several results, but the result in the middle was selected; and Final, when the last result was chosen. Therefore, the participants sometimes had one result (Beginning), sometimes two of them (Beginning and Final) and sometimes three results (Beginning, Intermediate and Final). Just individuals having at least two measures were considered for analyses.

In the present study the variables were: *Gender*, *Body Mass Index* (PORTO,2000) - using the following arrangement: Healthy, from 18 up to 24,9 kg/m2; Overweight, from 25 up to 40 kg/m2; Obese > 40kg/m2; *Glucose* (PORTO,2000) - using the following arrangement: Normal , resulting <140mg/dl: Altered,, resulting >140 mg/dl; *Cholesterol* - using the following arrangement: Normal, resulting < 200 mg/dl; Altered , resulting > 200 mg/dl.

A descriptive analysis on all variable of the study was carried out. Qualitative variables were presented in terms either of relative and absolute values. Quantitative variables were presented in terms of its values of central tendency and of dispersion (BERQUÓ; SOUZA; GOTLIEB,1981; MORETTIN; BUSSAB, 1982). Qui-square and/or Fisher precise test were used for the qualitative variables in order to verify if there was any connection between these variables and the groups of study **(**SIEGEL, 1981). As for the quantitative variables, Levene test and Kolgomorov-Smirnov test were used in order to verify the uniformity of deviances and the adherence to the normal curve, respectively. For the variables presenting these two principles fulfilled, parametric tests were used as t **(**KLEINBAUM; KUPPER; MULLER; NIZAM,1998**),** test while for the other variables not presenting these two principles fulfilled non parametric tests - Mann-Whitney U test, Wilcoxon test and Friedman[13] test were

used, (SIEGEL, 1981). Significance level was 5%.

III- ***Results***

By analyzing 351 participants during the three phases of the program: Beginning, Intermediate and Final, a major participation of the feminine gender was observed. Overweight was observed in the two genders. Glucose serum tests showed normal. As for the Cholesterol test only the feminine gender showed a major normal result in Beginning and Final phases, but in Intermediate phase the normal result exceeded in the masculine gender. Surprisingly, on the analyzed cards, the variables BMI, Cholesterol and Glucose rates were minor among the obese participants and major among the overweigh group. Highest cholerestol rates were <200mg/dl and highest glucose rates were <140mg/dl. It was also observed the following: participants taking the tests in the Intermediate phase were fewer than in the Beginning phase, but more when the Final tests were accomplished than in the Intermediate phase. This fact means that the participants who started with the program didn't follow it in the analyzed period, mainly because it is a facultative program, i.e., one of the participant's free-will.

Analyzing Table 1 according to Matsudo Classification in relation to the BMI variable it was observed that the Irregularly Active group was more frequent, the overweigh individuals were prevalent in all phases of the program: Beginning, Intermediate and Final.

Table 1 Distribution in number and percentage of participants on Body Mass Index according to Matsudo Classification.

BMI[1]		PI[2]	IA[3]	Total
		N (%)	N (%)	N (%)
Initial	Healthy	16 (34,0)	80 (28,5)	96 (29,3)
	Overweigh	31 (66,0)	197 (70,1)	228 (69,5)
	Obese		4 (1,4)	4 (1,2)
	Total	**47 (100,0)**	**281 (100,0)**	**328 (100,0)**
Intermediate	Non informed	52 (100,0)	118 (39,6)	170 (48,6)
	Healthy		45 (15,1)	45 (12,9)
	Overweigh		131 (44,0)	131 (37,4)
	Obese		4 (1,3)	4 (1,1)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**
Final	Non informed	52 (100,0)	76 (25,5)	128 (36,6)
	Healthy		63 (21,1)	63 (18,0)
	Overweigh		157 (52,7)	157 (44,9)
	Obese		2 (0,7)	2 (0,6)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**

1 Body Mass Index; 2 Physically Inactive; 3 Irregularly Active

Table 2, on Glucose test for both groups analyzed, it was observed that normal results appear in a major percentage among the Irregularly Active group. In the Intermediate phase, however, the major percentage is in the Non informed group.

Table 2 Distribution in number and percentage of participants about Glucose results according to Matsudo Classification.

Glucose		PI[1]	IA[2]	Total
		N (%)	N (%)	N (%)
Initial	Non informed	17 (32,7)	34 (11,4)	51 (14,6
	< 140	27 (51,9)	195 (65,4)	222 (63,4)
	041	8 (15,4)	69 (23,2)	77 (22,0)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**
Intermediate	Non informed	52 (100,0)	125 (41,9)	177 (50,6)
	< 140		112 (37,6)	112 (32,0)
	041		61 (20,5)	61 (17,4)
	total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**
Final	Non informed	51 (98,1)	72 (24,2)	123 (35,1)
	< 140		174 (58,4)	174 (49,7)
	041	1(1,9)	52 (17,4)	53 (15,1)
	total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**

1 Physically Inactive; 2 Irregularly Active

Table 3, on Cholesterol test, for both groups analyzed, it was observed that normal results appear in a major percentage among the Irregularly Active group, during the three phases of the program. In all three phases, however, the major percentage is in the Non informed group.

Table 3 Distribution in number and percentage of participants on Cholesterol results, according to Matsudo Classification.

Cholesterol		PI[1]	IA[2]	Total
		N (%)	N (%)	N (%)
Initial	Non informed	49 (94,2)	228 (76,5)	277 (79,1)
	< 200	2 (3,8)	58 (19,5)	60 (17,1)
	002	1 (1,9)	12 (4,0)	13 (3,7)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**
Intermediate	Non informed	52 (100,0)	283 (95,0)	335 (95,7)
	< 200		14 (4,7)	14 (4,0)
	002		1 (0,3)	1 (0,3)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**
Final	Non informed	52 (100,0)	269 (90,3)	321 (91,7)
	< 200		26 (8,7)	26 (7,4)
	002		3 (1,0)	3 (0,9)
	Total	**52 (100,0)**	**298 (100,0)**	**350 (100,0)**

1 Physically Inactive; 2 Irregularly Active

When classification of values from Initial, Intermediate and Final phases is analyzed, the minor index of the general average on the variable BMI is found. According Friedman test, a statistically significant difference can be observed on Initial, Intermediate and Final phases (p<0,001). Following Wilcoxon test, it is noted that initial BMI value differs from the Intermediate value (p<0,024) and from the Final one (p<0,0004); and, also, that the Intermediate value differs from the Final one (p<0,05) (Figure 5)

Using Friedman test for the Glucose variable, it could be observed that there was also a statistically significant difference among Beginning, Intermediate and Final values (p<0,003). Using Wilcoxon test, it could be observed that the Beginning values differ from those of the Intermediate phase (p<0,05) and the results from the Intermediate phase differ from the ones of the Final phase (p<0,005) (Figure 4). As for the Cholesterol variable there was no significance when using the Friedman test(p<0,17), maybe because of the few data registered on the cards, as it is an exam which demands fast for the participants , i.e., they were supposed to have eaten nothing before the test.

Analyzing results on the classification of values during the Beginning, Intermediate and Final phases, considering physical activity involved, lead to the general average index for the PASA variable; using the Friedman test it can be observed a statistically significant difference during the Beginning, Intermediate and Final phases(p<0,005). Following Wilcoxon test, it can be observed that the Initial PASA value differs from the Intermediate value (p<0,002) and from the Final value (p<0,003), and also, that there was not significance between Intermediate and Final values (p<0,79). (Figure 1).

Yet in relation to the general average minor index about PADA variable, it can be observed, through Friedman test that there is a statistically significant difference among Beginning, Intermediate and Final phases (p< 0,001). Using Wilcoxon test, it can be observed that the Initial value for PADA differs from the Intermediate value (p<0,0002)and from the Final value (p<0,0004), and that there was no significance for the Intermediate and Final values (p<0,36). (Figure 2)

Figure 1 Analysis of distribution of PASA levels in participants during Initial, Intermediate and Final phases of the study.

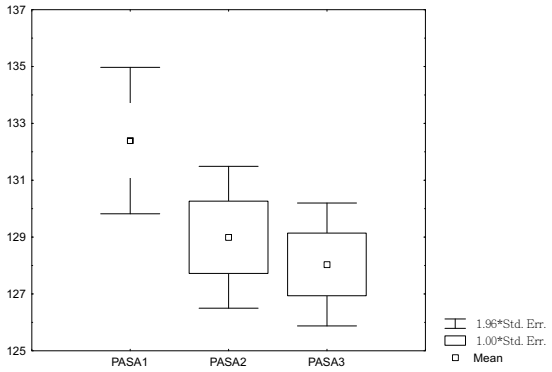
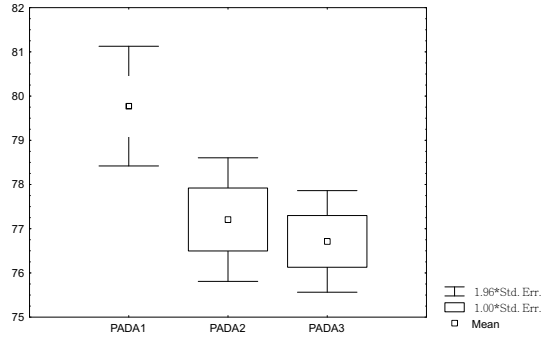


Figure 2 Analysis of distribution of PADA levels in participants during Initial, Intermediate and Final phases of the study.



IV *Conclusions*

Efforts to improve forms of treatment and prevention of health problems must be taken not only as a form of individual health but also as a matter of Public Health. Community intervention practices, including control programs of Glucose, Cholesterol, Blood Pressure and BMI, along with a positive change in life style are essential for the control of pre-existing diseases. Education on Health programs and physical activity practices- as walking- are ways of improving life quality.

This study was carried out to evaluate the impact of "Se mexe, Pinhal" program on the participants´health. Thus, it was concluded that they were not regular in their physical activity, what could make them active participants according to the physical activity classification used. In spite of this, positive changes in some employed indicators occurred. Examples of the mentioned indicators are: Body Mass Index, systolic and diastolic blood pressures - before exercises- and glucose serum levels (from the Initial to the Intermediate phases).

Although characteristics of the program don't help a more regular and effective participation of individuals joining it, the observed results showed the importance of physical activity, even irregular, in Health preservation. These results also supply motivation for the implementation of conducts to improve the program functioning in search of a better quality of life for all the inhabitants of Espírito Santo do Pinhal.

As suggestions for the program improving, can be named:

•Accomplishing actions of awareness not only for the personnel in charge of the program, but mainly for the population in general toward the importance of the right development of the program in search of the improving of quality of life of all the participants;

•Of the activities to be performed and determining minimal regularity for these tasks.

•Designing a stable team in regular schedules;

•Establishing partnerships with education Institutions to enable the staff in charge of the program;

•Refining the information records concerning to the participants so that regular program evaluations can be reached;
•Informing the participants about the group prevailing diseases and their possible complications as a way to engage them to the program.

Key words: physical activity, glucose, cholesterol, BMI, health promotion.

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Cristina Porto Pinheiro Filiponi
Rua Floriano Peixoto, 462 Centro
Espírito Santo do Pinhal SP / 13990-000
Tel: (19) 3651-1319 fbpinheiro@uol.com.br
Marli Gabriel de Melo Almeida mg-melo-almeida@bol.com.br
Lourdes Conceição Martins lourdesc@usp.br
Alfésio Luís Ferreira Braga abraga@uol.com.br

PHYSICAL ACTIVITY AND ITS IMPACT IN HEALTH: EXPERIENCE IN ESPÍRITO SANTO DO PINHAL, SP.

Introduction: Regular physical activity is important to health promotion and its practice has been encouraged in programs developed to control chronic diseases. **Objective:** evaluate the impact of the "Se Mexe Pinhal" program in the participants' health. **Method:** From the clinical records of the 351 participants we obtained information on body mass index, cholesterol and glucoses serum levels, systolic and diastolic blood pressures in the initial, intermediary, and final periods of the study. Participants were classified in terms of their level of physical activity according to Matsudo Classification. To compare periods we adopted Friedman and Wilcoxon tests. **Results:** Among the participants, 52 (15%) were considered physically inactive and 298 (85%) irregularly active. Along the period of study, there were statistically significant decreases in the body mass index ($p < 0,001$) and in systolic ($p < 0,05$) and diastolic ($p < 0,001$) blood pressures. Glucose serum levels decreased from the beginning to the intermediary period (Wilcoxon test: $p < 0,005$) and returned to the initial levels in the final period ($p < 0,005$). **Conclusion:** The results showed the relevance of physical activity to prevent diseases, even though irregularly performed. Also, they can be seen as motivation to the implementation of program changes, so it can accomplish its goal in improving the participants quality of life.

Key words: physical activity, glucose, cholesterol, BMI, health promotion.

L'ACTIVITE PHYSIQUE ET SON IMPACT SUR LA SANTE : L'EXPERIENCE DE ESPIRITO SANTO DO PINHAL, SP.

L'introduction: l'activité physique régulière est importante pour la promotion et la manutention de la santé, et est mise en oeuvre par des programmes en visant le contrôle des maladies chronique-dégénérescentes. **L'objectif** : évaluer l'impact du programme « Mouvez, Pinhal » sur la santé des participants. **La méthode** : on a évalué les donnés de 351 participants, de 2001 à 2004, y compris l'index de masse corporelle, la pression artérielle systolique et diastolique avant et après l'activité physique, et les niveaux séreux de la glucose et le cholestérol dans les phases initiales, intermédiaires et à la fin de l'étude. Les participants ont été classés en fonction de la régularité de l'activité physique selon la classification de Matsudo. Pour la comparaison entre les phases on a utilisé l'analyse de variances de Friedman et les tests de Wilcoxon. **Les résultats :** Sur l'avancement des cas, 52 (15%) ont été considérés comme physiquement inactifs et 298 (85%) ont été considérés irrégulièrement actifs. Au cours du période d'étude, on a observé une réduction statistiquement significative dans les valeurs de IMC (test de Friedman, $p < 0,001$) et dans la pression artérielle systolique ($p < 0,05$) et diastolique ($p < 0,001$). Pour la glycemie, on a observé une réduction marquée parmi les périodes initial et intermediaire (test de Wilcoxon, $p < 0,005$) et le retour aux valeurs initiales du période final d'évaluation ($p < 0,005$). **La conclusion** : les résultats observés ont montré l'importance de l'activité physique dans la prévention des maladies, même que irrégulièrement developpé, et ils agissent comme une raison de la mise en œuvre de mesures à la recherche des résultats plus efectifs pour une meilleure qualité de vie des participants.

Les mots-clé: activité physique, glycemie, cholestérol, IMC, promotion à la santé.

ACTIVIDAD FÍSICA Y SU IMPACTO EM LA SALUD: EXPERIENCIA DE ESPÍRITO SANTO DO PINHAL SP.

Introducción: La actividad física regular es importante para la promoción y mantenimiento de la salud y se consigue atravéz de los programas de control de las enfermedades crónico-degenerativas (Diabetes Mellito, Hipertensión Arterial).**Objetivo:**Avaliar el impacto y repercusiones del Programa "Se Mexe Pinhal (Se mueve Pinhal)" en la salud de los participantes.**Método:**Fueran estudiados los datos de los trecientos y cincuenta y un pacientes (351) participantes de 2001 a 2004, incluso fueron avaliados: el índice de masa corpórea, presiones arteriales sistólicas y diastólica antes y después de la actividad física, y los niveles séricos de glucosa y colesterol, en La fase inicial, intermediaria y final del estudio. Los participantes fueron clasificados de acuerdo con la regularidad de la actividad física según la "Clasificación de Matsudo". Para la comparación entre las fases, fue utilizado el "Análisis de Variación de Friedman" y las "Pruebas de Wilcoxon".**Resultados:**El acompañamiento de los pacientes estudiados mostro:cincuenta y dos (52) casos (15%) que fueron considerados físicamente inactivos y doscientos y noventa y ocho (298) casos (85%) que fueron considerados los irregularmente activos. Durante el transcurso del período de estúdio, se observó la reducción estadisticamente significante de los valores de Índice de Masa Corpórea IMC, (la "Prueba de Friedman", p <0,001) y en las presiones arteriales sistólicas (p <0,05) y diastólicas (p <0,001). Para la glicemia, se observó una reducción acentuada entre los períodos inicial e intermediario (la "Prueba de Wilcoxon",p <0,005) y retorno a los valores iniciales en el período final avaliado (p <0,005).**Conclusión:**Los resultados observados muestran la importancia de la actividad física en la prevención de enfermedades crónico degenerativas (Diabetes , Hipertensión Arterial), aun cuando practicada irregularmente. Y deve servir como importante factor de motivación para la aplicación de medidas en la búsqueda permanente de resultados más eficaces para una mejor calidad de vida y mas saludable de los participantes.

Palabras Clave: actividad física, glicemia, colesterol, IMC, promoción a la salud.

ATIVIDADE FÍSICA E SEU IMPACTO NA SAÚDE: EXPERIÊNCIA DE ESPÍRITO SANTO DO PINHAL, SP.

Introdução: A atividade física regular é importante para promoção e manutenção da saúde, e é implementada através de programas voltados ao controle das doenças crônico-degenerativas. **Objetivo:** avaliar o impacto do Programa Se Mexe Pinhal na saúde dos participantes. Método: Foram avaliados os dados referentes aos 351 participantes, de 2001 a 2004, incluindo índice de massa corpórea, pressões arteriais sistólica e diastólica antes e depois da atividade física, e os níveis séricos de glicose e colesterol, nas fases inicial, intermediária e final do estudo. Os participantes foram classificados de acordo com a regularidade da atividade física segundo a classificação de Matsudo. Para a comparação entre as fases foram utilizados A análise de variância de Friedman e os testes de Wilcoxon. **Resultados:** Quanto á evolução dos casos, 52 (15%) foram considerados fisicamente inativos e 298 (85%) foram considerados irregularmente ativos. Ao longo do período de estudo observou-se redução estatisticamente significativa nos valores de IMC (teste de Friedman, p < 0,001) e nas pressões arteriais sistólica (p < 0,05) e diastólica (p < 0,001). Para a glicemia, observou-se uma redução acentuada entre os períodos inicial e intermediário (teste de Wilcoxon, p < 0,005) e retorno aos valores iniciais no período final de avaliação (p < 0,005). **Conclusão:** Os resultados observados mostram a importância da atividade física na prevenção de doenças, mesmo que irregularmente desenvolvida, e servem de motivação para a implementação de medidas na busca de resultados mais efetivos para uma melhor qualidade de vida dos participantes.

***Palavras-chave**:* atividade física, glicemia, colesterol, IMC, promoção à saúde.