65 - CORRELATION BETWEEN THE PRACTICE OF PHYSICAL ACTIVITIES AND BIOCHEMICAL VARIABLES BETWEEN OFFICIALS OF THE UNIVERSITY OF TOLEDO CAMPUS PARANAENSE-PR

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INTRODUCTION

The regular practice of physical activities is currently regarded as a vital part of a healthy life (GONÇALVES, 1996). According to this context, Weineck (2003) emphasises that all sport, by healthier, if practised so excessive, you can reverse the positive effects and lead to damage to health.

Our reality has changed a lot from the industrial revolution. It is clear that the machines have replaced the legwork, reducing even more the level of physical activity practiced by workers, being that, according to the literature, there were 90 percent decrease to less than 1 per cent quota of energy spent through physical activity (WEINECK, 2003).

The consequences of that sharp decline of activity are seen in the study of Gonçalves (2003), through a survey conducted by Jerry Morris, professor, school of hygiene and Tropical Medicine in London. He examined the health of workers in the transport sector, and concluded that an easy life could be dangerous, as drivers who were seated all day had more heart attacks than the conductors, who spent the day up and down the stairs to collect the tickets.

According to Weineck (2003), the lack of physical activity is the number one risk factor for our health. This factor, therefore, ceases to be a personal interest and becomes a social duty, since according to this same author approximately 30 to 40 percent of all diseases costs are directly or indirectly related to the lack of physical activity.

Vilarta et al. (2007) points out that the highest percentage of diseases that can be related to low physical activity begin in childhood, or is in a stage of life which adopt habits and lifestyles, often difficult to change in adulthood. The lack of incentive to practice physical activity during childhood can lead to a sedentary adult, causing numerous damages to health, such as obesity, diabetes, hypertension, high cholesterol, cardiovascular problems, among others, arising from metabolic changes.

Second Robergs and Roberts (2002), people with diabetes mellitus should practice regular physical activities, bearing in mind that physical activity has the benefit of controlling blood pressure, blood fat levels, stimulating the production of insulin and raise the ability of glucose uptake by muscles.

The liver greatly increases the release of glucose during exercise to activate the muscle as the exercise intensity increases. Realizes that through blood glucose concentration there is a regulation by feedback from the production of glucose by the liver; inhibition of hepatic release glucose during exercise due to increased blood glucose (NURO et al., 2010).

High cholesterol is also a common problem nowadays. According to the Ministry of health (2009), many factors can contribute to the increase of cholesterol as hereditary or genetic tendencies, obesity, diet and reduced physical activity. The main representative of sterols, cholesterol is found as a component of gallstones and abundant in the nervous system, in the adrenal glands, in food, among others (NURO et al., 2010).

Changes on uric acid metabolism may be related to numerous complications, such as gout, Arthritis Urica, acute renal failure and/or chronic renal and calculation, which, in turn, especially in cases of gout and arthritis may lead to a decrease in the practice of physical activities. The hyperuricemia is associated with, among other situations, Hyperglycemia, because high levels of uric acid increase resistance of the tissues to insulin action. Also occurs in exaggerated intake of proteins and strenuous exercises. The presence of hyperuricemia is associated with cardiovascular risk factors, such as hypertension, Hyperlipidemia, diabetes, and coronary vascular changes. These factors that can be increased when there are physical inactivity (BUSATO, 2001).

The triglycerides are important indicators of possible complications in liver, pancreatitis, diabetes, hypothyroidism and descompensada mainly complications to the cardiovascular system. Its plasma concentration varies when at rest and during exercise, behaving differently according to the diet and the intensity of exercise (NURO et al., 2010).

Gonçalves (1996) points out that the good physical form should be essential in the life of everyone, at any age. However, at each stage of life is recommended exercise according to their State of health. This same author cites that the best exercise is that fits easily in your daily life. This means integrating the training day to day, an example of this is going to work on foot or by bicycle.

Accordingly, this article aims to correlate the practice of physical activities and biochemical variables between officials of the University of Toledo Campus Paranaense-PR, giving emphasis to the importance of sport to achieve better health.

MATERIALS AND METHODS

This study was developed in UNIPAR Campus I Toledo – PR and covered a sample of 60 officials from different sectors of institution of higher education.

Held interviews with the participating employees through the international physical activity Questionnaire, after being held to collect blood sample to the biochemical analyses of interest (uric acid, glucose, total cholesterol and triglycerides).

To avoid variations in the results arising from food, employees were told to be on fasting at the time of blood collection.

Information equivalent to the usual practice of physical activity were obtained by the International Physical Activity Questionnaire (IPAQ), proposed by the international group for Consensus on Measures of physical activity, in version 8, with reference to the last week. After the compilation of the questionnaire, the data from the practice of physical activity were categorized according to the agreement proposed by the Centre for the study of the laboratory of physical fitness of São Caetano do Sul (MATSUDO et al., 2001), whereas four statements:

Very-active: $\geqslant$ 30 min/session of vigorous activity $\geqslant$ 5 days/week; and/or $\geqslant$ 20 minutes/session of vigorous activity $\geqslant$ 3 days/week compounded $\geqslant$ 30 minutes moderate activity/session or hiking $\geqslant$ 5 days/week;

Active: $\geqslant$ 20 minutes/session of vigorous activity $\geqslant$ 3 days/week; and/or $\geqslant$ 30 minutes moderate activity/session or hiking $\geqslant$ 5 days/week; and/or $\geqslant$ 150 minutes/week of any of the activities summarized (vigorous + moderate + walk);

Irregularly active: < > and 150 minutes/week 10 of any of the activities summarized (vigorous + moderate + walk);

Sedentary: $\leqslant$ 10 minutes/week of any of the activities summarized (vigorous + moderate + walk).

In accordance with the above categorization formed different groups.

For biochemical analysis, biochemical kits used for trade by enzymatic-colorimetric determination methodology, with the following: Uric Acid – PP (Analyzes, cat. 451, MS 80022230065), Cholesterol – PP (Analyzes, cat. 460, MS 80022230064) and Triglycerides – PP (Analyzes, cat. 459, MS 80022230062). For the quantitative determination of by capillary glycemia methodology of biosensor, made use of glucose meter and tiras for AccuChek glucose meter Advantage II (Roche, 12016400309 MS).

In statistical analysis, the data obtained were presented by mean and standard deviation. To analyze possible differences between the variables in the various statistics groups formed using the ANOVA Tukey test next.

RESULTS

Among the employees surveyed, 15 were categorised as very active. For these, it might make an average of the results of biochemical analyses performed for 3.806666667 for 92.86666667, uric acid, glucose and triglycerides to 122.14 166.7 for total cholesterol. Being that the standard deviations were found 1.411922027, 16.74543292, 20.90180443 and 32.6129466, respectively.

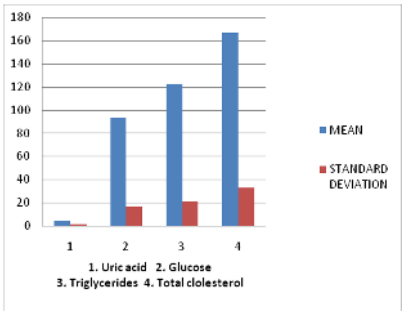

Figure 1: mean and standard deviation of uric acid, glucose, triglycerides and total cholesterol to very active individuals.

In relation to assets, 22 officials searched fit into this category. The mean of the results was obtained from 3.163636364 to uric acid, 98.45454545 for glucose, 97.83636364 to triglycerides and 147.1863636 for total cholesterol. Being that standard deviations found 1.234251443were, 11.47140242, 27.07339751, 40.10369352 and respectively.

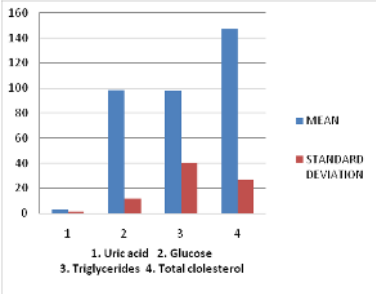

Figure 2: mean and standard deviation of uric acid, glucose, triglycerides and total cholesterol for active individuals.

As to individuals unlawfully assets, 21 officials were categorised as such. There were the following averages for the results obtained for 3.528571429: this category to uric acid, 95.33333333 for glucose, 95.7047619 to triglycerides and 161.6714286 for total cholesterol. Standard deviations found 1.220714077were, 12.51532394, 33.50863286 and 27.27574276, respectively.

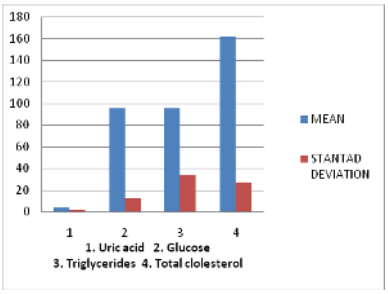

Figure 3: mean and standard deviation of uric acid, glucose, triglycerides and total cholesterol to individuals unlawfully assets.

Between 60 employees surveyed, it was found that only 2 are considered to be sedentary. For this category, it might make an average 3.2 results to uric acid, 95.5 for glucose, 149.7 to triglycerides and 203.9 for total cholesterol. Being that standard deviations found 0.707106781were, 10.60660172, 91.49961749, 19.23330445 and respectively.

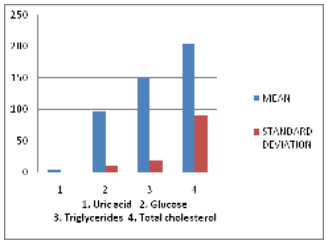

Figure 4: mean and standard deviation of uric acid, glucose, triglycerides and total cholesterol for sedentary individuals.

DISCUSSION

Second Pitanga (2001), physically active people have a higher propensity to present high levels of HDL (low density lipoprotein-good cholesterol) and low levels of LDL (low-density lipoprotein, high-density – bad cholesterol) and VLDL (very low density lipoproteins) compared to people physically inactive. This could be seen through the results of total cholesterol obtained, being individuals categorized as very active, active asset and irregularly made medium within normal, while the sedentary presented this variable high (above 200 mg/dl).

Another factor that may be influenced by the practice of physical activities is the glycemic index, which tends to be less than the greater the practice of physical exercises (TORRES, 2007). This is in accordance with the data obtained for glucose, in which there was no average above normal (99 mg/dl), but it found slight increase as the level of physical activity decreased. This is why after a workout, for example, the natural tendency is to produce low glycemic index, because the muscles are eager for glucose to restore muscle glycogen reserves, which decreases the amount of glucose into the bloodstream. On the other hand, when energy demand is lower, the excess blood sugar is converted into fat and stored in fat cells. Over time, increased body fat can lead to overweight and obesity, and thereafter to the complications of these (TORRES, 2007).

According to Richter et al. (1992), cross-sectional studies show lower levels of insulin and greater sensitivity to insulin in athletes, when compared to their sedentary counterparts.

Second Pitanga (2000), the regular practice of physical activity can reduce triglyceride levels, especially the aerobic training, cardiovascular exercise and diets with moderate amounts of carbohydrates containing essential fatty acids. Accordingly, this article has been found that individuals very active, active and normal values submitted assets irregularly triglycerides (below 150 mg/dl), but among the sedentary noted values very close to the limit, which increases the risk of developing cardiovascular diseases.

Unable to verify that all groups of individuals have normal values of uric acid, and there is little difference between them. But it is worth remembering that the presence of hyperuricemia is associated with cardiovascular risk factors, such as hypertension, Hyperlipidemia, diabetes, and coronary vascular changes, which are aggravated when there are physical inactivity (BUSATO, 2001).

CONCLUSION

Currently, there is greater incentive to practice physical activities as a means of promoting health, due to physiological, psychological and social effects related to a physically active lifestyle, contributing to the preservation or restoration of the quality of life (MAZO et al., 2009). However, its membership is still low in the Brazilian population, as demonstrated in Project health study conducted by the Ministry of health about lifestyle, which showed that only 10% of the population between 18 and 55 years practicing physical activity regularly at least three times per week (MATSUDO et al., 1996).

It was concluded that it was possible to correlate the practice of physical activities and biochemical variables between officials of the University of Toledo Campus Paranaense-PR, in which it was found important influence of regular physical activity in biochemical levels of individuals surveyed.

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CORRELATION BETWEEN THE PRACTICE OF PHYSICAL ACTIVITY AND BIOCHEMICAL VARIABLES BETWEEN STAFF OF THE UNIVERSITY OF TOLEDO CAMPUS PARANAENSE-PR

ABSTRACT: This paper aims to correlate the physical activity and biochemical variables between employees of the University of Toledo Campus Paraná-PR. 60 employees were surveyed through interviews using the International Physical Activity Questionnaire and implementation of biochemical interest (glucose, uric acid, total cholesterol and triglycerides). It was found that 15 employees are very active, 22 are active, 21 are irregularly active and 2 are sedentary. Data were expressed as mean and standard deviation, and we noted the relationship between the level of physical activity and biochemical values obtained.

KEYWORDS: Activity, Biochemistry; Correlation.

CORRESPONDANCE ENTRE LA PRATIQUE DE L'ACTIVITÉ PHYSIQUE ET VARIABLES BIOCHIMIQUES ENTRE LE PERSONNEL DE L'UNIVERSITÉ DE TOLEDO CAMPUS PARANAENSE-PR

Résumé: Cet article vise à corréler l'activité physique et des variables biochimiques entre les employés de l'Université de Toledo Campus Paraná-PR. 60 employés ont été interrogés au moyen d'entrevues à l'aide du Questionnaire international sur l'activité physique et la mise en œuvre d'intérêt biochimique (glucose, acide urique, cholestérol total et triglycérides). On a constaté que 15 employés sont très actifs, 22 sont actifs, 21 sont irrégulièrement actives et 2 sont sédentaires. Les données ont été exprimées en moyenne et l'écart standard, et nous avons noté la relation entre le niveau d'activité physique et les valeurs biochimiques obtenus.

MOTS CLES: Activité, biochimie; Corrélation.

LA CORRELACIÓN ENTRE LA PRÁCTICA DE ACTIVIDAD FÍSICA Y LAS VARIABLES BIOQUÍMICAS ENTRE EL PERSONAL DE LA UNIVERSIDAD DE TOLEDO CAMPUS PARANAENSE-PR

RESUMEN: Este trabajo pretende correlacionar la actividad física y las variables bioquímicas entre los empleados de la Universidad del Campus de Toledo Paraná-PR. 60 empleados fueron encuestados a través de entrevistas con el Cuestionario Internacional de Actividad Física y la aplicación de interés bioquímicos (glucosa, ácido úrico, colesterol total y triglicéridos). Se encontró que 15 empleados son muy activos, 22 están activos, 21 se encuentran irregularmente activos y 2 son sedentarios. Los datos se expresaron como media y desviación estándar, y señaló la relación entre el nivel de actividad física y los valores bioquímicos obtenidos.

PALABRAS CLAVE: Actividad, Bioquímica, Correlación.

CORRELAÇÃO ENTRE A PRÁTICA DE ATIVIDADES FÍSICAS E VARIÁVEIS BIOQUÍMICAS ENTRE FUNCIONÁRIOS DA UNIVERSIDADE PARANAENSE CAMPUS DE TOLEDO-PR

RESUMO: O presente artigo tem como objetivo correlacionar a prática de atividades físicas e variáveis bioquímicas entre funcionários da Universidade Paranaense Campus de Toledo-PR. Foram pesquisados 60 funcionários através de entrevistas utilizando o Questionário Internacional de Atividade Física e realização das análises bioquímicas de interesse (glicose, ácido úrico, colesterol total e triglicerídeos). Verificou-se que 15 funcionários são muito ativos, 22 são ativos, 21 são irregularmente ativos e 2 são sedentários. Os dados foram expressos em média e desvio padrão, constatando-se relação entre o nível de atividade física praticada e os valores bioquímicos obtidos.

PALAVRAS-CHAVE: Atividade; Bioquímica; Correlação.