



SPORTS RECREATION & FITNESS: AN INVESTIGATION ON NUTRITIONAL EVALUATION IN TERM OF PROTEIN, MINERALS AND FAT EVALUATION AMONG UNDERGRADUATE STUDENTS IN UNITEN

Mastura Johar[†]

College of Foundation & General Studies, Universiti Tenaga Nasional y, Putrajaya, Selangor Malaysia

Rosima Alias

College of Graduate Studies, Universiti Tenaga Nasional y, Putrajaya, Selangor Malaysia

Azmi Ahmad

College of Foundation & General Studies, Universiti Tenaga Nasional y, Putrajaya, Selangor Malaysia

ABSTRACT

Recent developments in Malaysia have highlighted the fact that the lack of physical activity or sedentary lifestyle will not only contribute to rising obesity rates, but it also directly contributes to the risk of several physical and psychological health, and heart disease still remains one of the nation's leading causes of death. The purpose of this investigation was to evaluate the effect of a 12-week of physical activities on nutritional evaluation in term of protein, minerals and fat evaluation among undergraduate students in UNITEN. Hundred and eighteen subjects were recruited from Sports and Recreation Management course in semester 2 2012/2013. Subjects were all male both local and foreign students between the ages of 19 and 30 years. Subjects are engineering students who were not enrolled in any exercise program over the period of one year (sedentary). A pre-test-post-test control research design was utilized. Subjects were assigned to a 12-week of physical activities for 50 minutes per session at three times a week (36 sessions). The InBody 720 Body Composition analysis examined nutritional evaluations which include protein, minerals, and fat were used to assess changes in both the nutritional evaluation respectively, as a result of the physical activities at one and 12-weeks. Statistical analysis included (group x time) measures t-test to determine mean differences. Results for nutritional evaluation indicate a significant $p = < 0.5$, an improvement in protein, and mineral evaluation analysis at week 12. It is concluded that with any form of physical activities does contribute greatly to the positive findings and should be include as subjects in higher learning to improve the nutritional evaluation and obesity diagnosis among sedentary undergraduate students.

© 2014 AESS Publications. All Rights Reserved.

Keywords: Physical activity, Physical education, Nutritional evaluation, Protein, Minerals, Fat, Fitness.

1. INTRODUCTION

Recent developments in Malaysia have heightened the lack of physical activity or sedentary lifestyle will not only contribute to the rising obesity rates and nutrition deficiency, but it also directly contributes to the risk for several physical and mental health, and heart disease still remains one the nation's leading cause of death (United States Department of Health and Human Services, 1996; 2000; Ministry of Health Malaysia, 2005). USDHHS (1996) also links regular physical activity to the prevention or reduction of the burden from others common ailments including high blood pressure, Type 2 diabetes, and colon cancer.

[†] Corresponding author

ISSN(e): 2224-4441/ISSN(p): 2226-5139

© 2014 AESS Publications. All Rights Reserved.

The report also discusses the importance of physical activity to the health of bone, joints, and improved psychological well-being (Ledwidge, 1980; Dishman, 1988; Sallis and Owen, 1999; Kahn *et al.*, 2003). The evidence viewed above so far suggest that lack of physical activity or sedentary lifestyle has become a health issue of a great concern in recent years in Malaysia and United States (USDHHS., 1996; 2000; Ministry of Health Malaysia, 2005). According to the first ever Report of the Surgeon General on Physical Activity and Health (USDHHS, 1996), more than 60% of American adults do not get the recommended amount of regular physical (USDHHS, 1996) and while in Malaysia 64.8% Malaysian are sedentary (Ministry of Health Malaysia, 2005).

However, while lack of physical activity is of concern to the entire Malaysian population, it is of particular concern to certain subgroups. Obesity and lack of nutrition values is now common among young adults and more than 60% of them not engaging in the recommended amount of physical activity (USDHHS, 1996).

In addition, taking once a week of physical education, this subgroup may be particularly predisposed to a sedentary lifestyle. However, Malaysian had begun taking a more active interest in health and well-being in many campaign such as “Malaysia Cergas”, ‘Sayangi Jantung’ and “Sports for All” but still, despite the efforts of government, public, and private organizations to increase physical activity levels for both physical and mental health, the percentage of sedentary population is still remain.

Thus, this study will provide data base and contribute to the community in the government sector, public and private organizations specifically young adults to engage in exercise and physical activity and doing it with fun, safe and long-term habitual adherence. To achieve some insight regarding the nutrition evaluation specifically protein, minerals and fat evaluation, the following objectives are formulated.

First objective is to investigate whether there is any difference in the subject’s nutrition evaluation in terms of protein, minerals, and fat after exposure to physical education and fitness program and second is to compare the difference in nutritional evaluation status between local and foreigner’s subjects in UNITEN.

2. METHODOLOGY

The purpose of this investigation was to evaluate the effect of a 12-week of physical activities on nutritional evaluation and obesity diagnosis among undergraduate students in UNITEN. Hundred and eighteen subjects were recruited from Sports and Recreation Management course in semester 2 2012/2013. Subjects were both local and foreign students between the ages of 20 and 23 years majoring in Engineering and Information Technology, were not enrolled in any exercise program over the period of one year (sedentary).

A pretest-posttest control research design was utilized. Subjects were assigned to a 12-week of physical activities for 50 minutes per session at three times a week (36 sessions). The InBody 720 Body Composition analysis examined nutritional evaluations which include protein, minerals, and fat while obesity diagnosis measured body mass index (BMI) and waist hip ratio (WHR) were used to assess changes in both the nutritional evaluation and obesity diagnosis respectively, as a result of the physical activities at one and 12-weeks.

The research design used in this study is a quasi-experimental design, pretest-posttest two-control group designs. Quasi- experiment design will provide as much control as possible (Creswell, 2002; Shadish *et al.*, 2002).

One of the strongest and most widely used quasi-experimental design that will differ from other experimental design because treatment and control groups are not equivalent.

Comparing pretest results will indicate degree of equivalence between treatment and control group (Bahaman and Turiman, 1999) A pretest was administered to all subjects of study to measure the status of subject’s nutritional evaluation and obesity diagnosis before treatment condition was introduced.

Subjects were measured again at week 12 after the treatment is given (Bordens and Abbott, 1996) Table 1 shows treatment assignment and the pretest-posttest design used in this research study.

Table-1. Treatment Assignment on Pre-test, Post-test Design.

50 Min /SESSION, 3 TIMES A WEEK		RESEARCH DESIGN QUASI-EXPERIMENT	
GROUP 1:		TIME FRAME	
Local Students n = 40	Week 1	Week 12	
1. 60–70 % Maximum Training Heart Rate	↓	↓	
2. Aerobic activities include walking, dancing and jogging)	Pre-test 1 SESSION	Post-test 2 36 SESSIONS	
GROUP 2:	MEASURE 1	MEASURE 2	
Foreign Students n = 63	1. Nutritional Evaluation: Protein, Minerals & Fat		
1. 60–70 % Maximum Training Heart Rate	2. Obesity Diagnosis: BMI & WHR		
2. Aerobic activities include walking, dancing and jogging)	3. Demographic Information		
	4. Par-Q Test – Health Stage		
	5. Consent		
	6. Attendance		

3. FINDINGS / RESULTS

3.1 Descriptive Data Analyses

The first set of analyses examined the impact of the respondent profile through descriptive data analysis. The purposes of examining the data in details were to detect errors in coding during the data entry, to screen out any unusual values, to identify outliers, to assess the normality of distribution and homogeneity of variance of the population from which samples were drawn. The aim of this study is to examine 103 subjects (N=103) of undergraduate male (100%) students age ranges between 19 to 30 years and was not engaged in any exercise program for the period of more than one year before the study were carried out. The subjects were assigned randomly into two groups, that is local students (n=40) and the foreign students (n=63). Subjects identified for this study is male students and majoring Engineering Degree program.

Table-2. Respondent Profile on Frequency of Age, Nationality, Gender, and Program.

Variables	Frequency	Percentage
Age (Years)		
19 – 22	62	60.2
23 – 26	34	33.0
27 – 30	7	6.8
Nationality		
Local Students	40	38.8
Foreign Students	63	61.2
Gender		
Male	103	100
Degree Program		
Engineering	103	100

*Normally distributed and the homogeneity of variance was not violated

Further to that, descriptive statistics scores for dependent variables during both pre-test and post-test were examined and shown in Table 3.2. Scores for the dependent variables during week one and week 12 were assessed. Results reported at week one on Protein: (Normal =76%, Deficiency =24 %.), Minerals (Normal =80%, Deficiency =20%), and for Fat (Normal =36%, Deficiency =18 %, Excessive = 46%). While during post-test, results indicated Protein: (Normal =78%, Deficiency =22 %.), Minerals (Normal =83%, Deficiency =17%), and for Fat (Normal =32%, Deficiency =22 %, Excessive = 47%) at the difference of 5% improvement for Protein, 5%, Minerals = 5% and fat 4% after 12 weeks of physical activities.

Table-3. Results on Frequency and Percentage of Nutrition Evaluation Pre-test & Post-test.

Variables	PRE-TEST		POST-TEST		% Differ
	Frequency	Percentage	Frequency	Percentage	
Protein					
Normal	78	75.73	80	77.66	4.93
Deficiency	25	24.27	23	22.33	1.94
Minerals					
Normal	83	80.58	85	82.53	4.95
Deficiency	20	19.42	18	17.47	1.95

Fat					
Normal	37	35.92	33	32.04	3.88
Deficiency	19	18.44	23	22.33	3.89
Excessive	47	45.63	47	46.63	1.00

3.2. Statistic Analyses

3.21. Protein Evaluation

Comparisons between local and foreign students were made using an independent sample t-test to compare the protein evaluation between pre-test and post-test during week 1 and week 12. Results indicate during week one, there was a significant difference in scores for local students ($M = 10.12$, $SD = 2.27$), and foreign students ($M = 10.79$, $SD = 1.45$); $t(101) = 1.81$, $p < .05$. The magnitude of the differences in the mean is very small. (Eta squared = .02). While at week 12 during post-test 1, in this study reported there was a significant difference in protein evaluation for local students ($M = 10.24$, $SD = 2.23$), foreign students ($M = 10.86$, $SD = 1.48$); $t(101) = 1.68$, $p < .05$. Table 3 described the results clearly. The mean differences were statistically significant between pre-test and post-test 1 on both local and foreign students.

Table-4. Results of Independent sample t-test between Local and Foreign Students for Protein Evaluation.

Protein Trial	Group	N	M	SD	t	df	p
Pre-test	Local	40	10.12	2.27	1.81	101	.005
	Foreign	63	10.79	1.45			
Post test	Local	40	10.24	2.23	1.68	101	.007
	Foreign	63	10.86	1.48			

3.22 Minerals Evaluation

Comparisons between local and foreign students were made using an independent sample t-test to compare the minerals evaluation between pre-test and post-test during week 1 and week 12. Results indicate during week one, there was a significant difference in scores for local students ($M = 3.54$, $SD = .799$), and foreign students ($M = 3.79$, $SD = .521$); $t(101) = 1.88$, $p < .05$. The magnitude of the differences in the mean is very small. (Eta squared = .02). While at week 12 during post-test 1, in this study reported there was no significant difference in minerals evaluation for local students ($M = 3.57$, $SD = .809$), foreign students ($M = 3.86$, $SD = .777$); $t(101) = 1.85$, $p > .05$. Table 4 described the results clearly. The mean differences were statistically no significant between pre-test and post-test 1 on both local and foreign students.

Table-5. Results of Independent sample t-test between Local and Foreign Students for Minerals Evaluation

Minerals Trial	Group	N	M	SD	t	df	p
Pre-test	Local	40	3.54	.799	1.88	101	.007
	Foreign	63	3.79	.521			
Post-test	Local	40	3.57	.809	1.85	101	.194
	Foreign	63	3.86	.777			

3.23. Fat Evaluation

Comparisons between local and foreign students were made using an independent sample t-test to compare the minerals evaluation between pre-test and post-test during week 1 and week 12. Results indicate during week one, there was a significant difference in scores for local students ($M = 16.65$, $SD = 14.01$), and foreign students ($M = 19.29$, $SD = 15.33$); $t(101) = .883$, $p > .05$. The magnitude of the differences in the mean is very small. (Eta squared = .02). While at week 12 during post-test 1, in this study reported there was no significant difference in fat evaluation for local students ($M = 16.86$, $SD = 13.45$), foreign students ($M = 19.08$, $SD = 15.36$); $t(101) = .755$, $p > .05$. Table 5 described the results clearly. The mean differences were statistically no significant between pre-test and post-test 1 on both local and foreign students.

4. CONCLUSION

The findings of the study revealed that local and foreigners subjects benefited statistically significant improvements on the nutritional evaluation in term of Protein and Minerals evaluation

after exposure to physical activities for 12 weeks. However, results on Fat evaluation indicated no significant difference on week 12 for both local and foreigners' students. In addition to the above findings, this interaction effect indicates that the difference between the local and foreigners students on the linear combination of all dependent variables was different at pre-test (week one) than it is at post-test (week 12). Examination of the means suggests that this is because groups do not differ on either dependent variable at the time of the pre-test, but they do differ, particularly on all the dependent variables at the time of the post-test (week 12) significantly except for Fat evaluation. These findings further support the idea of there are a variety of ways to reap the nutritional benefits through physical activities and fitness. The American Heart Association recommends 30 minutes of moderate intensity physical activity at least five days a week or high intensity activity for 20 minutes for three days a week to fully obtain the physical benefits of exercise (Haskell *et al.*, 2007). To achieve the elevated nutritional contribution the activity does not need to be as frequent or intense.

Table-6. Results of Independent sample t-test between Local and Foreign Students for Fat Evaluation.

Fat Trial	Group	N	M	SD	t	df	p
Pre-test	Local	40	16.6	14.01	.883	101	.942
	Foreign	63	19.29	15.33			
Post-test	Local	40	16.86	13.45	.802	101	.755
	Foreign	63	19.07	15.36			

Simple, deliberate, low to moderate intensity and a low intensity aerobic exercise has stress reducing properties. Individuals can do innumerable varieties of physical activities to improve their health and well-being. The findings from this study are able to contribute to the current literature. First, nutritional evaluation does improve with even a low to moderate intensity of physical activities. Physical activity works in many ways to prevent heart disease, two of the most important are by reducing blood pressure and allowing blood vessels to be less stiff and it is less likely for fat to accumulate and clog up the vessels. Results like these have been proven repeatedly including in this present study, which has reported that both the local and foreigners students improved their protein and minerals evaluation after 12 weeks of physical activity. The results of this research support the idea that exercise can elevate our nutritional benefit. There have been a number of studies investigating the effects of exercise on depression, stress, and self-esteem. In this present study, three days per week for 12 weeks of low intensity physical activities for approximately 50 minutes per workout reduced scores improved significantly $p < 0.5$ in both local and foreigners students. It is generally accepted that improvements in nutritional evaluation and well-being can be elicited if the routines follow the guidelines recommended by The American College of Sports Medicine as done by this present research. To conclude, this dissertation has investigated and revealed that subjects benefited statistically significant improvements on the nutritional evaluation in terms of protein minerals and not significant on fat evaluation after 12 weeks of physical activities

REFERENCES

- Bahaman, A.S. and S. Turiman, 1999. Statistic for social research with computer application. (is'ed). University Putra Malaysia.
- Bordens, K.S. and B.B. Abbott, 1996. Research design and methods: A process approaches (3rd Ed.). MV, California: Mayfield Publishing Company.
- Creswell, J.W., 2002. Research design: Qualitative, quantitative, and mixed methods approach. Thousand Oaks, CA: Sage Publications.
- Dishman, R.K., 1988. Determinants of participation in physical activity. In Bouchard, C., Shephard, R. J., Stephens, T., Sutton, J. R. and McPherson, B. D. (eds), Exercise, Fitness and Health: A Consensus of Current Knowledge. Human Kinetics, Champaign, IL, pp. 75-101.
- Haskell, W.L., I.M. Lee, R.R. Pate, K.E. Powell, S.N. Blair and B.A. Franklin, 2007. Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. Circulation. The Journal of the American Heart Association, 116(9): 1081-1093.
- Kahn, J., R. Hessling and D. Russell, 2003. Social support, health, and well-being among the elderly: What is the role of negative affectivity? Personality and Individual Differences, 35(1): 5-17.
- Ledwidge, B., 1980. Run for your mind: Aerobic exercise as a means of alleviating anxiety and depression. Canadian Journal of Behavioural Science, 12(2): 126-140.

- Ministry of Health Malaysia, 2005. Healthy lifestyle campaign 2000. Retrieve July 20, 2002. Available from <http://prosakti.nstp.com.my/HealthyLifestylele.html>.
- Sallis, J.F. and N. Owen, 1999. Physical activity and behavioral medicine. Thousand Oaks, California: Sage.
- Shadish, W.R., Thomas D. Cook and D.T. Donald T. Campbell, 2002. Experimental and quasi-experimental designs for generalized causal inference. Boston: Houghton-Mifflin. An update of a classic by a third author.
- United States Department of Health and Human Services, 1996. Physical Activity and Health: A report of the Surgeon General. Washington, DC: U.S. Government Printing Office.
- USDHHS., 2000. Healthy people 2010: Understanding and improving health. 2nd ed. Washington, DC: U.S. Government Printing Office.
- USDHHS, 1996. Physical activity and health: A report of the surgeon general. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion.

Views and opinions expressed in this article are the views and opinions of the authors, International Journal of Asian Social Science shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.