ORIGINAL RESEARCH PAPER

Volume-7 | Issue-3 | March-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PHYSICAL ACTIVITY AMONGST COLLEGE STUDENTS: MOTIVATIONAL REQUISITE FOR PUBLIC HEALTH EDUCATION OF BEHAVIOURAL REGULATION IN EXERCISE

Public Health Education

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ABSTRACT

Background: Regular physical activity is a key factor in lifetime physical fitness and wellness with bearing to self-determination under behavioural regulation in exercise, which could utilise maximum volume of oxygen, intake and expenditure of calories for healthy lifestyle and reduction in cardiac related diseases. As a result, physical activity under behavioural regulation in exercise plays a key role as a public health factor that relates to human movement that could utilise intake-and-expenditure of calories from macro-and-micro-nutrients for improved healthy lifestyle. This study aimed at scoring measured and evaluated factors of physical activity amongst college students: motivational requisite for public health education of behavioural regulation in exercise.

Methods: Adopted instrument for this survey was Behavioural Regulation in Exercise Questionnaire (**BREQ**). **IBM-SPSSv.23** Statistics analyzed variables, with mean and standard deviation **(M±SD)** age **(28.5±9.5)** with response rate **(100%)** of sampled participants **(N=500),** ranged (**19-38)** years, selected through simple random sampling.

Results: Significant differences were tested at level of ***P<0.05***, with highest scores recorded as follows: External Regulation: males (10.75±2.382), Introjected Regulation: females (7.72±1.918), Identified Regulation: females (7.07±3.428) and Intrinsic Motivation: females (6.44±2.656).

Conclusion and Recommendation: That the study favoured more males than females. That majority of the students responded to identified regulation, followed by external regulation, which however displayed clear evidence of self-determination of behavioural regulation in exercise for lifetime physical activity, fitness and wellness. In recommendation, it was stated that college administrators, clinicians, public health and physical educators should put modalities in place to encourage college students especially undergraduates to offer modules relating to lifetime physical fitness and wellness programmes for healthy lifestyle.

KEYWORDS

Physical Activity, Physical Health Education and Exercise Behavioural Regulation

1. INTRODUCTION

Physical activity being a key factor in lifetime physical fitness and wellness especially for college students is of relevance to public health education and could be related to human movement(s) trajected by musculoskeletal functions, which when undertaken regularly for prolonged period of time from moderate to vigorous devoid of injuries to tissues of muscles, ligaments, tendons, joints and bones, could improve physiological and psychological health with significance to the holistic wellbeing of individuals, which could be more positive, productive, effective, efficient, fruitful and functional if due attention and significant recognition is accorded the teaching and learning of health and physical education in schools and colleges to improve physical activity literacy (*Bebeley et al. 2017a,d,e,f,g; Tucker et al. 2017a,b; Bebeley 2016a,b,c,d)*. Physical activity plays a key role in wellness, which is an aspect of public health and physical education with determinant factors (personal, social and environmental) that could deal with human movement(s) of musculoskeletal functions, intake and expenditure of calories for improved and sustainable physiological and psychosocial fitness and healthy lifestyle (*Bebeley et al. 2017d,e,f,g; Tucker et al. 2017a,b)*. Physical activity as an aspect of performance skill development and workout, could require basic aerobic endurance training for children, adolescents, youths and adults for effective approach in improvement of maximum volume of oxygen for sustainable physical activity and motor fitness skill development, which could be implemented in schools (pre, primary, junior and senior) and colleges especially undergraduates during health and physical education lessons, thereby engaging pupils as well as students in functional movement skills and screening for improvement in physical fitness and motor skill components of speed, agility, reaction time and power, focusing on advantages (pros.), motive, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity during childhood, adolescent, adulthood and old age (*Tucker et al. 2018; Bebeley et al. 2017b,c,d,e,f,g; Tucker et al 2017a,b; Bebeley 2015, Bebeley et al. 2011)*. Sustainable physical activity plays a key role in physical fitness, which is a well-structured, organized, planned and technically executed activity with bearing to circuit training, maximum volume of oxygen, body mass index, intake and expenditure of calories for healthy lifestyle and reduction in cardiovascular related sicknesses and mortality. Physical activity under motor fitness skill could be linked to public health factor that relates to intake and expenditure of calories from macro-and-micro nutrients for improved healthy lifestyle and decrease in cardiovascular related sicknesses and mortality (*Tucker et al. 2017a,b; Bebeley et al. 2017d,e,f,g)*.

Physical activity being a subcategory of physical education (education of and through the physical), could be an educational programme that teaches pupils and students the physique of human movements produced by musculoskeletal systems, which when undertaken regularly from moderate to vigorous could improve not only the physiological, but also psychosocial health, fitness and wellness (intellectual, spiritual and social) of individuals (*Bebeley et al. 2017d,e,f,g; Tucker et al. 2017a,b)*. Physical activity favoured by autonomy in self-determination for wellness and motor fitness skill development rather than rewards, threats and coarse, could help improve greatly motivational level of pupils and students in physical activity, exercise and motor fitness skill development with respect to sustainable future participation growth alongside advantages (pros.), motive, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity, which could be complemented by mandatory institution of programmes, seminars, workshops, group discussions, adopting and allotting enough time to teaching and learning of health and physical education for pupils and students before graduation to help improve and guarantee motivational level in physical activity as one fundamental factor that could help greatly with sustainable future participation in physical activity and motor fitness skill development for children, adolescents, youths as well as adults (*Tucker et al. 2018; Bebeley et al. 2017a,d,e,f,g; Tucker et al. 2017a,b*; *Laggao et al. 2017; Bebeley 2016a,b,c,d; Bebeley et al. 2011)*.

Motivation is a key factor in sustainable physical activity, which could be understood as the science of psychology that deals with internal process (intrinsic motivation) and external process (extrinsic motivation), with inborn tendencies acquired by individuals before birth – innate abilities and environmental tendencies acquired by individuals after birth, that could have the ability, power, focus,

intellect and potential to initiates, ignites, guides, maintains goal-oriented physical activity, fitness, education, wellness and explain emotional, social and cognitive behaviours that activate direction of individual desires, needs and actions, including psychomotor (physique i.e. physical activity), affective (moral i.e. abstinence) and cognitive (intelligence quotient i.e. knowledge acquisition) (*Bebeley et al. 2017f,g; Tucker et al. 2017a,b)*. And in determining individual motivation for physical activity and motor fitness skill development, health professionals i.e. clinicians, public health and physical educators, could use this knowledge to create awareness and develop effective and efficient intervention that could motivate the general public especially children, adolescents, youths and adults to frequently and constantly engage in physical activity for improved fitness, wellness and motor skill development (*Bebeley et al. 2017d,e,f,g; Tucker et al. 2017a,b)*, practice abstinence from eating disorders i.e. anorexia nervosa, bulimia nervosa and binge eating disorders (*Bebeley et al. 2017ci)*, practice non-usage of drugs i.e. cigarette smoking, alcohol consumption and performance enhancing drugs (*Bebeley et al. 2016ciii)*, practice abstinence from diseases associated with unsafe sexual practices i.e. HIV/AIDS, syphilis and gonorrhea (*Bebeley et al. 2016cii)*, focus on knowing and monitoring of vital signs i.e. heart rate, blood pressure and body mass index (*Bebeley et al. 2017cii)*, understand about preventing sport injuries i.e. achilles tendinitis, runner's knee/patellofemoral pain syndrome and shin splints *(Bebeley et al. 2016ci)*, understand about health literacy level of asthma due environmental, physical and medical conditions (*Bebeley 2016c)*, understand about health literacy level of muscle atrophy due physical, medical and exercise factors (*Bebeley 2016b)*, understand about contraindications of muscle weakness due central fatigue, peripheral fatigue and lactic acid (*Bebeley 2016a),* understand health education literacy level of stress due cognitive, emotional and physical factors (*Bebeley 2016d)*, understand physical education literacy level due developmental, humanistic and fitness factors (*Bebeley et al. 2017a)*, understand the measurement level of maximum volume of oxygen consumption *(Bebeley 2015)*, understand the effects of physical education programme on motor fitness of primary school pupils *(Bebeley et al. 2011)* and understand physical literacy level due locomotor-&-body, sending and receiving skills *(Laggao et al. 2017)*, which not only increase advantages (pros.), motive, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity, but also help individuals, communities, environment and the public to control and reduce lifestyle-related sicknesses and mortality (*Tucker et al. 2018; Bebeley et al. 2017b,c,d,e,f,g; Tucker et al. 2017a,b)*.

This study aimed at scoring measured and evaluated factors of physical activity amongst college students: motivational requisite for public health education of behavioural regulation in exercise by maintaining healthy lifestyle, fitness skill development and reducing cardiovascular related sicknesses and mortality amongst college students, cased at Njala University and Eastern Polytechnic in Sierra Leone.

2. MATERIALS AND METHODS

Respondents

The survey sampled participants of (**N=500**), with mean and standard deviation (**M±SD**) age (**28.5±9.5**) with **100%** response rate, age ranged (1**9-38)** years, selected mainly amongst college students, from two tertiary institutions, through a mechanism of simple random sampling (**SRS**).

Instrumentation

Adopted survey instrument include: Behavioural regulation in exercise questionnaire (**BREQ**) with evidence of previous research supporting its validity and reliability by examining the psychometric properties of the prediction of behavioural regulation in exercise provided for by (*Wilson et al. 2002)*.

Procedure

Participants were each tested and scored within their respective college campuses alongside the instructions provided for by the survey instrument, using application software census survey entry and processing (**CSEntry.** and **CSPro.**) installed in smart phones, tablets and computers.

Analysis

Comparative Mean, Descriptive Statistics, Analysis of Variance Test, t-Test, Chi-Square Tests and Partial Correlations from **IBM-SPSSv.23** Statistics were used to compute, analyze and compere survey findings at significant value ***P<0.05***, with Cronbach's Alpha Reliability **(0.648)**.

3. RESULTS

Key differences observed in descriptive statistics tests of behavioural regulation in exercise by sex, were recorded with external regulation scoring highest geometric and arithmetic mean of males (10.34 and 10.75±2.382) and females (9.42 and 10.05±2.943) in **tables 1&2.**

Table 1: Descriptive Statistics – Behavioural Regulation in Exercise by Sex (N=500)

Behavioural Regulation in Exercise		Descriptive Statistics Test			
		External Regulation	*Introjected Regulation*	*Identified Regulation*	*Intrinsic Motivation*
Males	n	392	392	392	392
	%	78.4	78.4	78.4	78.4
	Geometric Mean	10.34	6.57	5.29	5.68
Females	n	108	108	108	108
	%	21.6	21.6	21.6	21.6
	Geometric Mean	9.42	7.39	6.33	6.00

Table 2: Descriptive Statistics - Behavioural Regulation in Exercise by Sex (N=500)

	Descriptive Statistics Test					
Behavioural Regulation in Exercise	*Sex*	*n*	*Mean*	*Standard Deviation*	*95%-CI-Mean*	
					Lower	*Upper*
External Regulation	Males	392	10.75	2.382	10.52	10.99
	Females	108	10.05	2.943	9.48	10.61
Introjected Regulation	Males	392	7.09	2.363	6.85	7.32
	Females	108	7.72	1.918	7.36	8.09
Identified Regulation	Males	392	5.68	2.454	5.44	5.93
	Females	108	7.07	3.428	6.42	7.73
Intrinsic Motivation	Males	392	5.92	1.892	5.73	6.11
	Females	108	6.44	2.656	5.94	6.95

Note: CI=Confidence Interval

Key differences were observed in ANOVA, t-test, chi-square tests and correlations of behavioural regulation in exercise by sex with highest scores as follows: Identified Regulation F(22.567), t(-4.751) followed by External Regulation F(6.686), t(2.586), which are significant only at 0.05 level, and that only introjected, identified and intrinsic motivation recorded some form of positive correlations in **tables 3,4,5&6.**

Table 3: Analysis of Variance - Behavioural Regulation in Exercise by Sex (N=500)

Behavioural Regulation in Exercise		Analysis of Variance Test				
		Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Sex	External Regulation	42.234	1	42.234	6.686	.010
	Introjected Regulation	34.194	1	34.194	6.609	.010
	Identified Regulation	163.689	1	163.689	22.567	<.001
	Intrinsic Motivation	23.434	1	23.434	5.418	.020

Table 4: Equality of Means - Behavioural Regulation in Exercise by Sex (N=500)

Behavioural Regulation in Exercise		Equality of Means Test					
		t	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95%-CI*	
						Lower	*Upper*
Sex	External Regulation	2.586	498	.010	.706	.170	1.243
	Introjected Regulation	-2.571	498	.010	-.635	-1.121	-.150
	Identified Regulation	-4.751	498	<.001	-1.390	-1.965	-.815
	Intrinsic Motivation	-2.328	498	.020	-.526	-.970	-.082

Table 5: Pearson Chi-Square - Behavioural Regulation in Exercise by Sex (N=500)

Behavioural Regulation in Exercise		Pearson Chi-Square Tests		
		Chi-Square	*df*	*Sig.*
Sex	External Regulation	18.572	8	.017*

	Introjected Regulation	13.698	6	.033*
	Identified Regulation	38.849	8	<.001*
	Intrinsic Motivation	17.642	7	.014*
Chi-square-statistic is significant at .05 level.				

Table 6: Partial Correlations - Behavioural Regulation in Exercise by Sex (N=500)

Behavioural Regulation in Exercise			Partial Correlations Test			
			External Regulation	*Introjected Regulation*	*Identified Regulation*	*Intrinsic Motivation*
Sex	External	Correlation	1	-.079	-.540	-.635
		Sig. (2-tailed)	.	.076	<.001	<.001
	Introjected	Correlation	-.079	1	.404	.192
		Sig. (2-tailed)	.076	.	<.001	<.001
	Identified	Correlation	-.540	.404	1	.502
		Sig. (2-tailed)	<.001	<.001	.	<.001
	Intrinsic	Correlation	-.635	.192	.502	1
		Sig. (2-tailed)	<.001	<.001	<.001	.

4. DISCUSSION

Physical activity (PA) amongst college students behavioural regulation in exercise plays a key role in self-determination (external regulation, introjected regulation, identified regulation and intrinsic motivation) for sustainable PA, which according to *(Bebeley et al. 2017c)*, is a subset of physical health education (PHED) for college students lifetime physical fitness and wellness. Under identified regulation, physical activity of college students behavioural regulation in exercise shows that, greater majority of students do PA because of personal reasons (identified regulation), which according to (*Bebeley et al. 2017c)*, is a motivational factor for PA. Under external regulation, physical activity of college students behavioural regulation in exercise shows that, majority of students do PA because of outside pressure (external regulation), which according to (*Bebeley et al. 2017c)*, is a motivational factor for PA. Under intrinsic motivation, physical activity of college students behavioural regulation in exercise shows that, some students do PA because of internal stimulus (intrinsic motivation), which according to (*Bebeley et al. 2017c)*, is a motivational factor for PA. Under introjected regulation, physical activity of college students behavioural regulation in exercise shows that, some students do PA because of personal feelings (introjected regulations), which according to (*Bebeley et al. 2017c)*, is a motivational factor for PA.

5. CONCLUSION AND RECOMMENDATION

That the study favoured more males than females. That majority of students responded to identified regulation, followed by external regulation, intrinsic motivation and introjected regulation, which however displayed evidence of self-determined motivation of behavioural regulation in exercise for lifetime physical activity and wellness. It was recommended that, college administrators, clinicians, public health and physical educators should engage in encouraging college students especially undergraduates to offer modules relating to lifetime physical activity, fitness and wellness programmes for prevention of cardiovascular related diseases and for healthy lifestyle.

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