

Motivational Level of College Students' in Physical Activity: A Concern for Public Health Education

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Abstract: Background: Physical activity can be expressed as a public health factor or determinant (personal, social and environmental) that relates to human movement skills of the musculoskeletal system that requires the intake and expenditure of kilocalories for improved wellness and healthy lifestyle, which prevents and minimizes cardiovascular related diseases, mortality and morbidity amongst college students. This study only aimed at scoring the measured and evaluated factors under motivational level of college students' in physical activity: a concern for public health education. Methods: Behavioural Regulation in Exercise Questionnaire (BREQ), Motives for Physical Activity Questionnaire (MPAQ), Decisional Balance Scale Questionnaire (DBSQ) and Physical Exercise Self-Efficacy Scale Questionnaire (PESEQ) were adopted as survey instruments. The variables were analyzed using IBM SPSS v.23 Statistics, with sampled participants of (N=500); mean and standard deviation (M±SD) age of (28.5±9.5) with a response rate of (100%), ranged from (19-38) years, selected using a process of simple random sampling method. Results: A significant difference was recorded regarding the variables tested with highest scores displayed as follows: under behavioural regulation in exercise, intrinsic motivation scored [t = 2.496]; under motives for physical activity, competence scored [t = 9.332]; under decisional balance scale, disadvantages (cons) scored [t = 5.419] and under physical exercise self-efficacy scale, when I am busy (self-efficacy) scored [t = -.079] in tables 2, 4, 6 & 8. The results were tested @ significance level p < 0.05. Conclusion and Recommendation: In the final analysis, the greater majority of respondents recorded significant values with respect to intrinsic motivation, competence, disadvantages and when I am busy. It was recommended that, a mandatory course in physical health education be instituted in schools and colleges to help educate pupils and students about physical activity and therapy before graduation to help maximize motivational level and minimize/prevent cardiovascular related diseases, morbidity and mortality.

Keywords: Physical Activity, Public Health Education, Physical Therapy and Motivation

1. Introduction

The basic aerobic endurance training (BAET) that will be somehow sufficient for children, adolescents and adults for effective approach in the improvement of maximum volume of oxygen for sustainable physical activity referencing the advantages, motives, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity for a better physical activity status, is by applying the endurance high intensity interval training, Bebeley (2015), which can be implemented in schools and colleges during physical education and literacy lessons, thereby leading to the exposure of pupils as well as students to weight designed physical education programmes i.e. physical literacy, health and physical education literacy, Bebeley (2016) and nutrition education, by helping them improve their motor fitness level components that include speed, agility, reaction time and power, Bebeley (2015), with regards sustainable future participation in physical activity with special focus on the advantages (pros.), motives, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity for a better physical activity status during adulthood and old age, Bebeley et al. (2017). And that by adopting and allotting enough time to the teaching and learning of physical literacy/education activities, Laggao et al. (2017); Bebeley (2016); Bebeley et al. (2011), during and outside school or college hours, will help greatly with sustainable future participation in physical activity, Bebeley et al. (2017). With regards attention, it is but vital to give adequate attention to the teaching and learning of physical education

activities, Bebeley et al. (2017), conducting seminars, training workshops and holding focus group discussions amongst pupils and students in the areas of physical fitness, activity and or exercise, health education, Bebeley (2016), knowledge about the non-usage of drugs like cigarette smoking, alcohol consumption and performance enhancing drugs, and wellness literacy with respect to ageing, Bebeley et al. (2016), for sustainable involvement and motivation in physical activity in schools and colleges, is of utmost importance for effective growth and development of physical activity for adolescents and adults, Bebeley et al. (2017).

Physical activity can be expressed as a human kinetics or movement(s) produced or trajectory by the musculoskeletal systems, which when undertaken regularly for a prolonged period of time (PPT) from moderate to vigorous physical activities (MVPA) devoid of injuries to the tissues of the muscles, ligaments, tendons, joints and bones, improves physiological and psychological health and wellness, Bebeley et al. (2017). Physical activity can also be expressed as a human kinetics of the musculoskeletal systems that requires the use of energy for improved physiological and psychological wellness and healthy lifestyle, which is that aspect of public health education with determinant factors (i.e. personal, social and environmental) that deals with human kinetics of the musculoskeletal systems that requires both energy or calorie intake and expenditure for improved and sustainable physiological and psychosocial fitness, wellness and healthy lifestyle, Bebeley et al. (2017).

Physical activity is also a public health factor that relates to human movement patterns and structures of the musculoskeletal systems that requires the intake and expenditure of kilocalories for improved wellness and healthy lifestyle, which prevents cardiovascular related diseases, mortality and morbidity, *Bebeley et al. (2017)* and it is of significance to the holistic wellbeing of an individual, which can be more productive, effective and efficient if due attention is given to the teaching and learning of health and physical education in schools, *Bebeley (2016)* and colleges to improve its literacy level, and by implication also includes physical activity, *Bebeley et al. (2017)*. Physical activity being a sub category of physical education (i.e. an education of the physical and through the physical approach), is an educational programme that teaches pupils and students, the physique of human kinetics/movements, produced by the musculoskeletal systems (i.e. systems of the muscles and skeletons), which when undertaken regularly from moderate to vigorous physical activity (MVPA) improves not only the physiological, but also the psychosocial health, *Bebeley et al. (2017)*. Autonomy in self-determination to engage in physical activity rather than rewards and threats, will help improve greatly the motivational level of school pupils and college students in physical activity with respect to sustainable future participation growth in line with the advantages (pros.) motives, behavioural regulation and self-efficacy regarding physical activity, *Bebeley et al. (2017)*. Therefore, a mandatory institution of a programme or course in physical literacy or education for all college students before graduation will help improve and guarantee motivational level in physical activity, which is the most prominent factor that stimulates and maintains individuals' participation in physical activity, *Bebeley et al. (2017)*. And by determining the individuals' motivation for physical activity, health professionals and clinicians like physiotherapists, physical and public health educators, can use this knowledge to create awareness and develop effective and efficient intervention to motivate the general public to frequently and constantly engage in physical activity, *Bebeley et al. (2017)*, practice the abstinence knowledge from eating disorders, *Bebeley et al. (2017)*, practice the knowledge about the non-usage of drugs, *Bebeley et al. (2016)*, practice the knowledge about abstinence from diseases associated with unsafe sexual practices, *Bebeley et al. (2016)*, focus on knowledge about knowing and monitoring of vital signs, *Bebeley et al. (2017)*, and have knowledge about preventing sport injuries, *Bebeley et al. (2016)*, thereby not only increasing the advantages (pros.) and self-efficacy of physical activity, but also help individuals, communities and the environment as a whole to reduce lifestyle-related illnesses, mortality and morbidity, *Bebeley et al. (2017)*.

Motivation on the other hand can be expressed as the internal process or approach (intrinsic motivation) and as an external process or approach (extrinsic motivation) that possesses both the factors of nature i.e. inborn tendencies (tendencies acquired by an individual before birth – innate abilities) and nurture i.e. environmental tendencies (tendencies acquired by an individual after birth in an environment), *Bebeley et al. (2017)*, that has the ability and potential to initiate, ignite, guide, maintain goal-oriented physical activity and explain behaviours that involves the

holistic forces i.e. emotional force, social force and cognitive force that activate the behavioural direction of an individual's desires, needs and actions, which includes the psychomotor learning (i.e. the physique such as physical activity), affective learning (i.e. the moral such as abstinence) and cognitive learning (i.e. the intelligence quotient such as knowledge), *Bebeley et al. (2017)*.

This survey only aimed at scoring the measured and evaluated factors under motivational level of college students' in physical activity: a concern for public health education in maintaining healthy lifestyle, wellness, functional movement skills and sound mind in a healthy body amongst college students, based at Njala University and Eastern Polytechnic in Sierra Leone.

2. Methodology

Respondents

The survey was mainly carried out on sampled respondents of five hundred (**N=500**), which were selected mainly from undergraduate students of the two tertiary institutions with a mean and standard deviation (**M±SD**) age of (**28.5±9.5**), with (**100%**) response rate, ranged from (**19-38**) years, through a process of simple random sampling method.

Instrumentation

Behavioural regulation in exercise questionnaire (**BREQ**) with evidence of previous research supporting its validity and reliability with prediction of motives for exercise behaviour provided for by *Wilson et al. (2002)*; *Mullan et al. (1997)*, motives for physical activity questionnaire (**MPAQ**) with evidence of reliability and validity provided for by *Frederick et al. (1993)*, showing internal consistency (alphas above .87) and differential relations with physical activities and associated outcomes, decisional balance scale questionnaire (**DBSQ**) with evidence of validity, internal consistency and test-retest reliability provided for by *Plotnikoff et al. (2001)* and physical exercise self-efficacy questionnaire (**PESESQ**) with good item-total correlations ranged from (**r=0.4 to 0.76**) and with excellent internal consistency of (**Cronbach's alpha=0.88**) and validity supported by a moderate correlation with exercise intention (**r=0.33**) and physical activity behaviour (**r=0.39**) at a 6-month follow-up, *Schwarzer et al. (2005)*.

Procedure

The sampled participants were each interviewed on their respective college campuses using the on the spot face-to-face approach in alliance with the instructions provided for by the survey instruments, using tablets and smart phones installed with census survey entry (**CSEntry**) and census survey processing (**CSPro.**) application software.

Analysis

The data collected through smart phones, tablets and in some cases computers with installed census survey entry (**CSEntry**) and census survey processing (**CSPro.v.6**) software were merged and exported to (**IBM SPSSv.23**) for analysis. Mann-Whitney U Test and Independent Samples Test, were used to compute, tabulate, analyze, compare, interpret and record the results of the findings within the

scope of the survey. The results were tested at a significant value $P < 0.05$.

3. Results

In Mann-Whitney U Test by institution and sex, Njala University respondents scored higher \bar{X} rank with respect to **External Regulation** [\bar{X} rank = 268.04], **Introjected Regulation** [\bar{X} rank = 272.42] and **Intrinsic Motivation** [\bar{X} rank = 276.51], compared to Eastern Polytechnic respondents. Also, female respondents scored higher \bar{X} rank with respect to **Introjected Regulation** [\bar{X} rank = 275.09], **Identified Regulation** [\bar{X} rank = 288.98] and **Intrinsic Motivation** [\bar{X} rank = 260.84], compared to male respondents. And some form of significance value was recorded under t-test for equality of means as slated in tables 1 and 2.

Table 1: Mann-Whitney U Test for Behavioural Regulation in Exercise (BRE) by Institution and Sex (N=500)

Behavioural Regulation in Exercise	External Regulation		Introjected Regulation		Identified Regulation		Intrinsic Motivation		
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	
Institution									
NU (n=250)	268.04	67009.5	272.42	68106.0	243.67	60916.5	276.51	69127.5	
EP (n=250)	232.96	58240.5	228.58	57144.0	257.33	64333.5	224.49	56122.5	
P (2-tailed)	.001		≤ .001		.259		≤ .001		
Sex									
M (n=392)	257.03	100754.0	243.73	95540.5	239.90	94040.5	247.65	97079.5	
F (n=108)	226.81	24496.0	275.09	29709.5	288.98	31209.5	260.84	28170.5	
P (2-tailed)	.022		.030		.001		.351		

Table 2: Independent Samples Test for BRE between Institution and Sex (N=500)

Behavioural Regulation in Exercise	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	95% CI	
				Lower	Upper
Between Institution (Combined)					
External Regulation	2.202	498	.028	.054	.938
Introjected Regulation	2.397	498	.017	.088	.888
Identified Regulation	-.878	498	.381	-.700	.268
Intrinsic Motivation	2.496	498	.013	.099	.829
Between Sex (Combined)					
External Regulation	2.586	498	.010	.170	1.243
Introjected Regulation	-2.571	498	.010	-1.121	-.150
Identified Regulation	-4.751	498	≤ .001	-1.965	-.815
Intrinsic Motivation	-2.328	498	.020	-.970	-.082

In Mann-Whitney U Test by institution and sex, Njala University respondents scored higher \bar{X} rank with respect to **Interest/Enjoyment Motives** [\bar{X} rank = 266.94], **Competence Motive** [\bar{X} rank = 301.25] and **Social Motives** [\bar{X} rank = 276.16], compared to Eastern Polytechnic respondents. Also female respondents scored higher \bar{X} rank with respect to **Interest/Enjoyment Motives** [\bar{X} rank = 277.87], **Competence Motive** [\bar{X} rank = 287.37], **Appearance Motives** [\bar{X} rank = 291.86], **Fitness Motives** [\bar{X} rank = 302.70] and **Social Motives** [\bar{X} rank = 255.53] compared to male respondents. And some form of significance value was recorded under t-test for equality of means as slated in tables 3 and 4.

Table 3: Mann-Whitney U Test for Motives for Physical Activity (MPA) by Institution and Sex (N=500)

Motives for Physical Activity	Enjoyment Motives		Competence Motives		Appearance Motives		Fitness Motives		Social Motives		
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	
Institution											
NU (n=250)	266.94	66734.5	301.25	75311.5	225.03	56258.5	234.99	58746.5	276.16	69039.5	
EP (n=250)	234.06	58515.5	199.75	49938.5	275.97	68991.5	266.01	66503.0	224.84	56210.5	
P (2-tailed)	.004		≤ .001		≤ .001		.006		≤ .001		
Sex											
M (n=392)	242.96	95240.5	240.34	94214.0	239.10	93729.0	236.12	92558.5	249.11	97652.5	
F (n=108)	277.87	30009.5	287.37	31036.0	291.86	31521.0	302.70	32691.5	255.53	27597.5	
P (2-tailed)	.011		.002		.001		≤ .001		.668		

Table 4: Independent Samples Test for MPA between Institution and Sex (N=500)

Motives for Physical Activity	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	95% CI	
				Lower	Upper
Between Institution (Combined)					
Interest/Enjoyment	.771	498	.441	-.390	.894
Competence	9.332	498	≤ .001	3.862	5.922
Appearance	-1.747	498	.081	-1.317	.077

Fitness	-1.046	498	.296	-.933	.285
Social	4.408	498	≤.001	.530	1.382
Between Sex (Combined)					
Interest/Enjoyment	-2.976	498	.003	-1.945	-.398
Competence	-2.848	498	.005	-3.296	-.605
Appearance	-5.035	498	≤.001	-2.954	-1.296
Fitness	-5.669	498	≤.001	-2.787	-1.352
Social	-.462	498	.644	-.652	.404

Institution and sex under Mann-Whitney U Test, Eastern Polytechnic respondents scored higher \bar{x} rank with respect to **Advantages (Pros.)** [\bar{x} rank = 279.22], as compared to Njala University respondents. Also, female respondents

scored higher \bar{x} rank with respect to **Advantages (Pros.)** [\bar{x} rank = 303.73], as compared to male respondents. And some form of significance value was recorded under t-test for equality of means as slated in **tables 5 and 6**.

Table 5: Mann-Whitney U Test for Decisional Balance Scale (DBS) by Institution and Sex (N=500)

Decisional Balance Scale		Advantages (Pros.)		Disadvantages (Cons.)	
		Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks
Institution					
	NU (n=250)	221.78	55444.5	286.51	71627.5
	EP (n=250)	279.22	69805.5	214.49	53622.5
	P (2-tailed)	≤.001		≤.001	
Sex					
	M (n=392)	235.83	92447.0	256.79	100662.0
	F (n=108)	303.73	32803.0	227.67	24588.0
	P (2-tailed)	≤.001		.037	

Table 6: Independent Samples Test for Decisional Balance Scale (DBS) between Institution and Sex (N=500)

Decisional Balance Scale	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	95% CI	
				Lower	Upper
Between Institution (Combined)					
Advantages (Pros.)	-2.382	498	.018	-1.358	-.130
Disadvantages (Cons.)	5.419	498	≤.001	1.022	2.186
Between Sex (Combined)					
Advantages (Pros.)	-5.488	498	≤.001	-2.762	-1.306
Disadvantages (Cons.)	2.661	498	.008	.256	1.700

With Mann-Whitney U Test by institution and sex, Eastern Polytechnic respondents scored higher \bar{x} rank with respect to **Self-Efficacy** [\bar{x} rank = 252.44] compared to Njala University respondents. Also, female respondents scored higher \bar{x} rank with respect to **Self-Efficacy** [\bar{x} rank = 300.49] compared to male respondents. And no form of significance value was recorded under t-test for equality of means as slated in **table 7 and table 8** accordingly.

Table 7: Mann-Whitney U Test for Physical Exercise Self-Efficacy Scale (PESES) by Institution and Sex (N=500)

Physical Exercise Self-Efficacy		Self-Efficacy	
		Mean Rank	Sum of Ranks
Institution			
	Njala University (n=250)	248.56	62140.5
	Eastern Polytechnic (n=250)	252.44	63109.5
	P (2-tailed)	.759	
Sex			
	Male (n=392)	236.73	92797.5
	Female (n=108)	300.49	32452.5
	P (2-tailed)	≤.001	

Table 8: Independent Samples Test for Physical Exercise Self-Efficacy Scale (PESES) between Institution and Sex (N=500)

Physical Exercise Self-Efficacy	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	95% CI	
				Lower	Upper
Between Institution (Combined)					
Self-Efficacy	-.079	498	.937	-.620	.572
Between Sex (Combined)					
Self-Efficacy	-4.129	498	≤.001	-2.210	-.785

4. Discussion

Looking at behavioural regulation in exercise, a good number of the respondents especially from Njala University responded more positively to intrinsic motivation, as the highest level of self-determination for physical activity. This research agrees with *Bebeley et al. (2017)* survey about the behavioural regulation in exercise for college students' level of motivation in physical activity, which state that the greater majority of the respondents responded more in favour of intrinsic motivation as a self-determinant factor for physical activity.

Also, with motives for physical activity, a good number of the respondents especially from Njala University responded more positively to interest/enjoyment and competence motives as the highest level of self-determination for physical activity. This research again agrees with *Bebeley et al. (2017)* survey about the motives for physical activity for college students' level of motivation in physical activity, which state that the greater majority of the respondents responded more in favour of interest/enjoyment and competence motives as self-determinant factor(s) for physical activity.

Under decisional balance scale for physical activity, the greater majority of the respondents responded in favour of the disadvantages (cons.) of the decision(s) to exercise, meaning lesser determination and readiness to engage in physical activity. This research is in agreement with Bebeley et al. (2017) survey regarding decisional balance scale for college students' level of motivation in physical activity, which states that the greater majority of respondents recorded more positive values regarding the disadvantages (cons.) of the decision(s) to exercise, revealing also a lesser determination by respondents to engage in physical activity.

With regards physical exercise self-efficacy for physical activity, the greater majority of the participants responded more to "I can manage to carry out my exercise intentions even when I am busy", showing that amidst all busy schedules including study pressure, respondents were determined to engage in physical activity. This research also agrees with Bebeley et al. (2017) survey regarding physical exercise self-efficacy for college students' level of motivation in physical activity, which states that the greater majority of respondents scored more positive values with respect to "I can manage to carry out my exercise intentions even when I am busy", indicating that amidst all busy schedules including study pressure, respondents were determined to engage in physical activity, which is a positive factor in the domain of physical therapy.

5. Conclusion and Recommendation

In the final analysis, it was concluded that the greater majority of respondents from both institutions, clearly responded more in favour of intrinsic motivation and competence motives in contrast to male and female respondents under sex. Also, greater majority of the respondents mostly from Njala University responded more positively to competence, followed by interest/enjoyment regarding motives for physical activity, and that more females responded positively to fitness and appearance motives. However, it was concluded that the greater majority of respondents from both institutions, male and female clearly responded more in favour of the disadvantages (cons.) for decisional balance scale under physical activity and showed no significant values for physical exercise self-efficacy scale when combined and compared.

It was recommended that a mandatory course in health and physical education be instituted in schools and colleges to help educate pupils and students especially in the junior high schools, senior high schools and college undergraduates about physical activity before graduation to help maximize motivational level and minimize/prevent cardiovascular related diseases, morbidity and mortality, which is a concern for public health educators.

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7. Conflict of Interests

The authors declared no conflict of interests regarding the publication of this manuscript.

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