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BEHAVIOURAL REGULATION IN EXERCISE FOR COLLEGE STUDENTS' LEVEL OF MOTIVATION IN PHYSICAL ACTIVITY

Physical Education

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ABSTRACT

Background: Physical activity is any bodily movement produced by skeletal muscles that requires energy expenditure. This study only aimed at measuring, evaluating and scoring behavioural regulation in exercise for college students' level of motivation in physical activity.
Methods: Behavioural Regulation in Exercise Questionnaire (**BREQ**), was adopted as research instrument. The variables were analyzed using **IBM-SPSSv.23** Statistics, with a sampled size of **500** students, a mean and standard deviation age of [**28.5±9.5]** ranged from (**19-38)** years, were selected using simple random sampling with a response rate of 100%.
Results: The results showed a significant difference for all tested variables with **intrinsic motivation** scoring highest [F = 42.530 with sig. (≤.001), t = 6.521 with 2-tailed sig. (≤.001)] and **identified regulation** scoring lowest [F = 3.172 with sig. (.076), t = -1.781 with 2-tailed sig. (.076)] in tables 3,4&5. The results were tested @ significance of ***p<0.05***.
Conclusion and Recommendation: In conclusion, greater majority of respondents responded more in favour of intrinsic motivation. However, autonomy in self-determination rather than rewards and threats to help improve the motivational level of college students in physical activity, was strongly recommended**.**

KEYWORDS:

Physical Activity, Behavioural Regulation, Exercise and Motivation

INTRODUCTION

According to *World Health Organization (2011)*, physical activity is an essential aspect of maintaining a healthy lifestyle. The effects of physical activity as a health-protective behaviour have become clearer, as *WHO (2011)* defines physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure", which should not be confused with the term exercise, as it is only a subcategory of physical activity, which is "planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one of more components of physical fitness is the objective". Thus, physical activity does include exercise; which also includes a larger realm of activities that may be done on a daily basis such as household chores, play, work, active transportation or recreation.

The *CDC (2008)* outlined physical activity parameters that are necessary to sustain a healthy lifestyle. Behaviours include moderate-intensity physical activity for a minimum of 150 minutes per week or 75 minutes of vigorous-intensity activity per week and muscle strengthening activities that increase strength and endurance of all major muscle groups at least 2 days per week. Moderate intensity activities include walking, dancing, swimming, jumping rope, etc. Vigorous-intensity physical activity (PA) may include brisk walking, running, cycling, aerobics, swimming, or competitive sports. Muscle strengthening activities are not to be included in minimum duration requirements for maintaining or improving health, *CDC (2008).* The level of effort required by a person to do physical activity is called relative intensity. When measuring intensity of physical activity, it is useful to pay attention to how the activity affects heart rate and breathing *CDC (2008).* The talk test is a simple way to measure relative intensity. If an individual is doing moderate-intensity activity, they will be able to talk but not sing during the activity. If an individual is doing vigorous-intensity activity, they will not be able to say more than a few words without pausing for a breath, *CDC (2008).* Levels of intensity may depend on previous experience with the activity or their relative level of fitness, *WHO (2011).* The focus of this study will be physical activity because it is a central aspect of maintaining a healthy lifestyle. Physical benefits of regular physical activity include reduced risk of heart disease, diabetes, high blood pressure, certain cancers, depression, anxiety and premature death, *NHLBI (2011).* In addition, regular physical activity helps build and maintain healthy bones, muscles and joints and aspects of overall psychological well-being, *CDC (2008).*

Physical education as an umbrella term for physical activity, on the other hand is an educational course related to the physique of the human body, which encourages psychomotor learning in a play or movement exploration setting to promote health, which is very important to students' overall well-being, *Anderson (1989); Bebeley et al. (2017).* Physical education can also be linked to developmental factors like opportunity for holistic development, competition, socialization, integration of experience, society and social change, and self-actualization, *Bebeley et al. (2017)*; it can also be linked to humanistic factors like individual uniqueness, sense of community, active playful spirit, stages of development in self-direction, expanding self-awareness and social changes and preparation for society, *Bebeley et al. (2017)*; and it can be linked to fitness factors like unique contribution of health, skills in activities with health benefits, commitment to regular exercise, component of health-related fitness, knowledge and activities related to fitness and disciplinary mastery, *Bebeley et al. (2017)*. However, giving due attention to the teaching and learning of physical education in schools and colleges will help improve the literacy level of physical education, which by implication also includes physical activity, *Bebeley et al. (2017)*.

This study only aimed at measuring, evaluating and scoring behavioural regulation in exercise (BRE) for college students' level of motivation in physical activity, cased at two selected tertiary institutions (Njala University and Eastern Polytechnic) in Sierra Leone.

METHODOLOGY

Participants

The research was conducted mainly on undergraduate college students with a sampled size of five hundred (**n=500**), a mean and standard deviation age of [**28.5±9.5]** ranged from (**19-38)** years, were selected through a process of simple random sampling with a response rate of 100%.

Instrument

Behavioural Regulation In Exercise Questionnaire (**BREQ**) was used to measure, evaluate and score the level of self-determination for physically active. It is a fifteen-item questionnaire that measures extrinsic and intrinsic motivation to exercise, *Mullan, Markland and Ingledew (1997)*. Previous research has supported its validity and reliability, predicting motives of exercise behaviour, *Wilson, Rodgers and Fraser (2002)*.

Procedure

The participants were each questioned on the spot for evaluation and scoring purposes as per the instructions of the research instrument, using census survey processing (**CSPro.**) and census survey entry (**CSEntry**) data input, collection and analysis application software via the use of smart phones and tablets, on their respective college campuses and locations within the country.

Analysis

Descriptive Statistics, Frequency, Cross Tabulation, Pearson Chi-Square Statistics Test (**Pearson χ^2 test**), Comparative Mean, Analysis of Variance (**ANOVA**) and Independent Sample Test, **from IBM-SPSSv.23 Statistics** were used to compute, tabulate, analyze, compere and record the results of the finding within the scope of the survey, using a significant value of ***P<0.05***.

RESULTS

The demographic mean and standard deviation for weight (**69.05±10.908**) and height (**6.23±.596**) of participants from Eastern Polytechnic (EP) is a little higher compared to the weight (**62.04±13.497**) and height (**6.07±.552**) of participants from Njala University (NU). The comparative factors measured, evaluated and scored under behavioural regulation in exercise by institution, Njala University scored higher with intrinsic motivation and identified regulation compared to Eastern Polytechnic (EP). However, Eastern Polytechnic (EP) also scored higher with introjected and external regulations compared to Njala University (NU) in response to **"(very true)"**. In all, only intrinsic motivation, identified and external regulations recorded some form of significance at a level of (**p<.05**) in the **Pearson χ^2 test** as slated in **tables 1 and 2**.

Table 1: Behavioural Regulation in Exercise by Institution (n=500)

Behavioural Regulation in Exercise	Njala University			Eastern Polytechnic		
	Very True	Fairly True	Not True	Very True	Fairly True	Not True
External Regulation						
Other people say I should	25	23	202	34	41	175
My friend/family/spouse say I should	25	21	204	33	31	186
Others will not be pleased with me if I don't	24	24	202	34	29	187
I feel under pressure to exercise by friends/family	23	26	201	36	37	177
Introjected Regulation						
I feel guilty when I don't exercise	47	24	179	70	38	142
I feel ashamed when I miss an exercise session	47	22	181	50	50	150
I feel like failure when haven't exercised a while	64	21	165	66	45	139
Identified Regulation						
I value the benefits of exercise	196	16	38	171	36	43
It is important to me to exercise regularly	199	14	37	181	27	42
I think effort is important in regular exercise	200	12	38	192	22	36
I get restless if I don't exercise regularly	141	17	92	137	30	83
Intrinsic Motivation						
I want to have fun	44	15	191	102	25	123
I enjoy my exercise sessions	218	8	24	208	21	21
I find exercise a pleasurable activity	216	9	25	211	19	20
I get satisfaction from participating in exercise	219	8	23	214	15	21

Table 2: Pearson Chi-Square Statistics for Behavioural Regulation in Exercise [n=500]

Behavioural Regulation in Exercise	Pearson Chi-Square Tests		
	Chi-square	df.	Sig.
External Regulation			
Other people say I should	8.369	2	.015*
My friend/family/spouse say I should	3.857	2	.145
Others will not be pleased with me if I don't	2.774	2	.250
I feel under pressure from friend/family to exercise	6.309	2	.043*
Introjected Regulation			
I feel guilty when I don't exercise	11.947	2	.003*
I feel ashamed when I miss an exercise session	13.885	2	.001*
I feel like a failure when I haven't exercised in a while	10.982	2	.004*
Identified Regulation			
I value the benefits of exercise	9.704	2	.008*
It is important to me to exercise regularly	5.291	2	.071
I think effort is important in regular exercise	3.158	2	.206
I get restless if I don't exercise regularly	4.116	2	.128
Intrinsic Motivation			
I want to have fun	40.267	2	≤.001*
I enjoy my exercise sessions	6.262	2	.044*
I find exercise a pleasurable activity	4.186	2	.123
I get pleasure and satisfaction from participating in exercise	2.279	2	.320
**** The Chi-square statistics is significant at .05 levels.***			

With analysis of variance and independent samples test for behavioural regulation in exercise by institution, the highest scores recorded for **external regulation** [F = 5.909 with sig. (.015), t = 2.431 with 2-tailed sig. (.015)], **introjected regulation** [F = 10.316 with sig. (.001), t = 3.212 with 2-tailed sig. (.001)], **identified regulation** [F = 3.172 with sig. (.076), t = -1.781 with 2-tailed sig. (.076)] and **intrinsic motivation** [F = 42.530 with sig. (≤.001), t = 6.521 with 2-tailed sig. (≤.001)], as slated in **tables 3, 4 and 5** respectively.

Table 3: Comparative Mean for Behavioural Regulation in Exercise by Institution (n=500)

Behavioural Regulation in Exercise	Njala University			Eastern Polytech.		
	N	Mean	SD	N	Mean	SD
External Regulation						
Other people say I should	250	2.71	.639	250	2.56	.721
My friend/family/spouse say I should	250	2.72	.636	250	2.61	.710

Others will not be pleased with me if I don't	250	2.71	.631	250	2.61	.715
I feel under pressure to exercise by friends/family	250	2.71	.625	250	2.56	.732
Introjected Regulation						
I feel guilty when I don't exercise	250	2.53	.792	250	2.29	.876
I feel ashamed when I miss an exercise session	250	2.54	.792	250	2.40	.802
I feel like failure when haven't exercised a while	250	2.40	.869	250	2.29	.859
Identified Regulation						
I value the benefits of exercise	250	1.37	.734	250	1.49	.772
It is important to me to exercise regularly	250	1.35	.725	250	1.44	.765
I think effort is important in regular exercise	250	1.35	.731	250	1.38	.724
I get restless if I don't exercise regularly	250	1.80	.947	250	1.78	.915
Intrinsic Motivation						
I want to have fun	250	2.59	.772	250	2.08	.947
I enjoy my exercise sessions	250	1.22	.606	250	1.25	.598
I find exercise a pleasurable activity	250	1.24	.618	250	1.24	.585
I get satisfaction from participating in exercise	250	1.22	.596	250	1.23	.588

Table 4: Analysis of Variance for Behavioural Regulation in Exercise [n=500]

Behavioural Regulation in Exercise	Analysis of Variance				
	Sum of Squares	df	Mean Square	F	Sig.
External Regulation					
Other people say I should	2.592	1	2.592	5.584	.019
My friend/family/spouse say I should	1.352	1	1.352	2.977	.085
Others will not be pleased with me if I don't	1.250	1	1.250	2.747	.098
I feel under pressure to exercise by friends/family	2.738	1	2.738	5.909	.015
Introjected Regulation					
I feel guilty when I don't exercise	7.200	1	7.200	10.316	.001
I feel ashamed when I miss an exercise session	2.312	1	2.312	3.642	.057
I feel like failure when haven't exercised a while	1.568	1	1.568	2.100	.148
Identified Regulation					
I value the benefits of exercise	1.800	1	1.800	3.172	.076
It is important to me to exercise regularly	1.058	1	1.058	1.904	.168
I think effort is important in regular exercise	.072	1	.072	.136	.712
I get restless if I don't exercise regularly	.050	1	.050	.058	.810
Intrinsic Motivation					
I want to have fun	31.752	1	31.752	42.530	≤.001
I enjoy my exercise sessions	.098	1	.098	.270	.603
I find exercise a pleasurable activity	0.000	1	0.000	0.000	1.000
I get satisfaction from participating in exercise	.018	1	.018	.051	.821

Table 5: Independent Samples Test for Behavioural Regulation by Institution (n=500)

Behavioural Reg.	Levene's Test for Equality of Variances		Equal Variances Assumed					
			t	df	Sig. (2-tailed)	Mean Diff.	95% CID	
	F	Sig.					Lower	Upper
External Regulation								
Other people say…	14.507	≤.001	2.363	498	.019	.144	.024	.264
My friends say…	9.050	.003	1.725	498	.085	.104	-.014	.222
Others not pleased...	9.336	.002	1.657	498	.098	.100	-.019	.219
I feel pressured…	18.104	≤.001	2.431	498	.015	.148	.028	.268
Introjected Regulation								
I feel guilty…	15.758	≤.001	3.212	498	.001	.240	.093	.387
I feel ashamed…	1.956	.163	1.908	498	.057	.136	-.004	.276
I feel like failure…	.000	.985	1.449	498	.148	.112	-.040	.264
Identified Regulation								
I value the benefits…	5.805	.016	-1.781	498	.076	-.120	-.252	.012
It is important…	4.468	.035	-1.380	498	.168	-.092	-.223	.039
Effort is important...	.127	.722	-.369	498	.712	-.024	-.152	.104
I get restless…	3.403	.066	.240	498	.810	.020	-.144	.184
Intrinsic Motivation								
I want to have fun	66.063	≤.001	6.521	498	≤.001	.504	.352	.656
I enjoy my exercise…	.520	.471	-.520	498	.603	-.028	-.134	.078
I find exercise a…	.056	.813	0.000	498	1.000	0.000	-.106	.106
I get satisfaction…	.088	.767	-.227	498	.821	-.012	-.116	.092

Discussion:

Looking at all the factors measured, evaluated and scored under behavioural regulation in exercise, a good number of the respondents especially from Njala University compared to Eastern Polytechnic, responded more positively to intrinsic motivation as the highest level of self-determination, which according to *Ryan et al. (2000),* people who are motivated intrinsically to be physically active participate for sheer enjoyment and in the moment satisfaction of the activity at hand and that it is autonomous.

However, some of the participants mostly from the Eastern Polytechnic responded in affirmative to external regulation in contrast to intrinsic motivation, which according to *Turke, E. G. (2012),* perceived pressure to exercise may represent a less salient source of motivation than voluntarily endorsed reasons. And at this level of regulation, motivation is only spurred through rewards or avoidance of

punishment because it is not autonomous and that external regulators do exercise because, other people say they have to and not because they want to, *Ryan et al. (2000)*.

According to *DeLong, L. L. (2006)*, self-determination appears to function in different ways in different segments of the population, especially with regards introjected regulation. The findings of this survey support the notion that, rewards and threats are not significant motivational influences for exercise related behavioural change, which according to *DeLong, L. L. (2006),* strategies reinforcing higher levels of self-determination, rather than those focusing on a sense of guilt or obligation, are more likely to foster long-term physical activity (PA).

Conclusion and Recommendation:

It was concluded that greater majority from both Njala University (NU) and Eastern Polytechnic (EP) clearly responded more in favour of intrinsic motivation under behavioural regulation in exercise (BRE) for physical activity (PA) as compared to its counterpart extrinsic motivation (i.e. identified regulation, introjected regulation and external regulation respectively). However, autonomy in self-determination rather than rewards and threats to help improve the motivational level of college students in physical activity, was strongly recommended**.**

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