

# Physical Activity and Motor Fitness Skill Level of Children and Adolescents: A Motivational Factor for Health and Physical Education

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**Abstract:** ***Background:** Physical fitness could be referred to as a well-structured, organized, planned and technically executed physical activity and exercise programmes with bearing to circuit training, which could require use of maximum volume of oxygen ( $VO_2$  max.) for all categories within body mass index (BMI), intake and expenditure of kilocalories by musculoskeletal and cardiovascular systems for fitness, wellness, healthy lifestyle, reduction in cardiovascular related sicknesses, mortality and morbidity, while physical activity under motor fitness skill could be referred to as a public health factor that relates to human movement patterns of musculoskeletal systems that could require intake and expenditure of kilocalories from macro-and-micro nutrients for improved healthy lifestyle and decrease in cardiovascular related sicknesses, morbidity and mortality. This study aimed at scoring measured and evaluated factors under physical activity and motor fitness skill level of children and adolescents: a motivational factor for health and physical education. **Methods:** Adopted instrument for this survey was American Association for Health, Physical Education and Recreation (AAHPER). IBM-SPSSv.23 Statistics analyzed variables, with mean and standard deviation ( $M \pm SD$ ) age ( $14.5 \pm 5.5$ ) with response rate (100%) of sampled participants ( $N=122$ ), ranged (9-20) years, selected through simple random sampling. **Results:** Significant differences were tested @ level of  $p < 0.05$ , with highest scores recorded as follows: Bend-Knee-Sit-Ups (Islam) scored ( $2.69 \pm 0.951$ )  $F(0.916)$ , Shuttle-Run (Islam) scored ( $2.67 \pm 0.717$ )  $F(0.627)$ , Standing-Long-Jump (Islam) scored ( $2.61 \pm 0.903$ )  $F(0.039)$  and Fifty-Yards-Dash (Islam) scored ( $2.78 \pm 0.959$ )  $F(0.774)$  for USS and TSS. **Conclusion and Recommendation:** In the analysis, most highly scored participants (boys and girls) were from JSS2 in the Southern region with an Islamic faith due to their frequency and mean responses, which however displayed clear evidence of motor fitness skill. It was recommended that parents, teachers and stakeholders should be positive role models in educating pupils about the rationale of physical activity, wellness and health education programmes for prevention and control of obesity and cardiovascular related sicknesses, morbidity and mortality.*

**Keywords:** Physical Activity, Physical Education, Health Education and Motor Fitness Skill

## 1. Introduction

Physical fitness could be referred to as a well-structured, organized, planned and technically executed physical activity and exercise programmes of circuit training, which could require the use of maximum volume of oxygen, intake and expenditure of kilocalories by musculoskeletal and cardiovascular systems for fitness, wellness, healthy lifestyle and decrease in cardiovascular related sicknesses, mortality and morbidity, Tucker et al. (2017); Bebeley et al. (2017), while physical activity under motor fitness skill could be referred to as a public health factor that relates to human movement patterns and structures of musculoskeletal systems that requires intake and expenditure of kilocalories for improved wellness and healthy lifestyle, which prevents cardiovascular related diseases, morbidity and mortality. Physical activity being a sub category of physical education (i.e. education of and through the physical approach), 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 physical activity (MVPA) could improve not only the physiological, but also the psychosocial health, fitness and wellness (intellectual, spiritual and social wellness) of the individual, Bebeley et al. (2017); Tucker et al. (2017). 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 the motivational level of school pupils and college 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 for better physical activity status, wellness and motor fitness skill development, which could be complemented by mandatory institution of programmes, conducting seminars, training workshops and holding focus group discussions amongst pupils and students, during and outside school or college hours, adopting and allotting enough time to teaching and learning of health and physical literacy or education, motor fitness skill and wellness for all school pupils and college students before graduation to help improve and guarantee motivational level in physical activity, wellness and motor fitness skill development as one of the fundamental factors that could help greatly with sustainable future participation in physical activity, wellness and motor fitness skill development for children, adolescents, youths as well as adults, Bebeley et al. (2017); Tucker et al. (2017). Laggao et al. (2017); Bebeley (2016); Bebeley et al. (2011).

Physical activity under motor fitness skill development could be expressed as human movement(s) trajected by 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, could improve wellness, physiological and psychological health and could be of significance to the holistic wellbeing of an individual, 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 or literacy in schools and colleges to improve physical activity literacy level, *Bebeley et al. (2017); Tucker et al. (2017); Bebeley (2016)*. Physical activity under wellness acquisition could also be expressed as that aspect of public health and physical education with determinant factors (i.e. personal, social and environmental) that could deal with human movement(s) of musculoskeletal systems, which could require both calorie intake and expenditure for improved and sustainable physiological and psychosocial fitness, wellness and healthy lifestyle, *Bebeley et al. (2017); Tucker et al. (2017)*. Physical activity under 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 education, activity, wellness and motor fitness skill development, which could be implemented in schools (pre, primary, junior and senior high schools) and colleges especially undergraduates during physical education, fitness, wellness and literacy lessons, thereby leading to the exposure of pupils as well as students to functional movement skills and screening, designed in physical education programmes for improvement of physical fitness, wellness and motor skill level components that includes speed, agility, reaction time and power, focusing on advantages (pros.), motive, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity for better physical activity status during childhood, adolescent, adulthood and old age, *Bebeley et al. (2017); Tucker et al. (2017); Bebeley (2015)*.

Motivation in physical activity, could be expressed as the science of psychology that deals with the internal process (intrinsic motivation) and the external process (extrinsic motivation), which 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); Tucker et al. (2017)*, that could have the ability, power, focus, intellect and potential to initiate, ignites, guides, maintains goal-oriented physical activity fitness, education, wellness and explain behaviours that involves the holistic forces (i.e. emotional, social and cognitive forces) that activate behavioural direction of individual desires, needs and actions, including psychomotor learning (physique i.e. physical activity, fitness and exercise), affective learning (moral i.e. abstinence and adherence) and cognitive learning (intelligence quotient i.e. knowledge acquisition), *Bebeley et al. (2017); Tucker et al. (2017)*. And in determining individual motivation for physical activity, wellness 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 (young, middle-aged and older) to frequently and constantly engage in physical activity for improved fitness, wellness and motor skill development *Bebeley et al. (2017); Tucker et al. (2017)*, practice abstinence from eating disorders i.e. anorexia nervosa, bulimia nervosa and binge eating disorders, *Bebeley et al. (2017)*, practice non-usage of drugs i.e. cigarette smoking, alcohol consumption and performance enhancing drugs, *Bebeley et al. (2016)*, practice abstinence from diseases associated with unsafe sexual practices i.e. HIV/AIDS, syphilis and gonorrhea, *Bebeley et al. (2016)*, focus on knowing and monitoring of vital signs i.e. heart rate, blood pressure and body mass index, *Bebeley et al. (2017)*, understand about preventing sport or exercise related injuries i.e. a chilles tendinitis, runner's knee/patellofemoral pain syndrome and shin splints, *Bebeley et al. (2016)*, understand about health literacy level of asthma due environmental, physical and medical conditions *Bebeley (2016)*, understand about health literacy level of muscle atrophy due physical, medical and exercise factors *Bebeley (2016)*, understand about contraindications of muscle weakness due central fatigue, peripheral fatigue and lactic acid, *Bebeley (2016)*, understand health education literacy level of stress due cognitive, emotional and physical factors *Bebeley (2016)*, understand physical education literacy level due developmental, humanistic and fitness factors, *Bebeley et al. (2017)* and understand physical literacy level due locomotor-&-body, sending and receiving skills, *Bebeley et al. (2017)*, which not only increase the advantages (pros.), motive, behavioural regulation, self-efficacy and weekly leisure time spent on physical activity for better physical activity status, but also help individuals, communities, the environment and the public to control and reduce lifestyle-related sicknesses, mortality and morbidity, *Bebeley et al. (2017); Tucker et al. (2017)*.

This study aimed at scoring measured and evaluated factors under physical activity and motor fitness skill level of children and adolescents: a motivational factor for health and physical education in maintaining healthy lifestyle, motor fitness skill development and reducing cardiovascular related sicknesses, mortality and morbidity amongst children, adolescents and youths, based at University and Taiama Secondary Schools (USS-&-TSS), Sierra Leone.

## 2. Methodology

### Respondents

The survey sampled participants (**N=122**), with mean and standard deviation (**M±SD**) age (**14.5±5.5**) with **100%** response rate, age ranged (**9-20**) years, selected mainly amongst Junior Secondary School (**JSS**) pupils, from two selected Secondary Schools, through a mechanism of simple random sampling (**SRS**).

### Instrumentation

Adopted survey instrument include: mat and stopwatch for timing during **Bent-Knee-Sit-Ups-Test**, *AAHPER (1976)*; floor space for acceptable traction, stop watch, two wooden blocks measured (2"x2"x4") for **Shuttle-Run-Test**, *AAHPER (1976)*; measuring tape, masking tape, foam/sand and rectangular board for **Standing-Long-Jump-Test**,

AAHPER (1976) and stopwatch with split timer for 50-Yards-Dash-Test, AAHPER (1976).

#### Procedure

Participants were each tested and scored within their respective school localities 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

Descriptive Statistics Analysis, Descriptive Frequency Test and Analysis of Variance (ANOVA) Test from IBM SPSSv.23 Statistics were used to compute, analyze and compare the findings of the survey using a significant value of  $P < 0.05$ .

### 3. Results

It was evidenced that there were differences in the mean and standard deviation interpretations of motor fitness skill test by religion, slated accordingly by highest scores as follows: Bend-Knee-Sit-Ups (Islam) scored ( $2.69 \pm 0.951$ )  $F(0.916)$ , Shuttle-Run (Islam) scored ( $2.67 \pm 0.717$ )  $F(0.627)$ , Standing-Long-Jump (Islam) scored ( $2.61 \pm 0.903$ )  $F(0.039)$  and Fifty-Yards-Dash (Islam) scored ( $2.78 \pm 0.959$ )  $F(0.774)$  for USS and TSS, in tables 1 and 2.

**Table 1:** Descriptive Statistics by Religion (N=122)

Motor Fitness Test	Descriptive Statistics Test					
	Religion	n	Mean	Standard Deviation	95%-CI-Mean	
Bend-Knee-Sit-Ups	Christianity	86	2.51	.967	2.30	2.72
	Islam	36	2.69	.951	2.37	3.02
Shuttle-Run	Christianity	86	2.56	.679	2.41	2.70
	Islam	36	2.67	.717	2.42	2.91
Standing-Long-Jump	Christianity	86	2.58	.694	2.43	2.73
	Islam	36	2.61	.903	2.31	2.92
Fifty-Yards-Dash	Christianity	86	2.73	.710	2.58	2.88
	Islam	36	2.78	.959	2.45	3.10

**Table 2:** Analysis of Variance by Religion (N=122)

Motor Fitness Skill Test	Analysis of Variance Test					
	Sum of Squares	df	Mean Square	F	Sig.	
Bend-Knee-Sit-Ups	.848	1	.848	.916	.340	
Shuttle-Run	.299	1	.299	.627	.430	
Standing-Long-Jump	.022	1	.022	.039	.844	
Fifty-Yards-Dash	.052	1	.052	.083	.774	

A motor fitness skill test results were recorded according to highest scores executed during the test process under region as follows: Bend-Knee-Sit-Ups scored ( $2.70 \pm 0.937$ ) under South  $F(4.013)$ , Shuttle-Run scored ( $2.75 \pm 0.500$ ) under North  $F(0.412)$ , Standing-Long-Jump scored ( $2.67 \pm 0.767$ ) under South  $F(1.640)$  and Fifty-Yards-Dash scored ( $2.83 \pm 0.812$ ) under South  $F(1.691)$  for USS and TSS, in tables 3 and 4.

**Table 3:** Descriptive Statistics by Region (N=122)

Motor Fitness Skill Test	Region	n	Mean	Standard Deviation	95%-CI-Mean	
					Lower	Upper
Bend-Knee-Sit-Ups	South	94	2.70	0.937	2.51	2.89
	East	20	2.30	0.865	1.90	2.70
	North	04	1.75	0.957	0.23	3.27
	West	04	1.50	1.000	-0.09	3.09
Shuttle-Run	South	94	2.62	0.705	2.47	2.76
	East	20	2.45	0.686	2.13	2.77
	North	04	2.75	0.500	1.95	3.55
	West	04	2.50	0.577	1.58	3.42
Standing-Long-Jump	South	94	2.67	0.767	2.51	2.83
	East	20	2.30	0.657	1.99	2.61
	North	04	2.50	1.000	0.91	4.09
	West	04	2.25	0.500	1.45	3.05
Fifty-Yards-Dash	South	94	2.83	0.812	2.66	3.00
	East	20	2.50	0.688	2.18	2.82
	North	04	2.25	0.500	1.45	3.05
	West	04	2.50	0.577	1.58	3.42

**Table 4:** Analysis of Variance by Region (N=122)

Motor Fitness Skill Test	Analysis of Variance Test					
	Sum of Squares	df	Mean Square	F	Sig.	
Bend-Knee-Sit-Ups	10.366	3	3.455	4.013	0.009	
Shuttle-Run	0.595	3	0.198	0.412	0.745	
Standing-Long-Jump	2.782	3	0.927	1.640	0.184	
Fifty-Yards-Dash	3.096	3	1.032	1.691	0.173	

Results were also recorded for motor fitness skill test according to highest scores executed during the test process under educational level as follows: Bend-Knee-Sit-Ups scored ( $2.64 \pm 0.932$ ) under JSS1  $F(0.188)$ , Shuttle-Run scored ( $2.74 \pm 0.497$ ) under JSS2  $F(1.486)$ , Standing-Long-Jump scored ( $2.71 \pm 0.835$ ) under JSS2  $F(1.640)$  and Fifty-Yards-Dash scored ( $2.83 \pm 0.730$ ) under JSS2  $F(0.603)$  for USS and TSS, in tables 5 and 6.

**Table 5:** Descriptive Statistics by Educational Level (N=122)

Motor Fitness Skill Test	Educational Level	n	Mean	Standard Deviation	95%-CI-Mean	
					Lower	Upper
Bend-Knee-Sit-Ups	JSS1	39	2.64	.932	2.34	2.94
	JSS2	42	2.55	.916	2.26	2.83
	JSS3	41	2.51	1.052	2.18	2.84
Shuttle-Run	JSS1	39	2.51	.601	2.32	2.71
	JSS2	42	2.74	.497	2.58	2.89
	JSS3	41	2.51	.898	2.23	2.80
Standing-Long-Jump	JSS1	39	2.44	.718	2.20	2.67
	JSS2	42	2.71	.835	2.45	2.97
	JSS3	41	2.61	.703	2.39	2.83
Fifty-Yards-Dash	JSS1	39	2.64	.843	2.37	2.91
	JSS2	42	2.83	.730	2.61	3.06
	JSS3	41	2.76	.799	2.50	3.01

*Note: CI = Confidence Interval*



**Table 6:** Analysis of Variance by Educational Level  
(N=122)

Motor Fitness Skill Test	Analysis of Variance Test				
	Sum of Squares	df	Mean Square	F	Sig.
Bend-Knee-Sit-Ups-Test	0.352	2	.176	0.188	.829
Shuttle-Run-Test	1.402	2	.701	1.486	.230
Standing-Long-Jump-Test	1.591	2	.795	1.394	.252
Fifty-Yards-Dash-Test	0.754	2	.377	0.603	.549

## 4. Discussion

The variables evaluated and scored in motor fitness skill development level could be referred to as components (i.e. speed, agility, reaction time and power) of physical fitness, *Tucker et al. (2017); Bebeley et al. (2011)*, which is a sub category of physical education programme on motor fitness skill level of school pupils in Sierra Leone.

Speed level of participants was tested using “**Fifty-Yards-Dash**”, which was more favoured by JSS2 pupils from South mostly Islamic, which as a component of physical activity, fitness and wellness, is a key proponent for performance excellence in sports, physical activity and motor fitness skill development for children and adolescents, *Tucker et al. (2017); Bebeley et al. (2011)*.

Agility level of participants was tested using “**Standing-Long-Jump**”, which was more favoured by JSS2 pupils from South mostly Islamic, which as a component of physical activity, fitness and wellness, is a key proponent for performance excellence in maneuverability of the body while in action for fundamental functional efficiency in sports, physical activity and motor fitness skill development, *Tucker et al. (2017); Bebeley et al. (2011)*.

Reaction Time level of participants was tested using “**Shuttle-Run**”, which was more favoured by JSS2 pupils from South mostly Islamic, which as a component of physical activity, fitness and wellness, is a key proponent for performance excellence required to win in sports and it is as vital as other components, *Tucker et al. (2017); Bebeley et al. (2011)*.

Power level of participants was tested using “**Bend-Knee-Sit-Ups**”, which was more favoured by JSS2 pupils from South mostly Islamic, which as a component of physical activity, fitness and wellness, is a key motivating proponent for children, adolescents and youths for doing sport and physical activity through physical education, *Tucker et al. (2017); Bebeley et al. (2011)*.

## 5. Conclusion and Recommendation

In the analysis, most highly scored participants of both boys and girls were from JSS2, within the Southern region with an Islamic faith in respect of their frequency and mean responses during the test, which however displayed clear evidence of physique i.e. physical activity, exercise and motor fitness skill development and was quite helpful during the conduct of the test, with the exception of activity technicalities and nomenclature, which were a bit challenging. Participants were impressed about the test

though concerns were raised by their pairs for not being part of the motor fitness skill development test process.

It was however recommended that, stakeholders in the health and education sectors should be in full gear in educating children, adolescents and youths concerning the rationale of living healthy through physical activity, wellness and health education programmes. And that, parents as well as teachers should be positive role models and motivate children to take part in physical activity and health education programmes for prevention and control of obesity, cardiovascular related sicknesses, morbidity and mortality amongst children, adolescents and youths.

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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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