

A Study to Determine the Factors Affecting the Level of Physical Fitness in Normal College Going Students

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ABSTRACT

Physical activity is defined as any body movement generated by the contraction of skeletal muscles that raises energy expenditure above resting metabolic rate, and is characterized by its modality, frequency, intensity, duration, and context of practice. The factors that affect the participation of adults in physical activity include age, gender, race, ethnicity and those that are modifiable (behavioral and personality characteristics, environmental circumstances and community settings) etc. 50 participants of college going population were taken whose were having age between 19 to 25 years were randomly selected. Physical activity like gender, BMI, social media, availability of ground, SF 36 score mainly for physical functioning, time management questionnaire, type of family, leisure activities etc were noted. Outcomes were measured in terms of cardiovascular endurance and muscular endurance. **RESULT:** No correlation was found between these factors and outcome measures.

Keywords: Physical activity, factors affecting physical activity, inactivity

INTRODUCTION

What is physical activity and physical fitness?

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure.⁽¹⁾

Physically fitness is defined as “the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies”⁽¹⁾ Physical fitness in turn can be interpreted as a measure of the capacity to perform physical activity and/or physical exercise that integrates the majority of the bodily functions (skeletal muscular, cardio-respiratory, hematocirculatory, endocrine-metabolic, and psycho-neurological) involved in bodily movement.⁽²⁾

Factors that influence physical activity behavior may be biologically determined or may belong to the physical or social environment in which we live.⁽³⁾

The factors affecting the participation of adults in physical activity are demographic and biological factors, psychological, cognitive, and emotional factors, behavioral attributes and skills, social and cultural factors, physical environment factors and physical activity characteristics.⁽³⁾

As physical therapists, we commonly measure, analyze, and treat movement disorders on a local level with the overall aim to optimize movement at a more global level, such as everyday physical activity level. There are many

factors influencing the participation in physical activity in adults.

Researches are done which studied effect of gender, ethnicity, workplace situations, lack of motivation etc on physical activity. Factors like use of social media sleep hours, time management skill, area, availability of ground which are modifiable. If these factors are influencing physical fitness, then they can be modified and one can increase their level of physical fitness. So, need of the study was to find which of the above factor have impact on the level of physical fitness.

Adils on Marques et al. conducted a study on Levels of Physical Activity of Urban Adolescents According to Age and Gender and concluded that boys are more active than girls. ⁽⁴⁾ Mona Kharbanda et al conducted a study on Effect of BMI and nutritional status on physical fitness index in response to short term moderate intensity exercise in sedentary young adults and showed that there is significant negative correlation with BMI with overweight and underweight subjects. ⁽⁵⁾ Sandhya V Shimoga et al. conducted study on Associations of Social Media Use with Physical Activity and Sleep Adequacy Among Adolescents: Cross-Sectional Survey showed that regular social media use reinforces health behaviors of adolescents at the extreme ends of the health behavior spectrum. ⁽⁶⁾

So, aim of study was to determine which factors influence the physical fitness more in normal college going population. The objective of this study was to determine the correlation between personal, social, demographic and environmental factors with level of physical fitness in normal college going students.

HYPOTHESIS

NULL HYPOTHESIS

There is no significant correlation between factors and level of physical fitness in normal college going students.

ALTERNATE HYPOTHESIS

There is significant correlation between factors and level of physical fitness in normal college going students.

METHODOLOGY

An observational study was performed on 50 normal college going participants. The participants were selected whose age fall between 20-25 years and from that 50 subjects were randomly selected based on inclusion criteria. Out of 50 participants 29 were females and 21 were male participants.

The inclusion criteria were:

- Subjects with age 20-25 years
- Both males and females
- Willingness to participate
- Able to understand the procedure
- Not having any health issues

The exclusion criteria were:

- Known musculoskeletal disorders
- Known cardiovascular disorders
- Any surgeries performed previously

The study was explained to them and their consent was taken. After proper explanation their demographic data was taken which included name, age, gender and BMI. Other factors were assessed which included social media use in hours, sleep taken in a 24 hrs, availability of ground at home or college campus, living in urban or rural area, household size, leisure activities performed.

SF 36 questionnaire and time management questionnaire were filled by the participants. After assessing the factors, the subjects were asked to performed push up, abdominal curl ups, squats in one minute and 6 minute walk test. The number of push up, curl ups and squats were recorded and the distance covered in 6 min walk test was also recorded.

RESULTS

A total 50 subjects participated in the study. Various demographic data, social and environmental factors were assessed. Muscular endurance was assessed by push up test, abdominal curl up test and squat

test. Cardiovascular endurance was assessed by 6 minute walk test.

Data was analyzed using SPSS statistics version 20. Shapiro Wilk test was performed to find whether the data is normally distributed or not. According to test the data was not normally distributed.

So spearman correlation was performed. Unpaired t test was performed to compare the means between factors like gender, availability of ground, living area, household size, type of leisure activity with the outcome measures.

Table 1: Relationship of outcome measures and various factors described in terms of correlation coefficient.

Outcome measures	Age	BMI	Social media use	SF 36 score	Sleep Hours	Time management score
Push ups	0.163	-0.085	0.071	0.207	-0.206	-0.110
Curl ups	0.014	0.071	0.080	0.195	-0.125	-0.048
Squats	-0.221	-0.027	-0.129	-0.087	-0.055	-0.205
6 min walk test	0.175	-0.055	0.053	0.003	-0.182	-0.163

Table 2: The below table shows t test result between male and female for various outcome measures.

OUTCOMEMEASURES	FEMALE	MALE	t TEST
	MEAN ± SD	MEAN ± SD	P VALUE
PUSH UP	10.96 ± 6.8	19±9.2	0.00
CURL UP	18.3 ± 7.2	20.4±6.6	0.14
SQUAT	26.06±8.4	28.2±7.2	0.16
6 MIN WALK TEST	550.73±101.55	571.95±102.22	0.23

Table 3: The below table shows t test result between availability of ground for various outcome measures.

OUTCOME MEASURE	YES	NO	t-TEST
	MEAN±SD	MEAN ±SD	P VALUE
PUSH UP	16.2±7.8	12.93±9.36	0.08
CURL UP	18.7±6.2	19.51±7.61	0.35
SQUAT	26.33±7.7	27.48±18.15	0.30
6 MIN WALK TEST	557.33±101.6	561.31±102.91	0.44

Table 4: The below table shows t test result between urban and rural area for various outcomes measures.

OUTCOME MEASURE	URBAN	RURAL	t- TEST
	MEAN ±SD	MEAN ±SD	P VALUE
PUSH UP	14.07±9.18	15.4±7.6	0.32
CURL UP	19.35±6.74	18.6±8.31	0.39
SQUAT	27.32±7.96	25.7±8.13	0.28
6 MIN WALK TEST	557.52±99.44	568.1±113.84	0.39

Table 5: The below table shows t test result between number of family members (<4 or>4) for various outcomes measures.

OUTCOME MEASURES	<4	>4	t- TEST
	MEAN ±SD	MEAN ±SD	P VALUE
PUSH UP	13.96±9.05	14.72±8.78	0.38
CURL UP	20.16±6.08	18.24±7.81	0.16
SQUAT	28.04±8.19	25.96±7.7	0.17
6 MIN WALK TEST	578.12±109.68	541.16±90.7	0.10

Table 6: The below table shows t test result between type of leisure activity (exertional or non exertional) for various outcome measures.

OUTCOME MEASURES	NON EXERTIONAL	EXERTIONAL	t- TEST
	MEAN ±SD	MEAN ±SD	P VALUE
PUSH UP	14.35±8.73	14±15.55	0.48
CURL UP	19.27±6.97	17.5±10.60	0.42
SQUAT	27±7.93	27±11.31	0.5
6 MIN WALK TEST	560.67±98.27	535±219.2	0.42

DISCUSSION

The present research was conducted to find the correlation between various personal, social and environmental factors with muscular endurance and cardiovascular endurance. Spearman correlation test was performed between the nominal variables like age, BMI, social media use, sleep hours taken, SF 36 score and time management

score. Unpaired t test was performed for categorical variables like gender, availability of ground, living area, number of family members and leisure activity performed.

From the results of spearman correlation study it is found that there is no correlation between factors like age, BMI, social media use, sleep hours, time

management skills, with muscular endurance and cardiovascular endurance. According to result of t test, male subjects are having statistically significant higher values of pushups than female subjects while other factors like number of family members, availability of ground, type of leisure activity, area were not statistically significant with the outcome measures.

Julia Bolívar et al (2010) reported that the level of physical fitness is affected by social and physical environment as well as women were less active than men in Spanish population. ⁽⁷⁾ Dinanti Abadiniet al conducted a systematic review which concluded that older adults were more active than younger adults, living in rural area also related to be more physically active and male found to be more active than females. ⁽⁸⁾

Xinwang et al. pointed out that any type of familial support including verbally encouraging, watching, and involving had effects on reducing leisure-time sedentary behaviours. ⁽⁹⁾ Lena Lammle et al concluded that Age in adolescence had a direct impact only on Physical Fitness, but not on Physical Activity. ⁽¹⁰⁾

Above all researches assessed the physical activity through a questionnaire which makes it subjective and bias too. In our study we measured through the valid cardiovascular and muscular endurance test which is objective. So, there are many researches done which shows influences of social, personal and environmental factors on physical fitness. But the following study shows no correlation between any factor and physical fitness.

The limitation of this study was that subjects were only selected within definite age group and they were only selected from one college

CONCLUSION

There is no correlation of personal, social and environmental factors on level of physical fitness in normal college going students. But there is significant difference observed in male subjects for pushups in

comparison to female subjects. So, it cannot be predicted whether a person is physically fit or not on the basis of any factor.

Future Recommendation

Valid questionnaire for social media use can be considered. This study can be performed taking larger age group

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