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Reliability of academic achievement questionnaire for sedentary college going females

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Abstract
Lifestyle is an indivisible part of holistic development of an individual including the academic performance. As it is well said, sound health is a foundation of sound mind and sound mind guides to intelligence and intelligence furnish towards good academic achievement. Therefore, academic achievement is also related to health of an individual. The objective of the present study was to determine the reliability (test-retest) of the Academic Achievement Questionnaire (AAQ) for college going sedentary females. A questionnaire was developed, consisting 10 variables, which were sent out to the experts for suggestion who rated each question on a ten-point scale to ascertain the face validity of the AAQ. A trial run was performed and the questionnaire was modified accordingly. The questionnaire was modified keeping in view the input provided by the experts. A group (n=35) which was selected randomly consisted of college going sedentary females between the age of 17 to 20 years. Thereafter the developed AAQ was administered on the selected sample twice at the interval of two days. The statistical analysis used was mean, standard deviation and the Pearson product-moment correlation 'r' between the trials. All statistical test were applied $p<0.05$ level of significance. The range of 'r' for the administration questionnaire was.40 to.47 which is considered an "acceptable" measure of reliability. In conclusion each items/variable of the selected questionnaire had acceptable reliability in regard to sedentary college going females.

Keywords: academic achievement questionnaire, face validity, sedentary females, test-retest reliability

Introduction

An increasing number of people are adopting sedentary lifestyle attributing much of it to the automation of the industries, the growing work culture and even work from home option (Lopes *et al*., 2016; Sedentary Lifestyle, 2022) [5, 10]. The sedentary living has consequences on mental and physical health of an individual. Sedentary lifestyle was defined as per centre for disease control and prevention, as no leisure-time, physical activity or activities done for less than 20 minutes or fewer than three times per week. It is also defined as any behaviour (awaken) which is characterised by an energy expenditure of ≤1.5 metabolic equivalent of task (Lopes *et al*., 2016) [5].

Sedentary behaviour is associated with harmful health outcomes, which differ from those that can be attributed to a lack of moderate to vigorous physical activity (Varela-Mato *et al*., 2012; Tremblay *et al*., 2010) [12, 13]. An individual who is living a sedentary lifestyle often sits or lies down while watching television, socializing, playing videogames, using mobile phone or computer day long (Shi et. al., 2013; Kristjansson *et al*., 2009; Sharma *et al*., 2017) [12, 4, 11]. The sedentary lifestyle doesn't only have harmful consequences related to health of a person but it also affects the academic performance or cognition of a school and college going student (Shi et. al., 2013; Kristjansson *et al*., 2009; Sharma *et al*., 2017; Sedantary Lifestyle, 2022) [12, 4, 11, 10].

Academic performance is said to be the measurement of student achievement over several subjects related to academics. Education officials typically measure achievement using various tools for instance, classroom performance, graduation rates and results from standardized tests (Santana *et al*., 2017) [9].

Academic means pertaining to an academy (R.C., 1992) [7]. Academic achievement broadly refers to the communicative (could be oral, reading or writing), mathematical, science, social science, thinking skills and competencies that enable a student to succeed in school, college and society (G. Fred L.L., 2006) [2]. It also states, percentage of aggregate marks scored at the annual examination in the subjects offered to a student for the particular examination (Question Pro., 2022) [6].

A questionnaire is said to be a research instrument that consists of a set of questions or other types of prompts that basically aims to collect information from a respondent (Roopa & Rani, 2012; Boynton & Greenhalgh, 2004) [8, 1].

Sound health is a foundation of sound mind and sound mind leads to intelligence and intelligence may furnish towards good academic achievement (Kaur, 2000) [3]. Therefore, academic achievement is related to health of an individual (Kaur, 2000) [3]. Academic achievement therefore means the acquisition of knowledge, skills and aptitude which a person is supposed to gain as a consequence of formal instruction in different academic subjects.

An Academic Achievement Questionnaire (AAQ) for sedentary college going females is of great importance. In the process of development of AAQ, testing the reliability is an important scientific consideration. Hence the present study aims to test reliability of the AAQ for sedentary college going females.

Materials and Methods

A total number of 35 college going sedentary females between the age ranged from 17 to 20 years were included as the subjects of the study. A standardized Academic Achievement Questionnaire (AAQ) was administered to the participants to evaluate the test-retest reliability for sedentary college going females. A questionnaire with selected 14 variables representing academic performance was developed and sent to the expert of the field. The original questionnaire was then modified, keeping in mind the suggestions provided by the experts (Refer Appendix 1). This was done so as to ascertain the face validity of the questionnaire. The AAQ prompts the respondents, through a series of questions on the academic status, which they had to answer on a nine-point scale.

The part B of the questionnaire that consist four variables namely, AAQ11, AAQ12, AAQ13 and AAQ14 were related to the percentage of marks and did not demand inter-test comparisons. Hence, they were not subjected to inter-test reliability. The AAQ was administered twice to the same participants at an interval of two days. Mean and standard deviation of the responses of the subject were calculated for descriptive statistical analysis. Pearson's coefficient of correlation was used to measure the test-retest reliability of the academic questionnaire. All statistical tests were applied at $p<0.05$ level of significance.

Results and Discussions

Table 1: Academic Variables (Through Questionnaire) and their Coding

S. No.	Variables	Variable Code
1.	Attendance	AAQ1
2.	Academic circle	AAQ2
3.	Interest/ liking	AAQ3
4.	Relationship with teacher	AAQ4
5.	Better Learning	AAQ5
6.	Academic performance	AAQ6
7.	Improvement in study hours	AAQ7
8.	Concentration	AAQ8
9.	Memory	AAQ9
10.	Motivation to learning	AAQ10
11.	Percentage of marks of last final examination	AAQ11
12.	Percentage of marks of last-to-last final examination	AAQ12
13.	Percentage of marks of present year final examination (during the training programme)	AAQ13
14.	Percentage difference of last school and present year	AAQ14

A total of ten components of academic achievement namely (1) Attendance (2) Academic circle (3) Interest/ liking (4) Relationship with teacher (5) Better Learning (6) Academic performance (7) Improvement in study hours (8) Concentration (9) Memory (10) Motivation to learning which were derived with the help of fourteen academic questions coded as AAQ1, AAQ2, AAQ3, AAQ4, AAQ5, AAQ6, AAQ7, AAQ8, AAQ9, AAQ10, AAQ11, AAQ12, AAQ13 and AAQ14.

Table 2: Statistics of Trial One and Trial Two of AAQ for Test-Retest Reliability of Sedentary female Group

S. No.	Variables	Trial One			Trial Two			Test-Rest Coefficient 'r'
		M	±	SD	M	±	SD	
1.	AAQ1	5.80	±	1.83	6.06	±	1.63	.40
2.	AAQ2	5.29	±	1.87	5.77	±	1.46	.47
3.	AAQ3	4.71	±	1.74	4.63	±	1.68	.42
4.	AAQ4	5.29	±	1.95	5.66	±	1.73	.43
5.	AAQ5	5.60	±	1.74	6.06	±	1.59	.40
6.	AAQ6	5.46	±	1.20	5.86	±	1.54	.44
7.	AAQ7	4.77	±	1.75	6.09	±	1.54	.48
8.	AAQ8	4.57	±	1.99	5.37	±	1.72	.46
9.	AAQ9	5.20	±	1.73	5.49	±	1.27	.49
10.	AAQ10	5.37	±	1.97	5.66	±	1.70	.42
Mean Coefficient= 0.441								

Note: Rounded to two digits after the decimal except for Mean Coefficient.

The analysis of data in Table 2, reveals that the test-retest reliability for co-efficient of academic questionnaire administered to the females belonging to sedentary group ranges from.40 to.47 i.e., acceptable average reliability. The means and standard deviation of trail one and trails two demonstrate compatibility for each individual academic question. The test-retest reliability of all the variables was found to be acceptable.

Table 3: Inferential Statistics of Trial One and Trial Two of the AAQ Administered to Sedentary Females

S. No.	Variables	Trial One			Trial Two			T-ratio
		M	±	SD	M	±	SD	
1	AAQ1	5.8	±	1.83	6.1	±	1.63	-0.62 (N.S)
2	AAQ2	5.3	±	1.87	5.8	±	1.46	-1.19 (N.S)
3	AAQ3	4.7	±	1.74	4.6	±	1.68	0.19 (N.S)
4	AAQ4	5.3	±	1.95	5.7	±	1.73	-0.84 (N.S)
5	AAQ5	5.6	±	1.74	6.1	±	1.59	-1.15 (N.S)
6	AAQ6	5.5	±	1.2	5.9	±	1.54	-1.21 (N.S)
7	AAQ7	4.8	±	1.75	6.1	±	1.54	-3.35*
8	AAQ8	4.6	±	1.99	5.4	±	1.72	-1.79 (N.S)
9	AAQ9	5.2	±	1.73	5.5	±	1.27	-0.79 (N.S)
10	AAQ10	5.4	±	1.93	5.7	±	1.7	-0.67 (N.S)

Note: *Significant at 0.05 level of significance; N. S= Not Significant. Rounded mean to one digit after the decimal; SD and T-ratio to two digits after decimal.

The data in Table 3, shows the result of T-Test applied at 0.05 level of significance between trial one and trial two for sedentary college going females. The variables in the Academic Achievement Questionnaire namely AAQ1, AAQ2, AAQ3, AAQ4, AAQ5, AAQ6, AAQ8, AAQ9, AAQ10 were found to be insignificant ($p<0.05$; $t>1.99$). Whereas, the variable namely AAQ7 was found to be significant ($p<0.05$; $t>1.99$).

Conclusions

1. The test-retest reliability coefficient of the Academic Achievement Questionnaire administered to college going sedentary female ranged from 0.40 to 0.47.
2. The descriptive statistics of the data documented compatibility of each Academic Achievement Question. The mean test-retest reliability of all the selected questions of the Academic Achievement Questionnaire reported a value of 0.44 which is rated as 'acceptable' correlation of coefficient.

3. The test-retest reliability of all the 10 variables was found to be acceptable.
4. According to t-test between trial one and trial two, out of 10 selected variables, nine variables were found to be insignificant. And only one variable that is AAQ7 was found to be significant. Hence, corroborated the findings related to reliability coefficient.

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