

## Review Article

### A study on stress stimuli among the students of physical education

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**Abstract.** The present study was undertaken to study the stress level of physical education students in a university. Level of stress due to different stimuli and level of coping strategy of men and women were measured by using the questionnaire. Thirty male and thirty female physical education students were randomly selected. Stress scores due to 1.Frustration and Inhibition, 2. Overload and 3.Compulsive, Time-urgent and Aggression were recorded for each student using the questionnaire. These subjects were also tested for their level of coping strategy. Scores obtained were analyzed using SPSS version 16.0. The results showed that the frustration and inhibition had significant correlation with time-urgent and aggressive stimuli in the PG men whereas, there was significant correlation between frustration and inhibition v/s overload stimuli among UG men. Similarly in the UG and PG women there was a significant correlation between frustration and inhibition v/s overload. Further, in PG women there was a negative relation between coping strategy and stress due to time-urgent and aggressive stimuli.

Further, two way analysis of variance resulted that stress due to all the three stimuli i.e. frustration and inhibition ( $p=.003$ ), overload ( $p=.049$ ) and time-urgent and aggressive behavior ( $p=.042$ ) were significantly higher among women in comparison to that of men irrespective of their classes. Whereas coping strategy ( $p=.048$ ) was higher in men in comparison to that of women. In assessing the vulnerability towards stress it was observed that among the UG section 86.7% men were vulnerable to stress due to frustration and inhibition whereas 100% women were found to be vulnerable to the stress due to overload. In PG section 80% men were vulnerable to stress due to overload whereas 100% women were found to be vulnerable to stress due to time urgent and aggressive behavior. In the UG section 80% men and 60% women were having adequate or good coping strategies whereas in PG section 80% men and 46.75% women were having adequate or good coping strategies. Thus, it may be concluded that in general, women had inadequate coping strategies than that of men whereas, they were more vulnerable to stress due to different stimuli in comparison to that of men.

**Key words:** Stress assessment, Stimuli, Coping strategy, Vulnerability towards stress.

#### Introduction

We are exposed to numerous stimuli in our day-to-day activities that are responsible for increasing stress levels. Stress is an internal experience that creates psychological or physiological imbalances within an individual and results from the factors in the external environment, the organization or the individual. People in different settings differ in perceiving the stressful situations, and how they cope with stress producing situations. It is important for each individual to find ways to manage stress effectively, because constant stress or over stress may lead to disease or illness (Selye, 1956). The body does not differentiate between physiological and psychological stresses. Instead, the immediate response of the body to stress is generalized and prepares the body to fight or flee from potentially threatening situations. Stress is a feeling experienced when a person thinks that "the demands exceed the personal and social resources the individual is able to mobilize" (Lazarus, 1966). The events that provoke stress are called stressors. It is not always necessarily harmful – it all depends on how one takes it (Selye, 1956).

One particular time period during one's lifespan where stress may be increased is when studying as a college student. A disturbing trend in college student's health is the reported increase in students stresses nationwide (Sax, 1997). Stressors affecting students can be categorized as academic, financial, time or health related, and self-imposed (Goodman, 1993; LeRoy, 1988). Academic stressors include the student's perception of the extensive knowledge base required and the perception of an inadequate time to develop it (Carveth et al., 1996).

Students report experiencing academic stress at predictable times each semester with the greatest sources of academic stress resulting from taking and studying for exams, grade competition, and the large amount of content to master in a small amount of time (Abouserie, 1994; Archer and Lamnin, 1985; Britton and Tesser, 1991; Kohn and Frazer, 1986).

When stress is perceived negatively or becomes excessive, students experience physical and psychological impairment (Murphy and Archer, 1996). Methods to reduce stress by students often include effective time management, social support, positive reappraisal, and engagement in leisure pursuits (Blake and Vandiver, 1988; Mattlin et al., 1990). Researchers and theorists in the related literature differ on whether coping is necessarily a conscious process. For example, while Lazarus or Folkman (1984) argue that coping is a conscious attempt at reducing or managing stress, others (Hardy et al., 1996) contend that coping strategies can be initiated with minimal cognition. The concept of time management is generally defined in terms of clusters of behavior that are deemed to facilitate productivity and alleviate stress (Lay and Schouwenburg, 1993). Effective time management strategies increase academic performance (Campbell and Svenson, 1992) and are frequently suggested by academic assistance personnel as aids to enhance achievement for college students.

In the field of physical education and sports there are many stimuli which one has to face which may result enhancing the level of stress. During an academic year the students of physical education experiences many stressful situations due to commitments in their academic achievement and sports activity performance. Due to too much commitment in the professional institutions one confronts stressful situations more often which may ultimately affect the health of an individual. This paper investigates the causes of stress due to different parameters among the men and women, and their level of coping strategy in under-graduate (UG) and post-graduate (PG) students of the physical education university of India.

## Material and Methods

A sample of thirty under-graduate and thirty post-graduate physical education students were randomly chosen from the Lakshmbai National University of Physical Education for the study, out of which fifteen men and fifteen women in each group were selected. The stress assessment questionnaire developed by Daniel et.al. (1979) was administered to assess the level of stress due to three sources; (1) frustration and inhibition(2) overload and(3) compulsive time urgent and aggressive behavior. Further a second questionnaire developed by George and Everly used by Heyward (1991) was also administered on the subjects to measure their coping strategy. In the first questionnaire there were, thirty questions and subjects were asked to give their response by choosing one of the option out of four viz.;" almost always true", "usually true", "usually false", "Almost always false". By using the scoring key, scores were obtained for each subject on each of the three sources of stress. In second questionnaire there were fourteen questions and subjects were required to reply either in "yes" or "no" option. By using the scoring key, scores for each of the subjects were calculated for coping level towards stress. Once the scores of each of the subjects were obtained on stress due to all three sources and on the coping strategy, the data were subjected to three types of analysis. Firstly, descriptive profile was prepared for each sources of stress and secondly, two-way analysis of variance was used to compare the various sources of stress between gender and class. Finally, correlation matrices were computed for the data on stresses in each gender and class separately to know the behavior of various sources of stress and their coping strategy.

## Results

### Co-relational Analysis

Table 1 shows the correlations among the stress scores due to three sources and scores on coping level among post-graduate men. The correlation between the stress scores due to frustration and inhibition and stress scores due to compulsive, time-urgent and aggressiveness (0.559) was found to be significant at 5% level.

**Table 1.** Correlation matrix of stress scores due to three factors and coping level of post-graduate men

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
X <sub>1</sub>	1	0.159	0.559*	-0.143
X <sub>2</sub>		1	0.387	-0.112
X <sub>3</sub>			1	-0.373
X <sub>4</sub>				1

\*Significant at .05 level (2-tailed).

X<sub>1</sub>: Stress due to Frustration and Inhibition

X<sub>2</sub>: Stress due to Overload

X<sub>3</sub>: Stress due to Compulsive, Time-urgent and Aggression

X<sub>4</sub>: Coping strategy

Table 2 shows the correlations among the stress scores due to three sources and scores on coping level among under-graduate men. The correlation between the stress scores due to frustration and inhibition and stress scores due to overload(0.599) was found to be significant at 5% level. Further, the correlation between the stress due to frustration and inhibition and stress scores due to compulsive, time urgent and aggressiveness (0.640) was also found to be significant at .05 level.

**Table 2.** Correlation matrix of various sources of stress and coping level of under-graduate men.

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
X <sub>1</sub>	1	.599*	.640*	-.106
X <sub>2</sub>		1	.180	-.048
X <sub>3</sub>			1	.170
X <sub>4</sub>				1

\*correlation is significant at the .05 level (2-tailed).

X1: Stress due to Frustration and Inhibition

X2: Stress due to Overload

X3: Stress due to Compulsive, Time-urgent and Aggression

X4: Coping strategy

Table 3 shows the correlations among the stress scores due to three sources and scores on coping level among under-graduate women. The correlation between the stress scores due to frustration and inhibition and stress scores due to overload(0.614) was found to be significant at 5% level.

**Table 3.** Correlation matrix of various sources of stress and coping strategy of under-graduate women

	X1	X2	X3	X4
X1	1	.614*	.064	.282
X2		1	.124	.336
X3			1	-.023
X4				1

\*correlation is significant at the .05 level (2-tailed).

X1: Stress due to Frustration and Inhibition

X2: Stress due to Overload

X3: Stress due to Compulsive, Time-urgent and Aggression

X4: Coping strategy

Table 4 shows the correlations among the stress scores due to three sources and scores on coping level among post-graduate women. The correlation between the stress scores due to frustration and inhibition and stress scores due to overload(0.565) was found to be significant at 5% level.

**Table 4.** Correlation matrix of various sources of stress and coping strategy of post-graduate women.

	X1	X2	X3	X4
X1	1	.565*	.116	.203
X2		1	-.053	.395
X3			1	-.625*
X4				1

\*correlation is significant at the .05 level (2-tailed).

X1: Stress due to Frustration and Inhibition

X2: Stress due to Overload

X3: Stress due to Compulsive, Time-urgent and Aggression

X4: Coping strategy

#### Analysis of Variance

The data was also analyzed by using the two way ANOVA for testing the following three null hypotheses for all the three stress related stimuli i.e. frustration and inhibition; overload; time urgent and aggressive behavior and coping strategy:

1. The stress level among the men and women are same irrespective of the classes.
2. The stress level among the students of UG and PG are same irrespective of their gender
3. Interaction between gender and class is insignificant.

Table 5 shows the result of two way ANOVA for all the four variables i.e. frustration and inhibition; overload; time urgent and aggressive behavior and coping strategy. It can be seen in table 5 that F-ratio for gender in all the four variables is significant at .05 level. The p-values for the gender in frustration and inhibition is .003; for overload is .049 and for the time urgent and aggressive behavior is 0.042 where as p-value in coping strategy for gender is .048.

**Table 5.** Two way ANOVA for the data on stress due to different stimuli

Variable	Source of Variation	df	SS	MSS	F-ratio	sig.
<b><i>frustration and inhibition</i></b>	Gender	1	106.66	106.66	9.310	<b>.003*</b>
	Class	1	26.66	26.66	2.238	.133
	Interaction	1	00	00	00	1
	Error	56	641.60	11.46		
<b><i>Overload</i></b>	Gender	1	96.26	96.26	4.045	<b>.049*</b>
	Class	1	.27	.27	.011	.916
	Interaction	1	86.40	86.40	3.63	.062
	Error	56	132.80	23.8		
<b><i>Time-urgent and aggressive Behavior</i></b>	Gender	1	64.06	64.06	4.34	<b>.042*</b>
	Class	1	21.60	21.60	1.46	.231
	Interaction	1	4.26	4.26	.28	.59
	Error	56	826.00	14.75		
<b><i>Coping strategy</i></b>	Gender	1	1706.66	1706.66	4.075	<b>.048*</b>
	Class	1	41.66	41.66	.099	.754
	Interaction	1	41.66	41.66	.099	.754
	Error	56	23453.33	418.81		

\*significant at .05 level

Thus, it may be concluded that there was a significant difference in the stress level of the men and women arising due to frustration and inhibition; overload as well as time urgent and aggressive behavior. Further, the coping strategy was also significantly different in men and women.

In order to know as to whether stress arising out of different stimuli were higher in women or men and also to know as to whether coping strategy to combat stress was higher in men or women, a post-hoc analysis was done by using the least significance difference (LSD) test. The results of these post-hoc analyses and mean stress values are shown in table -6.

**Table 6.** Mean and ( $\pm$  SD) stress scores of men and women due to different stimuli (all classes combined)

Variables	Men	Women	Mean Diff	CD at 5% level
<b><i>Frustration and Inhibition</i></b>	26.20( $\pm$ 3.59 )	28.87( $\pm$ 3.19 )	2.67*	1.748
<b><i>Overload</i></b>	27.66( $\pm$ 4.74)	30.20( $\pm$ 5.14)	2.54*	2.519
<b><i>Time-urgent and aggressive Behavior</i></b>	27.60( $\pm$ 3.51)	29.66( $\pm$ 4.12)	2.06*	1.983
<b><i>Coping strategy</i></b>	60.66( $\pm$ 17.65)	50.00( $\pm$ 22.36)	10.66*	10.568

\* Significant at .05 level of significance

It can be seen in table -6 that stress level for the women arising out due to all the three stimuli i.e. frustration and inhibition ; overload; time-urgent and aggressive behavior were higher than that of men, irrespective of their classes. Further, coping strategy of men was significantly higher than that of women.

*Gender Analysis*

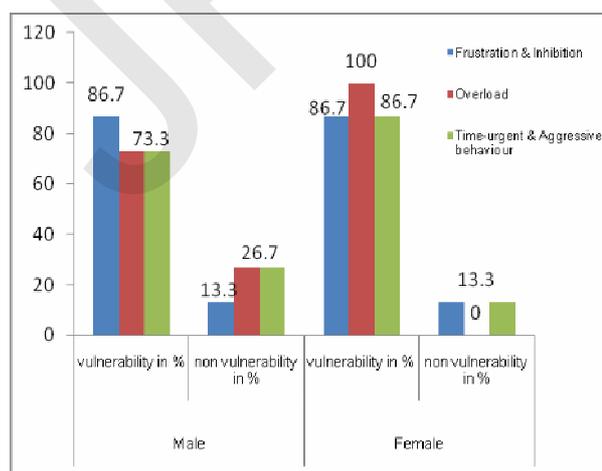
While assessing the vulnerability due to different stimuli, a subject was classified as vulnerable to stress due to particular stimuli if his/ her scores on that test were more than 25. Thus table 7 shows the percentage of UG students who are vulnerable to the stress due to different stimuli: frustration and inhibition, over- load and time urgent & aggressive behavior. The percentage of vulnerability and non-vulnerability to the stress due to different stimuli of under-graduate students are shown in figure 2.

**Table 7.** Percentage of under-graduate (UG) students vulnerable to the stress due to different stimuli

Stimuli	Men		Women	
	Vulnerability	non- Vulnerability	Vulnerability	non-Vulnerability
<i>Frustration and inhibition</i>	86.7%	13.3%	86.7%	13.3%
<i>Over- load</i>	73.3%	26.7%	100%	0%
<i>Time urgent and aggressive behavior</i>	73.3%	26.7%	86.7%	13.3%

**Table 8.** Percentage of post-graduate (PG) students vulnerable to the stress due to different stimuli

Stimuli	Men		Women	
	Vulnerability	non- Vulnerability	Vulnerability	Non-vulnerability
<i>Frustration and inhibition</i>	53.3%	46.7%	80%	20%
<i>Over- load</i>	80%	20%	60%	40%
<i>Time urgent and aggressive behavior</i>	73.3%	26.7%	100%	0%

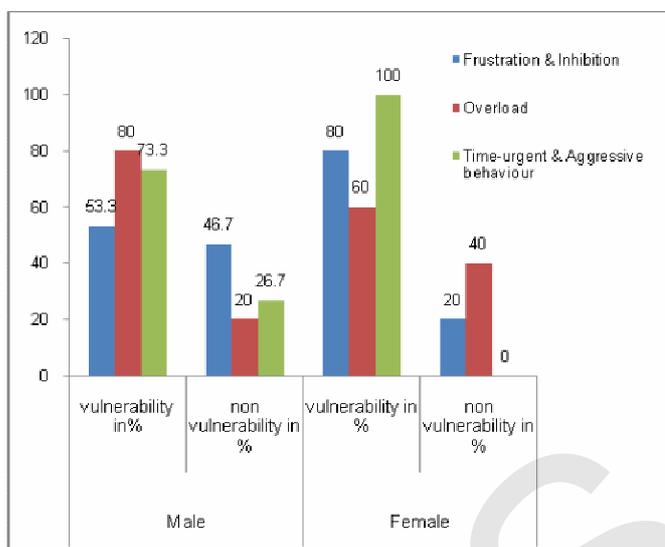


**Figure 2.** Percentage of vulnerability and non-vulnerability to the stress due to different stimuli of under-graduate students

Table 7 shows that in men section 86.7% students were vulnerable to stress due to frustration and inhibition and 73.3% were found to be vulnerable to stress due to overload as well as due to time urgent and aggressive behavior. Further, in the women section 100% were found to have vulnerability to the stress due to overload whereas 86.7% were found to be vulnerable to the stress due to frustration and inhibition as well as time urgent and aggressive behavior.

Table 8 shows the status of vulnerability towards stress among the men students of PG due to different stimuli. It can be seen from table 8 that 80% men were vulnerable to stress due to overload whereas 73.3% were vulnerable

to stress due to time urgent and aggressive behavior. In women section 100% were found to be vulnerable to stress due to time urgent and aggressive behavior whereas 80% were vulnerable to stress due to frustration and inhibition and 60% were found to be vulnerable to stress due to overload. The percentage of vulnerability and non-vulnerability to the stress due to different stimuli of post-graduate students are shown in figure 3.



**Figure 3.** Percentage of vulnerability and non-vulnerability to the stress due to different stimuli of post-graduate students

Thus, in general it may be concluded that the students are under continuous stress due to their frustration and inhibition profiles. Further, overload and time urgent and aggressive behaviour are also responsible for their high level of stress among the students.

Table 9 shows the percentage of students having different levels of coping strategies. In the UG section 80% men were having adequate or good coping levels whereas in the women section 60% were having adequate or good coping levels. Coping levels of under-graduate and post-graduate students have been shown in figure 4 and 5.

**Table 9.** Percentage of under-graduate (UG) and post-graduate (PG) students showing different levels of coping strategy

	Under-graduate (UG)		Post-graduate (PG)	
	Men	Women	Men	Women
Inadequate	20%	40%	20%	53.3%
Adequate	46.7%	40%	40%	13.3%
Good	33.3%	20%	40%	33.3%
Excellent	0%	0%	0%	0%

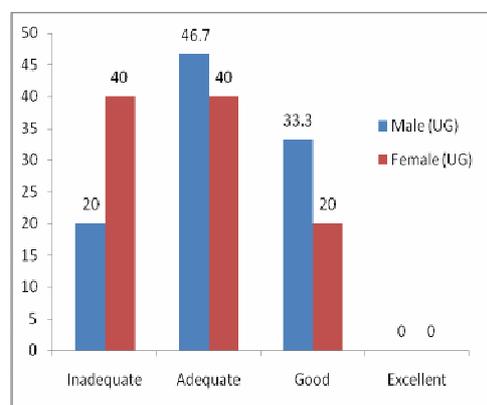


Figure 4.coping strategy of (UG) students

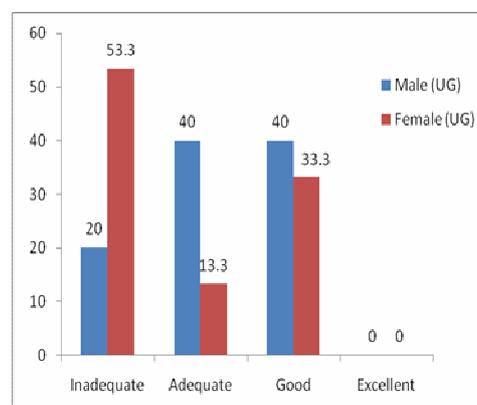


Figure 5.coping strategy of (UG) students

Further, among PG students 80% men had adequate or good coping level whereas 46.6% women had adequate or good coping levels. Thus, it may be concluded that UG as well as PG women in general had inadequate coping strategies in comparison to men.

## Discussion

Correlational analysis with the data on stress due to different stimuli and data on coping strategies among PG men showed that a significant relationship exists between the stress caused due to frustration and inhibition and stress due to compulsive, time urgent and aggressive behavior. It may be concluded that the compulsive time urgent and aggressive behaviour increases the frustration among the students. This kind of relationship was not exhibited among the PG women. It may be because of the fact that the men are more career conscious and therefore they had to strike a balance between activity as well as academic performance. While being at the masters' degree, men are keener to represent as many university tournaments as they can. Because of this approach they sometime lag behind in their studies. This may be one of the reasons why such kind of relationship was exhibited among the PG men only.

Among under-graduate men and women and post-graduate women the relationship between the stress caused due to frustration and inhibition( $X_1$ ) v/s stress due to overload( $X_2$ ) was significant. It may be concluded that overload enhances the frustration among the students which is quite logical, as all the students belongs to professional university of physical education where they are over burdened throughout the day due to hectic academic and activity schedules. However, in order to extract the real relationship among the different stimuli, it is recommended that future researchers may undertake such study using path analysis.

While applying the two-way ANOVA it was observed that stress was higher among the women in comparison to that of men in all the three stimuli. It may be because of the fact that the women had less freedom in comparison to that of men as they were supposed to be inside the hostel by 7 pm in the night every day. The other reasons may be non adjustment of their food habits, the strict activity schedule and the climatic change and above all they felt emotionally weak due to staying away from their family. Research conducted by Jackson and Maslach(1982) also showed that woman tend to experience more emotional anxiety. Pines et al (1981) cited woman's sensitivity to the social aspects of life and work as the reason why woman considered people a greater source of stress in their work than did man

Further, the coping strategy for the women was also inadequate in comparison to that of the men in general as shown in tables 7 and 8. This may be because of the fact that men had more chance of getting involved in leisure activities than that of women in residential institution. While assessing the vulnerability of the students due to different stimuli presented in table 7 and 8, it was observed that the UG men and women were more vulnerable to stress due all the three stimuli viz: frustration and inhibition, overload and compulsive, time urgent & aggressive behavior. The same trend was observed among PG men and women as well. Thus, it is recommended that some proactive measures taken at the administrative level in residential institutions of physical education may reduce the level of stress among the students in general and women in particular.

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