



Managing Test Anxiety and its influences on academic achievements using Neuro-Linguistic Programming (NLP) among College Students - Follow-up Study

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Abstract

Background: Test anxiety was shown to have negative debilitating effects on IQ/aptitude tests and eventually leads to poor academic performance and low motivation. Thus, in this current study, we are trying to explore the influence of Neuro-Linguistic Programming (NLP) interventions on management of academic achievements among Sport and Physical Activity students with anxiety King Saud University, Riyadh, Kingdom of Saudi Arabia.

Methods: A follow-up design was utilized to measure the effects of NLP treating program on anxiety and grade point average (GPA) academic achievements among 40 male university students with mild and moderate anxiety. Students with mild and moderate anxiety scores were subjected to NLP training strategies for 3 months (24 units; 2 units /week). Each unit lasting for 40-60 minutes. Academic achievements of students were measured as grade point average during four academic terms (T1—T4).

Results: The data showed significant difference in the levels of anxiety and GPA scores in students with moderate anxiety compared to those with mild scores. Compared to pre-test results, post-NLP training results showed significant reduction in the average scores of test anxiety and improved GPA scores among both students with mild and moderate anxiety, suggesting positive influence of NLP in improving anxiety, physiological, and mental parameters of students to achieve more academic scores (GPA).

Conclusion: The NLP program had a highly positive influence in reducing test anxiety and undesirable biological changes as well as improving GPA of students suffering with mild to moderate anxiety scores.

Keywords: Test anxiety, Grade point average, Neuro- Linguistic

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Intrudution:

Anxiety is a pathological state of fear that occurs while there is no real danger or when the emotional response is not adequate with the experience of risk (1). It was described by a feeling of inner restlessness, timidity, and concern. Fear of

Previously, test anxiety was shown to have a significant debilitating effect on both IQ/aptitude tests as well as poor performance in regular classroom tests (3,4,5).

In students with anxiety, many biological and psychological symptoms arise in association with the degree of fear from a test; it includes restlessness, unusual body movements, difficulty in concentrating, insomnia, fatigue, muscle contraction, abdominal pain, and tremors (6). These symptoms produce a negative consequences on student lives and professional growth (7), especially poor cognitive performance (8).

Negative effects of test anxiety were shown to be significantly associated with poor academic performance and low motivation (9), and that for test anxiety; fear of the test was an essential reason to promote severe anxiety scores (10,11). Higher test anxiety scores were shown to be associated with the decline in the performance of students at the university level, especially lower cognitive abilities of test anxiety which significantly affects on the academic performance (12,13,14).

Test associated stress and anxiety might be thought to play ideal roles, they encourage learning, shift the students' academic performance, and prepare students with stress to encounter in subsequent practice and foster coping strategies (15,16).

Previously, progressive muscle relaxation and activities acquired from religion or spirituality are benefit ways to manage and reduce anxiety among university students (17,18). Also, Neuro - Linguistic Programming (NLP) program was used to study and analyzing test anxiety among university students, the program based mainly on psychological and mental attributes of each student. It can be performed efficiently to improve and to develop the performance outcome of students, teachers, administrators and the community (19). In education, NLP mainly was applied to provide students with learning and training skills to improve the ability to reach the goal efficiently and effectively (20).

In our recently published study, NLP training programs were shown to provide a positive significant implications in reducing test anxiety and

exams and tests is one of the most cases of anxiety that provides more negative effects in the school environment, and ordinarily results in poor success, or lower achievements below the actual levels of ability of students (2).

undesirable biological changes appeared within university students from the college of Sport and Physical Activity (21). Thus in this current study, we are trying to explore the influence of NLP program interventions on management of academic achievements among Sport and Physical Activity students with anxiety at King Saud University, Riyadh, Kingdom of Saudi Arabia.

Materials and Methods:**Participants:**

A total of 40 healthy male university students from the college of Sport and Physical Activity of King Saud University were randomly enrolled in this follow-up study. Students who had serious acute or chronic health problems such as diabetes, endocrine disorders, cardiovascular disease, systemic infections, asthma and or malabsorption, physical disability, musculoskeletal disorders, mental retardation, or concentration problems or psychological disorders such as depression, or post traumatic stress disorders were excluded from this study. Based upon test anxiety scores (TAS), the participants were classified into two groups; mild anxiety group ($n=20$; $TAS \leq 240$) and moderate anxiety group ($n=20$, $TAS \geq 240$). "At a statistical power of 80% and a significance level of ≤ 0.05 , the sample size of the study was estimated to be 40 participants to compensate for an estimated 20% dropout rate. The study was approved by the Research Ethics Committee of King Saud University, and all participants gave signed informed consent. Demographics and baseline biological indicators of all participants were shown in table 1. A digital sphygmomanometer was used for systolic blood pressure (Sys), diastolic blood pressure (Dis) and heartbeats per minute (HR/min)" (22).

Assessments of test anxiety measures (TAS)

Test Anxiety Inventory (Spielberger, Gonzalez, Taylor, Algaze, & Anton, 1978) was used in this study (15). This test has been proven to have a high degree of validity and reliability (23). "It consists of 93 items. The scores were recorded on a three-point Likert scale of 1-3 where: 1 = Rarely feel the test anxiety, 2 = Sometimes I feel test anxiety, and 3 = I often feel test anxiety. The maximum degree was 279 and the

minimum was 93. These items were distributed into six divisions: Awe of the test 26 items where the maximum degree was 78 and the minimum was 26. The test confusion 19 items where the maximum degree was 57 and the minimum was 19. Test performance tension 15 items where the maximum degree was 45 and the minimum was 15. Discomfort test consists 12 items where the maximum degree was 36 degree and the minimum was 12 . Lack of test skills consists 14 items where the maximum degree was 42 and the minimum was 14. Disorder when taking consists 7 items where the maximum degree was 21 and the minimum was 7. The items of this test are answered, and corrected by giving a mark to each of the six sub-scales individually. These are combined to get the total score” (23).

Assessments of NLP training program

NLP training program was applied to all participants; mild and moderate groups, and it proceeds for 3 months -24 units; 2 units/week, each unit of 40-60 min/ apiece- (24,25). “The NLP program consists of a mixture of styles, goal setting,time management, assertiveness skills, effective communication,relaxation skills, and internal representations models based onSkills for Making Change Happen (24,25).”

Assessments of academic achievements

students’ academic achievements were measured using Grade Pont Average (GPA). The GPA is to measure students’ academic performance. The GPA was obtained from the questionnaire in which the students were asked to record their GPA on the questionnaire. The classification of the academic performance level of some universities categorized as low academic performance is $GPA \leq 3.0$;

moderate is within the range 3.1 - 3.6; and high is $\geq 3.7 - 4$ respectively (26).

Statistical Analysis

An SPSS software (StatisticalPackage for the Social Sciences, version 18.0, SPSS Inc. Chicago,IL, USA) was used to perform statistical analyses. “ The qualitative variables were presented in terms of frequencies and percentage, and the quantitative variables were represented using mean and standard deviation. For analyses within the groups, i used a t-test for paired data. The unpaired t- test was used for within and between groups” “ The comparison and correlation of the studied parameters were investigated using both Student’s t-test and Pearson’s correlation coefficient, respectively Values at $p < 0.05$ were considered statistically significant.” (21,27).

Results

A total of 40 healthy students from the college of Sport and Physical Activity of King Saud University were participated in this study. Table 1, shows baseline demographic characteristics, biological indicators, and academic achievements. Based up on TAS, students classified into two groups; mild group ($n=20; TAS \leq 240$) and moderate group ($n=20; TAS \geq 240$). Students with moderate TAS showed significant increase in the levels of TAS score ($P=0.01$) and grade point average ($p=0.001$) of students compared to those of mild group.

Also, diastolic blood pressure (DBP, $P=0.014$) and systolic blood pressure (SBP; $P=0.001$) as biological indicators showed significant increase in students with moderate TAS compared to those of mild TAS .

Table 1. Baseline demographic characteristics, biological indicators, and academic achievements of the participants (n=40).

Variables	Mild Anxiety (n=20; TAS ≤ 240)	Moderate Anxiety (n=20; TAS ≥ 240)	P-value
Age (years)	19.0±0.8	19.44±0.31	0.124
BMI (BMI (kg/m ²))	19.9±1.14	20.5±1.2	0.165
<u>TAS:</u>			
Awe of the test	53.14±3.84	67.55±5.6	0.01
TAS confusion	48.61±2.9	54.35±2.72	
TAS performance tension	35.53±2.21	42.5±2.35	
TAS Discomfort	29.96±3.36	37.4±3.8	
lack of TAS skills	34.91±4.22	40.55±1.67	
TAS disorder	15.19±2.95	19.1±2.2	
TAS Total score	216.36±8.5	261.5±11.31	
<u>Academic achievements</u>			0.001

1 st term GPA score	2.51±0.27	2.49±0.17	
2 nd term GPA Score	2.74±0.18	2.65±0.19	
3 rd term GPA score	2.83±0.15	2.74±0.18	
4 th term GPA score	2.98±0.14	2.76±0.22	
Total GPA score	2.76±0.134	2.65±0.13	
<i>Biological indicators:</i>			
Heart rate	86±1.5	86±1.0	0.76
Diastolic blood pressure	89±1.4	92±2.7	0.014
systolic blood pressure	134±1.6	138±3.1	0.001

Values are expressed as mean ±SD; the unpaired t- test was used for within and between groups. Values at p<0.05 were considered statistically significant; BMI: body mass index; GPA: grade point average; TAS: test anxiety score.

In this study, to improve GPA and reduce TAS scores, students were subjected for NLP training program for a period of 3 months (Table 2). Both students of mild and moderate groups showed significant decrease in TAS scores (P=0.001) with an

improvement in total GPA (P=0.01) during academic terms of the year were reported after treatment with NLP training program for a period of 3 months.

Table 2: Improvements in Test anxiety scores (TAS) and grade point average (GPA) of students with mild and moderate anxiety following NLP training interventions for 3 months (Mean ± SD).

Variables	Mild Anxiety (n=20; TAS≤ 240)		Moderate Anxiety (n=20; TAS≥240)	
	Pre-NLP	Post-NLP	Pre-NLP	Post-NLP
<i>TAS:</i>				
Awe of the test	53.14±3.84	48.2±1.85 **	67.55±5.6	45.6±3.4 ***
TAS confusion	48.61±2.9	41.7±3.2 **	54.35±2.72	40.8±3.9 ***
TAS performance tension	35.53±2.21	29.7±2.8 **	42.5±2.35	32.6±4.1 ***
TAS Discomfort	29.96±3.36	22.6±3.1 **	37.4±3.8	27.8±5.2 ***
lack of TAS skills	34.91±4.22	32.91±3.7 **	40.55±1.67	31.8±3.8 ***
TAS disorder	15.19±2.95	11.3±2.7 **	19.1±2.2	16.5±2.8 ***
TAS Total score	216.36±8.5	186.4±6.1 **	261.5±11.31	195.1±6.2 ***
<i>Academic achievements</i>				
1 st term GPA score	2.51±0.27	2.84±0.42 **	2.49±0.17	2.9±0.34 ***
2 nd term GPA Score	2.74±0.18	2.81±0.37 **	2.65±0.19	3.04±0.42 ***
3 rd term GPA score	2.83±0.15	2.91±0.28 **	2.74±0.18	3.5±0.58 ***
4 th term GPA score	2.98±0.14	3.08±0.19 **	2.76±0.22	3.76±0.65 ***
Total GPA score	2.76±0.134	2.91±0.45 **	2.65±0.13	3.3±0.35 ***

Values are expressed as mean ±SD; the unpaired t- test was used for within and between groups. * P< 0.05, ** P< 0.01 (Pre- versus Post- in mild group), *** P< 0.001 (Pre- versus Post in moderate group). Values at p<0.05 were considered statistically significant; BMI: body mass index; GPA: grade point average; TAS: test anxiety score.

Correlations between test anxiety scores (TAS) and GPA scores of academic achievements in students with mild (n=20) and moderate anxiety levels were shown in table 3 and figure 1A and 1B respectively. Test anxiety scores correlated negatively with GPA scores at different academic terms [T1-T4]. TAS showed significant decrease from T1 to T4 compared to improved GPA scores in students with mild (P=0.01; R = -0.124) and moderate (P=0.001; -0.657) following 3 months of NLP training interventions.

Table 3: Correlation coefficients analysis between test anxiety score (TAS) and students grade point average (GPA) at four academic terms following 3 months of NLP training interventions.

Variables	Total anxiety score (TAS)	
	Mild (n=20;TAS≤ 240),R	Moderate (n=20;TAS≥240),R
1 st term GPA score	-0.124*	-0.354**
2 nd term GPA Score	-0.278*	-0.215**
3 rd term GPA score	-0.871*	-0.312**
4 th term GPA score	-0.325*	-0.185**
Total GPA score	-0.685*	-0.631**

Data presented as coefficient (R); * denotes significance at <0.01; ** denotes significance at <0.001

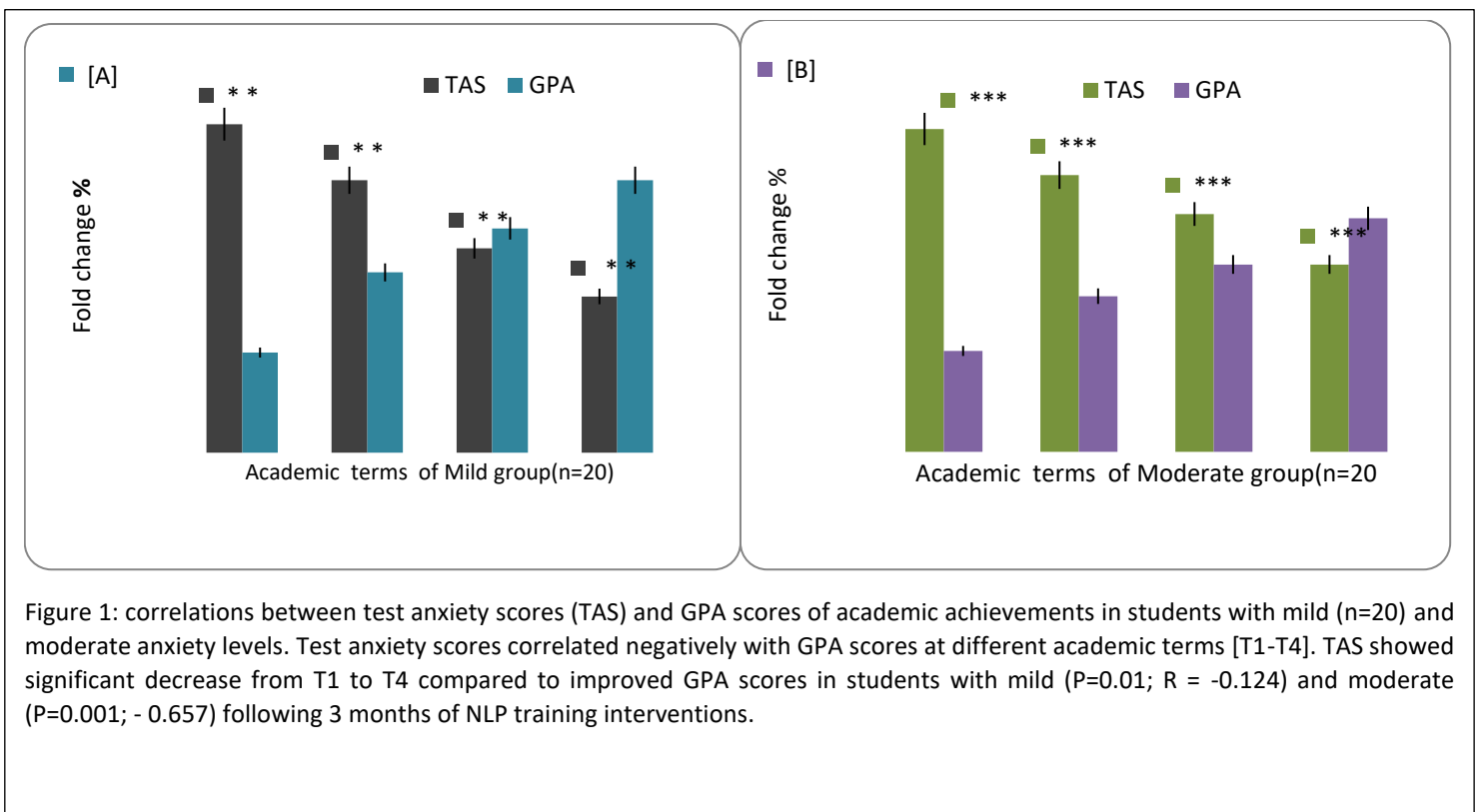


Figure 1: correlations between test anxiety scores (TAS) and GPA scores of academic achievements in students with mild (n=20) and moderate anxiety levels. Test anxiety scores correlated negatively with GPA scores at different academic terms [T1-T4]. TAS showed significant decrease from T1 to T4 compared to improved GPA scores in students with mild (P=0.01; R = -0.124) and moderate (P=0.001; - 0.657) following 3 months of NLP training interventions.

Discussion

This study shows that grade point average (GPA) as a measure of academic achievements during terms of the year was significantly lowered and significantly associated with higher test anxiety (TAS scores) in students with moderate TAS compared with those of mild TAS. Our data were in agreement with previously reported studies which clearly showed higher rates of anxiety disorders among students (28,29). These forms of anxiety most of the time tends to weaken students' test taking ability, and consequently lead to a decrease in knowledge of the studied courses which leading to poor performance in the test and eventually affects on both the test scores and overall grades (30). In consistent with previous studies, our results showed that mild and moderate test anxiety scores were associated in greater part with students during periods of academic exams, while only small scores with severe test anxiety were evaluated (31,32).

Correspondingly, in our study lower GPA showed significant negative association with higher scores of test anxiety among our targeted students. This finding was in accordance with previously reported studies (31,33,34) which indicates that during student examinations, higher outcome measures of anxiety such as physiological, psychological and behavioral during examination negatively affected student's performance and outcome GPA in the examination (33,34), and that students with higher test anxiety showed low academic achievements GPA (34).

This study also establishes that NLP training program for a period of 3 months significantly reduce test anxiety scores and increase GPA of students during academic terms. The data obtained showed that GPA scores correlated negatively with increased levels of test anxiety scores among healthy students of the college of Sport and Physical Activity of King Saud University.

Previous research studies showed that NLP training programs help individuals to develop and acquire more skills, and reduce fears and test anxiety scores which in turn increase control of students to perform tests efficiently and to succeed in them (35). Similarly, it was reported that with one session of

hypnosis and NLP can decrease severe anxiety and increase student performance during examinations (36).

In this study, biological indicators such as heart rate and blood pressure were shown to increase in students with moderate TAS compared to those of mild stage. The effect of NLP training programs on biological indicators was briefly discussed in our previous research study. In that study, NLP treated students was more healthy suggesting that the NLP program markedly reduces stress, buffering heart rate and lowering blood pressure which is also consistent with previously reported data in the literature (37).

Biological feedback and relaxation techniques such as NLP programs provide students with more physiological self-organization via reduction in the levels of both blood pressure and heart rate. This eventually leads to change in the mental state of the students to overcome test anxiety symptoms (38).

Although, our study clearly explored the role of NLP programs in managing test anxiety and improving GPA of the university students. It has some limitations such as gender differences regarding the effect of NLP treatment on anxiety among females. Also, because of low sample size, stress hormones and its association with anxiety and GPA scores were not appreciated in this protocol which needs for further elucidations on larger samples. The data obtained clearly recommend NLP program as treating strategy for reducing anxiety and improving GPA academic achievements among university students.

Conclusion

The NLP program had a highly positive influence in reducing test anxiety and undesirable biological changes as well as improving GPA of students suffering with mild to moderate anxiety scores.

Disclosure

The author reports no conflicts of interest in this work.

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