RESEARCH PAPER

Physical Factors Affecting Academic Performance of College Going Young Adults

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ABSTRACT

Background

As we know that there are many physical factors viz Neck pain/Back pain/Mental Wellbeing/Body weight and Insomnia etc., which affects our daily routine including ADL's, Functional Activity, Recreational and Occupational Activity. In this study only three physical factors are included namely Neck, Back pain, and Obesity to find the level of disturbances in academic activity of college going students.

Methodology

Total 50 participants were selected to participate in the study. Complete instruction was given to all participants with two Questionnaire forms to fill. BMI was taken in the assessment.

Result

The result of the study has shown that the Academic performance was affected in those participants who were reported with neck pain, back pain and having overweight. Without such complaints, the percentage of participants was very less with low academic performance.

Conclusion

The study concluded that physical factors like Neck Pain, Back Pain and overweight/obesity reduce the Academic performances in college going young adults.

Keywords: Activity of Daily Living (ADL), Instrument Assisted Soft Tissue Manipulation (IASTM), Body Mass Index (BMI), Neck Pain Disability Index Questionnaire (NPDIQ), Oswestry Low Back Pain Disability Questionnaire (OLBPDQ).

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INTRODUCTION

Introduction

Academic performance is a multifaceted outcome influenced by cognitive, psychological, social, and physical factors. While much emphasis is placed on intellectual and socio-emotional determinants, the role of physical factors - such as nutrition, sleep quality, physical activity, posture, vision, hearing, and general health - remains equally significant. Academic achievement requires optimal brain function, concentration, and sustained energy levels, all of which are influenced by physical well-being. Understanding these factors is essential for educators, parents, and policymakers to design interventions that promote holistic student development.

Obesity and Academic Performance

Obesity is increasingly recognized as a factor that can indirectly affect academic outcomes. Beyond physical health risks, obesity has been linked to reduced self-esteem, social isolation, and lower participation in school activities, which can negatively

impact motivation and learning. **According to Li et al. (2008)**, obese adolescents often display lower academic performance, potentially due to increased absenteeism, fatigue, and psychosocial stress. Moreover, obesity has been associated with reduced executive functioning, particularly in attention and working memory, both of which are crucial for academic success.[1]

Back Pain and Academic Performance

Back pain is indeed another important physical factor since it affects concentration, attendance, and physical comfort in class. Among these, back pain has emerged as a growing concern among school and college students. Heavy school bags, prolonged sitting in classrooms, excessive screen time, and poor ergonomics contribute to musculoskeletal discomfort at a young age. Back pain can distract students during lessons, reduce their ability to sit for long study hours, and increase absenteeism due to medical consultations or fatigue. Consequently, such discomfort indirectly influences academic engagement and performance. Though, low back pain is very common, so many studies have been done on low back pain, its management and few were done to check the assessment procedure like Pain provocation test in the patients.[2, 3]

Jain K. 2024 stated that low back pain is a common condition now-a-days and it affects overall performance of a person in day today life style including Academic, ADL's, Functional and Recreational activities.[4]

Neck Pain and Academic Performance

Among musculoskeletal issues, back and neck pain have emerged as growing concerns among students. Heavy school bags, prolonged sitting in classrooms, poor posture, and extended screen time are major contributors. Neck pain is associated with muscle fatigue, headaches, and reduced attention span, which may hinder effective learning. Students suffering from chronic neck discomfort may find it difficult to maintain concentration during lectures, complete long study sessions, or participate in classroom discussions. Such physical strain not only causes discomfort but also indirectly reduces academic productivity.

Nelakurthy S. in 2020 worked on pre & postpartum women who were complaining neck pain also. The study evaluated that postural changes in cervical & thoracic spine, and stated that women who were having neck pain, also complained about decline in reading habit.[5]

Mental well-being and Academic Performance

While your focus is on physical factors, it is important to acknowledge that mental well-being is closely intertwined with physical health, and both influence academic outcomes. Academic achievement requires optimal brain function, concentration, and sustained energy levels, all of which are influenced by physical well-being. Beyond these, mental well-being represents a crucial physical and psychological dimension that directly affects learning outcomes. Students experiencing chronic stress, anxiety, or depression often struggle with focus, memory retention, and motivation. For instance, a student who is physically present in the classroom but mentally overwhelmed by stress may find it difficult to absorb new concepts or perform well in examinations. Conversely, students with good mental well-being demonstrate resilience, sustained attention, and higher productivity, making them better equipped to meet academic demands.

Taken together, factors such as back pain, neck pain, and mental well-being highlight how both physical discomfort and psychological strain can disrupt the academic journey. This study therefore aims to explore the role of physical factors - including nutrition, sleep, physical fitness, sensory health, obesity, musculoskeletal discomfort, and mental well-being-in shaping academic performance among students, thereby emphasizing the need for a holistic approach to student health and learning.

A study done by **Pallewar M. 2021** explained that poor posture and age-related changes can also create pain in cervical region, which can radiate to the upper limb, so this study applied cervical traction and neural mobilization on the subjects to reduce the symptoms. Similarly, the procedure can be applied on the current study after the calculation of the result to improve the academic performance in college going students.[6] **Nelakurty S. 2020** also supported the treatment procedure including neural mobilization for the patient with cervicobrachial pain.[7,8]

Jain P. 2022 supported the treatment for low back pain by using IASTM tools and cupping therapy methods in patient with non-specific low back pain. This study also explained that non-specific lower backache is noted in college going students, so IASTM and cupping therapy sort of treatment can also be beneficial for the participants of the current study to improve their academic performance by making body fit.[9]

Nelakurthy S, 2020 also stated in their comparative study done on non-specific low back pain by comparing Mulligan's BLR versus Traction SLR

technique that low back pain is very common in any age group, specially when sitting is prolong (students or IT professionals). They explained that Mulligan BLR technique is very effective. So, their study supports the participants age group and symptoms also for the future treatment.[10]

Saharan M. 2022 also stated in their study on Ultrasonic cavitation for the treatment of Gynoid obesity that obesity/overweight keep the person Inactive in their life, which effect the overall performance of an individual.[11]

Saharan A. 2024 also stated in his book 'Pain Management in Physiotherapy' in the chapter four 'Nutritional Strategies for Pain Relief' that Nutrition we take daily also have an impact not only on our health but also on our body pain. He stated that Omega-3 fatty acids also useful in declining inflammation. So, the participants of this study can be benefited from such type of nutrition guideline for pain reduction.[12]

Other Physical Factors includes pain in other joints like Hip, Knee, Ankle, Shoulder, Elbow, Wrist etc., which affects the academic performances, **Mathur DM 2018** stated that knee pain also disturbs the all activities of daily living including study.[13-15]

Aim of the Study: To find the role of physical factors affecting academic performance of college going young adults.

METHODOLOGY

Research Design:

- A cross-sectional survey

Sample:

- Total 50 college going subjects, between the age span of 18 – 28 years were randomly selected.

Study Setting:

- A cross-section study was conducted in department of physiotherapy.

Participant Recruitment:

- All genders were included between the age of 18 – 28 years in the study.

Sample Size:

- Sample size was calculated using G – Power software

Inclusion Criteria:

- College going students between the age span of 18 – 28 years
- Subjects willing to share daily study status
- Subject with complain of Neck pain, Back pain and overweight

Exclusion Criteria:

- Subjects who have undergone surgical procedure near neck and back
- Recent injury to the back
- Subjects on painkillers, muscle relaxants
- Regular gym going

Outcome Measure:

1. 'Neck Pain Disability Index Questionnaire' (NPDIQ)
2. 'Oswestry Low Back Pain Disability Questionnaire' (OLBPDQ)

Procedure of Data Collection

The subjects were recruited and explain in detail about the ongoing study and the valuable or genuine feedback from them. Participants were asked to prepare a list of daily activities including Study time, Recreation time, Sleeping time and self-care or exercise time.

All the participants were explained about the role of Diet, Regular Exercise, Physical fitness, Flexibility, Recreation activity in their life and the role of physical factors affecting academic performance during their study period.

After a detail explanation all the participants were asked to go through a detailed assessment including Age, Height, and Body Weight. BMI was calculated by using formulae:

BMI = Weight (kg) / Height (m^2)

Then, all the participants were asked to relax for a while and fill the two (02) Questionnaire namely:

1) 'Neck Pain Disability Index Questionnaire'
2) 'Oswestry Low Back Pain Disability Questionnaire'

Participants were asked to fill both questionnaires honestly to calculate the role of physical factors affecting academic performance in their life style. Participants were asked to attempt all sections of the both scale if possible and same time strictly told that only one option per section is allowed to mark in the scale. Later calculations were done as per the instructions of the scale to check the impact of physical factors like Sedentary lifestyle, Lack of exercise, over weight and poor posture in their study.

Data Analysis

Descriptive statistics were used to summarize variables. Correlation and regression analyses tested associations between physical factors and academic scores.

RESULT

In matter of Nutrition, students who reported regular and healthy meal consumption daily scored lowest percentage in both questionnaire, which directly reflected in their academic performance because they were having No pain in body area and able to

concentrate in their study as well. Overall, there was No Physical factors like neck or back pain which can Affect their concentration on Academic performance. In opposite participants with irregular diet/nutrition having disturbed academic performance due to different physical factors like pain in neck or back.

During general assessment, obese / overweight participant admitted that due to excessive weight their body is lazy, sleepy and they find it difficult to sit and study for a required time to score a good mark during examination. So, they also feel that excessive body weight is also next Physical factor which harm their academic performance.

In respect of Physical factors like Neck Pain and Back Pain; high number of participants complained regarding these factors. These factors are the most common among others, which affects academic performance.

Table 1: Mean and SD (Age, Height, Body weight & BMI)

	Age	Height	Bodyweight	BMI
Mean	23.0800	162.3200	79.1800	26.8800
N	50	50	50	50
Std. Deviation	4.32760	6.53855	6.71182	3.44425

Table 1 shows the Mean and SD of Age 23.0800 & 4.32760, Height 162.3200 & 6.53855, Body weight 79.1800 & 6.71182, and BMI 26.8800 & 3.44425. The mean value of BMI shows the overweight (pre-obesity) in college going students which further indicate the low academic performance.

Table 2: Mean and Standard deviation (ONDQ & OLBPDQ)

	ONDQ Scoring	OLBPDQ Scoring
Mean	25.8600	26.9400
N	50	50
Std. Deviation	5.86936	6.93824

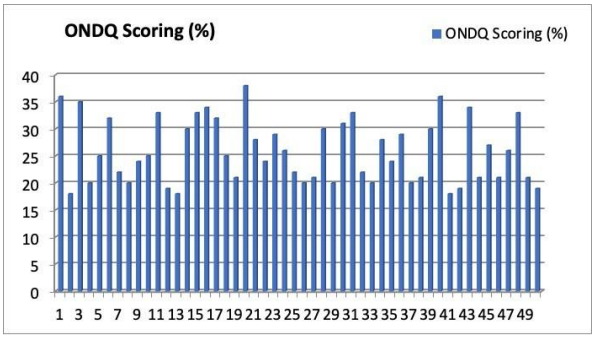
Table 2 shows the Mean and SD of ONDQ scoring 25.8600 & 5.86936 and OLBPDQ scoring 26.9400 & 6.93824. The mean value of both the scoring shows the Moderate Disability in college going students which further indicate the low academic performance.

Table 3: Frequency Distribution (ONDQ Scoring)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**18.00**	3	6.0	6.0	6.0
	19.00	3	6.0	6.0	12.0
	20.00	6	12.0	12.0	24.0
	21.00	6	12.0	12.0	36.0
	22.00	3	6.0	6.0	42.0
	24.00	3	6.0	6.0	48.0
	25.00	3	6.0	6.0	54.0
	26.00	2	4.0	4.0	58.0
	27.00	1	2.0	2.0	60.0
	28.00	2	4.0	4.0	64.0
	29.00	2	4.0	4.0	68.0
	30.00	3	6.0	6.0	74.0
	31.00	1	2.0	2.0	76.0
	32.00	2	4.0	4.0	80.0
	33.00	4	8.0	8.0	88.0
	34.00	2	4.0	4.0	92.0
	35.00	1	2.0	2.0	94.0
	36.00	2	4.0	4.0	98.0
	38.00	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Table 3 shows the ONDQ scoring as per number of participants involved. 12% participants were falling in mild disability while 88% participants suffering Neck pain moderately. Moderate level of Neck pain was found to be associated with Screen time (mobile or laptop).

Graph 1: Graphical Presentation of ONDQ Scoring



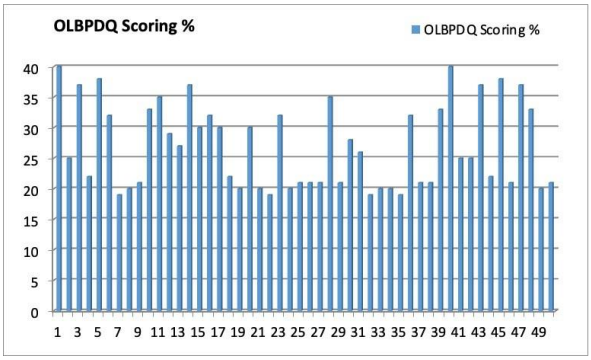
Graphical presentation of ONDQ scoring of all 50 participants.

Table 4: Frequency Distribution OLBPDQ

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19.00	4	8.0	8.0	8.0
	20.00	7	14.0	14.0	22.0
	21.00	9	18.0	18.0	40.0
	22.00	3	6.0	6.0	46.0
	25.00	3	6.0	6.0	52.0
	26.00	1	2.0	2.0	54.0
	27.00	1	2.0	2.0	56.0
	28.00	1	2.0	2.0	58.0
	29.00	1	2.0	2.0	60.0
	30.00	3	6.0	6.0	66.0
	32.00	4	8.0	8.0	74.0
	33.00	3	6.0	6.0	80.0
	35.00	2	4.0	4.0	84.0
	37.00	4	8.0	8.0	92.0
	38.00	2	4.0	4.0	96.0
	40.00	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Table 4 shows the OLBPDQ scoring as per number of participants involved. 8% participants were falling in mild disability while 92% participants suffering Back pain moderately. Moderate level of Back pain was found to be associated with poor posture, sudden bending, back packs, slouch sitting and Gym activities.

Graph 2: Graphical Presentation of OLBPDQ Scoring



Graphical presentation of OLBPDQ scoring of all 50 participants.

In comparison between Neck & Back pain via ONDQ and OLBPDQ, maximum number of participants were suffering from Back pain Disability which is seen in Graph 2.

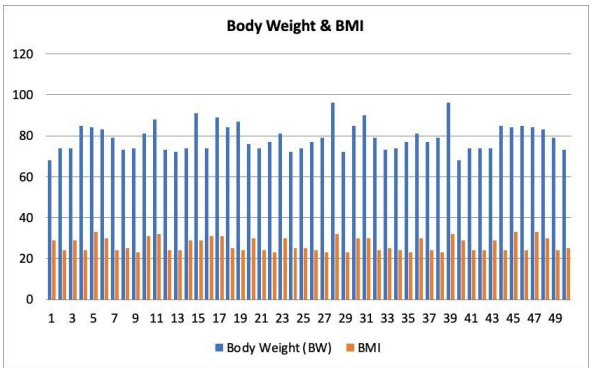
Table 5: Frequency Distribution (BMI)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	23.00	6	12.0	12.0	12.0
	24.00	16	32.0	32.0	44.0
	25.00	6	12.0	12.0	56.0
	29.00	6	12.0	12.0	68.0
	30.00	7	14.0	14.0	82.0
	31.00	3	6.0	6.0	88.0
	32.00	3	6.0	6.0	94.0
	33.00	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Table 5 shows the BMI of all participants; 44% participants were falling in the range of Normal Weight

while 24% participants were from overweight and 32% participants were from Class 1 Obesity. The maximum number of participants who were blaming Neck and Back pain for their poor academic performance were either overweight or obese.

Graph 3: Graphical Presentation of Body Weight & BMI



Graphical Presentation of Body weight and BMI. Its shows a standard pattern of high peak of BMI with high weight and vice versa.

DISCUSSION

The findings reaffirm the importance of physical well-being in determining academic outcomes. Being a Physically fit emerged as the most influential factors, supporting good academic performance. Regular physical activity also enhanced performance, as it improves brain oxygenation and reduced stress. Interestingly, posture and screen-time variables showed weaker correlations, possibly due to students adapting coping mechanisms. However, long-term studies might reveal stronger associations. The study demonstrates that promoting healthy lifestyle habits could significantly improve learning outcomes. College can play a key role by organizing physical activity sessions, and conducting health screenings. The present findings align with earlier literature suggesting that obesity may hinder learning by affecting both physical and psychological dimensions of student life. The current study directly measures body mass index (BMI), observational insights revealed that overweight participants reported higher fatigue levels and lower academic performance. This highlights the importance of addressing obesity not only as a health concern but also as an academic issue. College-based interventions combining physical fitness education, and balanced diet enhance both health outcomes and academic achievement.

The role of back pain & neck pain as a limiting factor for academic performance should not be underestimated. Though often overlooked, musculoskeletal discomfort affects classroom attentiveness and study consistency. In the current study context, several students informally reported difficulty sitting through long lectures, suggesting a potential link between posture-related pain and reduced focus. College may mitigate this by implementing ergonomic lecture room furniture and encouraging posture awareness. Addressing back pain & neck pain at an early stage may help students maintain better engagement and sustain academic productivity.

These results show the similarity with the study done by Saad M et al. (2022), who stated the conclusion after analysing the 18 studies done on more than 10000 students and found that students who were having chronic pain demonstrated significantly decline in psychological, social, and academic performance in comparison with their pain-free batchmates. This study shows the similarity with the Saad M et al. because results shows that participants who were having neck pain, back pain and overweight or obesity had low academic performance.

CONCLUSION

This research highlights that physical activity, and obesity are the determinants of academic performance. Students with better physical health consistently outperformed peers with inadequate health practices. The study underscores the necessity of holistic educational approaches that integrate health promotion with academic learning.

So, finally concluded that physical factors like neck pain, back pain and obesity, affects the academic performance in college going students.

Recommendations:

1. Implementation of posture awareness programs.
2. Awareness campaigns on early diagnosis of neck and back pain.
3. Regular physical activity incorporated into curricula.
4. Awareness campaign on balanced diet to control obesity.

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Informed Consent Statement – A prior written consent was taken from all the participants before the recruitment.

Data availability statement – The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

REFERENCES

1. Li M, Dibley MJ, Sibbritt D, Yan H. Factors associated with adolescents' overweight and obesity at community, school and household levels in Xi'an City, China: results of hierarchical analysis. European journal of clinical nutrition. 2008 May;62(5):635-43.
2. Nagasumanth G, Saharan AK, Rashmi BM, Rajesh BJ, Reddy S, Taneja D, Goel V. Inter-Rater Reliability of Pain Provocation Tests for Sacroiliac Joint Dysfunction with Low Back Ache in Indian Population. Int J Health Sci Res. 2023;13(7):307-12.
3. Taneja D, Sharma S. Comparison of Clinical Effectiveness of Conventional Physiotherapeutic Techniques versus Advanced Programmed Based Electrotherapeutic Interventions on Chronic Lumbar Discogenic Radiculitis.
4. Jain K, Goyal B, Singh R, Verma S, Bhandari Y, Sharma A, Sharma S. Evaluate the impact of core exercise and abdominal draw-in maneuver on Oswestry Disability Index in subjects with low back pain. Educ Adm Theory Pract. 2024;30(5):8139-43.
5. Nelakurthy S, Saharan M, Saharan A. To Evaluate the Postural Changes in Cervical and Thoracic Spine Pre & Postpartum Women With and Without Neck Pain. IOSR Journal of Sports and Physical Education (IOSR-JSPE), e-ISSN.:2347-6737.
6. Pallewar M, Kumar Saharan A, Gouru V. The effect of neural mobilization with cervical traction in cervical radiculopathy patients. International Journal of Development Research. 2021;11(4):45913-7.
7. Nelakurthy S, Saharan M, Kushma P, kumar Saharan A. A Comparative study to evaluate the Effectiveness of Conventional Therapy Alone and Combined with Neural Mobilization in Patients with Cervico Brachial Pain. Pramana Research Journal, ISSN. 2020 (2249-2976).
8. Taneja DD, Saharan DA, Mathur DM. Effect of spinal mobilization with arm movement in the treatment of cervicobrachial pain syndrome. International Journal of Development Research. 2018;8(01):18589-94.
9. Jain P, Saharan AK, Vishnoi CS, Bhati MP, Sharma P. Single IASTM and cupping therapy session improves pain and disability in patients with non-specific low back pain. GSC Advanced Research and Reviews. 2022;11(3):045-50.
10. Nelakurthy S, Saharan M, Saharan AK. A Comparative Study to Evaluate the Effectiveness of Mulligan's BLR Versus Traction SLR Techinique in Non-Specific Low Back Pain. Journal of Shanghai Jiaotong University, ISSN. 2020 Sep:1007-172.
11. Saharan M, Saharan AK, Ranjeeta W, Rajpurohit VS, Taneja D. Effect of Ultrasonic Cavitation on Subjects with Gynoid Obesity: A Randomized Controlled Trial. International Journal of Multidisciplinary Educational Research (IJMER), ISSN. 2022 Mar 10:2277-7881.
12. Saharan A. Nutritional Strategies for Pain Relief. Pain Management in Physiotherapy. 2024:29.
13. Mathur DM, Saharan DA, Taneja DD. Comparison between passive joint mobilization and manual therapy knee protocol on pain, function and quality of life in patient with chronic osteoarthritis of knee. International Journal of Development Research. 2018;8(01):18195-202.
14. Tiwari S, Saharan AK, Anshul G, Mathur M, Choudhary A, Sharma S. Unlocking the Effects of Neural Mobilization versus Transcutaneous Electrical Nerve Stimulation in Cervical Radiculopathy. Journal of Orthopaedic Case Reports 2026 April;16(04): 452-458.
15. Yogeshwar D, Saharan AK, Singh J, Shetty A, Bangera NS. Evaluating the impact of multi-level heel and toe standing on postural control and balance in healthy individuals – An experimental study. J Datta Meghe Inst Med Sci Univ 2026;21:136-40.