

# Prevalence of non-specific low back pain in sedentary lifestyle

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## *Abstract-*

**OBJECTIVE:** To review studies that can examine whether there's association between sedentary lifestyle and non-specific low back pain.

**MEHODOLOGY:** Journal articles published between 2011 and 2021 were secured by searching computerized bibliographical databases. High evidence studies as systematic reviews and case cross sectional studies were included. A total of 30 studies were selected.

**RESULT:** After analyzing the studies it was seen that; low back pain was a major health problem throughout the world. Majority of the studies suggested that sedentary lifestyle was responsible for it. However, other factors like posture, long sitting hours, increased screen time, BMI and physical activity played a huge role in it.

**CONCLUSION:** IT was seen that the sedentary lifestyle showed a positive association with non-specific low back pain but the association is weak.

**Index Terms-** non-specific low back pain, body mass index, leisure time physical activity, years lived with disability, international physical activity questionnaire, sedentary lifestyle, back pain, active living

## I. INTRODUCTION

Definition and prevalence of sedentary lifestyle

To be modified so as to reduce the amount of walking required by humans All the things you do while sitting or laying down that don't count as sleeping are included in the category of sedentary behavior or lifestyle. At work, at home, in our automobiles, and in our communities, we spend a disproportionate amount of time sitting compared to our parents' and grandparents' generations. Muscular activity has been and will continue to be prevalent in workplaces, classrooms, households, and public settings. These changes impact human behavior in two ways: we sit more and move less. Humans, according to evolutionary theory, were built for action, for locomotion and for doing a wide variety of manual tasks. This was crucial to our continued existence as a species. In a very little period of time, humanity has gone from a physically demanding lifestyle to one with minimal physical demands. [1] Many members of Generation Z have a sedentary lifestyle and exhibit paternalistic tendencies since they are slow to engage in any kind of physical activity. A sedentary lifestyle consists of sitting for lengthy periods of time. Many research have pointed to it as a major reason for obesity and metabolic syndrome. Increased levels of sedentary activity are associated with unfavorable physical, behavioral, and mental health biomarkers. The health of the heart is negatively impacted by inactivity, which also increases the chance of being underweight and having low self-esteem. Adolescents' first signs of adopting a sedentary lifestyle often appear between the ages of 12 and 14; if left unchecked, these habits often continue well into young adulthood.

Definition and prevalence of Non-specific low back pain (nsLBP)

One of the most prevalent modern medical problems is non-specific low back pain. It is reported to be the second most common reason for incapacity, just after headaches. Years of life lost due to disability (YLD) data show that non-specific low back pain is the main cause of disability globally. Non-specific low back pain is diagnosed after other potential reasons are ruled out, including infection, tumor, osteoporosis, lumbar spine fracture, spinal deformity, inflammation, or cauda equine syndrome. The increased incidence of nonspecific low back pain among adults of working age has been the subject of several studies. Sixty to eighty percent of people will have non-specific low back pain at some time in their life. With a recurrence rate of 60%, nsLBP is a major health concern.

Non-specific low back pain can be caused by –

- Traumatic injury
- Sprain or strains at lumbo-sacral level
- Postural deformity or strain.

The relationship between sedentary lifestyle and non-specific low back pain:

There have been several attempts throughout the years to establish causality between the two variables in question. Many preliminary investigations effectively established a correlation between inactivity and nsLBP, showing that those who are even moderately sedentary are more likely to suffer from this condition than those who are more physically active. However, as time went on, additional research emerged that seemed to indicate the opposite, that sedentary lifestyle itself was not to blame for non-specific low back pain. [2] Another research published in 2009 proposed a U-shaped relationship between activity level and the risk of back pain, meaning that both inactivity and excessive activity (back-unhealthy activity) contribute to this risk. Hans haneveer et al. (2009) [3] The purpose of this research is to examine the connection between a sedentary lifestyle and non-specific low back pain by collecting and analyzing as many relevant publications as possible.

## METHODOLOGY

Study design: - Literature review

Sample selection: - Published journals and articles, Books.

Data Collection: - Thirty studies were gathered for this analysis, however only fifteen were used. The methodological quality of all 15 research was rather excellent. Studies using a cohort or case-control design have their quality evaluated to determine the weight of the evidence. The analysis of all the included research is mentioned in Table 1.

Period and place of research: - The period of this research was the final year of the 2017-2021 academic year. The research took place at the GALGOTIAS UNIVERSITY.

## INCLUSION CRITERIA: -

I looked for "low back pain," "sedentary behavior," "physical activity," "chronic," "relation," "long sitting hours," and "leisure time physical activity" in the Medline database to find papers about the impact of a sedentary lifestyle on non-specific low back pain. Additional sources were obtained through a search of PubMed, Google Scholar, and official government websites. Articles were chosen for this research based on abstracts, and references were checked to see whether any of the cited works met our inclusion criteria. All of the publications included in the review employed at least one intervention, and they were either systematic reviews or cross-sectional studies. The investigation examined all publications of relevance published between 2010 and 2020.

## EXCLUSION CRITERIA: -

We didn't include pieces that drew a blank. Articles published before 2010, those without any kind of intervention, and those with a low quality of evidence were also excluded.

### *Abbreviations and Acronyms*

1. nslbp – non-specific low back pain
2. BMI – body mass index
3. LTPA- leisure time physical activity
4. YLD – years lived with disability
5. IPAQ- international physical activity questionnaire

## RESULT:

The goal of this research was to determine whether a sedentary lifestyle is linked to non-specific low back pain. We used a combined total of 15 previous cross-sectional studies and systematic reviews for this investigation, and my analysis of these research revealed a relationship between inactivity and non-specific low back pain. While 9 of the 15 studies did find an increased risk of low back pain among those who had sedentary lifestyles, 6 of the studies found no such increased risk, indicating that the relationship is weak. Possible causes of the discrepancy include variations in epidemiological methods, research populations, sedentary behavior measurement methods, and/or low back pain criteria. [31]

Studies that found no link between the two groups also found that other variables, such as prolonged sitting, smoking, desk jobs, being overweight, lack of exercise, and bad posture, were more strongly linked to low back pain than sedentary lifestyles itself. The contrary research also linked a sedentary lifestyle to increased body fat, among other negative health effects. Also, as opposed to mild physical activity, intense physical activity was associated with a higher risk of long-term low back discomfort. There seems to be a U-shaped link between activity level and nsLBP; being too sedentary or doing too much harmful exercise both increase the likelihood of developing back pain. [1]

Sedentary behavior has grown more common, as seen by its prevalence in today's workplaces and among persons who spend a disproportionate amount of their spare time in front of screens and who engage in little physical exercise. Increases in body fat/obesity, metabolic and cardiovascular disorders, musculoskeletal pain complaints, and low back pain (LBP) are only some of the negative health markers linked to insufficient physical exercise. Deborah Soccia Schwertner et al. (2019). [32] For a number of reasons, sedentary women are at a greater risk for nsLBP. These results corroborate those of previous research which found that female gender is associated with an increased risk of developing MSDs [33]. Workers or adults who sat for more than three hours a day also had a higher risk of developing low back discomfort. However, researchers also looked at how long people slept and found no correlation between it and back discomfort. Therefore, there is little proof that being sedentary increases the likelihood of experiencing LBP.

## *Figures and Tables*

## Characteristics of the included studies -

<b>Sr. No.</b>	<b>Authors</b>	<b>Objective</b>	<b>Discussion</b>	<b>Result</b>
1	Anna Citko et al 2018.	Poles in the medical profession suffer from inactivity and persistent low back discomfort.	Sedentary behavior undoubtedly contributes to the rise in the incidence of persistent low back pain. Several metabolic factors were also shown to significantly increase the likelihood of developing low back pain.	Chronic, nonspecific low back pain was more common among the sedentary (p0.001). Increased risk of nsLBP was seen in those with hypertension (9-fold), diabetes mellitus type 2 (3-fold), and hyperlipidemia (2-fold) (p0.001, p0.001, and p0.01, respectively).
2	Lemes Ribeiro Pinto. et al(2021)	Examining the Relationship Between Physical Activity, Inactivity, and Low Back Pain	There was a strong correlation between high body mass index and chronic low back discomfort. However, someone who was very active in their free time was less likely to suffer from LBP.	The findings indicated that sitting for more than three hours each day increased the risk of getting LBP compared to shorter periods of sitting. There was a 33% reduction in the risk of LBP among individuals who were more active than those who were less so.
3	Esfahani, N. Haddadi. et al(2021)	To analyze the core muscle endurance in sedentary office workers with and without nsLBP.	Long sitting times were not shown to be associated with sedentary behavior or nsLBP, contrary to popular belief. Low levels of physical fitness and poor seating habits also had a significant influence.	Extensor, flexor, and right/left flexor muscular endurance were all similarly low among sedentary employees (P > 0.05). However, there were statistically significant variations in how long people sat at work (P = 0.035), how often they slouched (P = 0.049), and how often they rested their back against their chair (P = 0.02).
4	Debora Soccal Schwertner. et al (2020).	Author used in his studies, administered Sex, physical activity, and sedentary behavior are all factors in the high prevalence of low back pain in young Brazilians.	Researchers discovered no link between sitting for long periods of time and developing back discomfort (as screen time, anthropometric measures and sleep time was also measured).	After controlling for other characteristics, the authors of this research found no significant link between LBP and any of the behaviors studied (exercise, sleep, and sedentary behavior) (sex, age, BMI).
5	Lemes, Ítalo Ribeiro. et al (2021)	Author used a cross-sectional design to look for links between sedentary lifestyle habits, LTPA (leisure-time physical activity), and LBP.	They discovered that LTPA was directly related to inactivity and body mass index, and negatively related to the prevalence of LBP.	Obese individuals had lower odds of having a positive LTPA (OR = 0.49 [95% CI: 0.25-0.94]) compared to those with a normal or overweight body mass index.
6	KAMAL CONSTANTIN KAMAL. et al (2020)	This study was to find the risk factors and favoring factors after the clinical examination of nsLBP.	Smoking cigarettes, prior lumbar spine injuries, inactivity, and prolonged standing or sitting were identified as the most significant risk factors. Inactivity was not the only contributing factor.	Ninety-three participants in the research needed medical leave approved by both the attending physician and additional experts. Therapeutic care for LBP, regardless of its cause or mechanism, should focus on relieving pain and preventing further episodes.
7	Fahad Hanna. et al (2019)	Performed a cross-sectional research of both academic and non-academic workers at QATAR University to	Workers who sit for long periods of time are at a higher risk for physical and mental health problems; thus,	The findings showed that regular exercise might aid in the avoidance of LBP. Sedentary lifestyles were also linked to LBP sufferers.

		assess the prevalence of sedentary behavior and back pain among university employees.	efforts should be implemented to minimize sitting time and increase physical activity.	
8	Anita B.Amorim. et al (2017)	Cross-sectional investigation of the Spanish population to determine whether inactivity is associated with a higher incidence of low back pain.	They came to the conclusion that a sedentary lifestyle is linked to LBP, although a weak one.	The prevalence or risk of chronic LBP were not higher among the inactive in the long-term study.
9	Leandro Fornias Machado de Rezende. et al (2014).	Found in a meta-analysis of sedentary lifestyle and health consequences	While working in an AWB setting, employees had less back pain and spent more time on their feet.	In ABW, low back discomfort was lower than in the control group (odds ratio 2.0, 95 percent confidence interval 1.1 to 3.7). After treatment, patients' capacity to work fell from 8.4 to 7.8 points (P 0.01).
10	Samuel D. Burkhalter, (2019)	Researched the effects of sitting for lengthy periods of time at work and found it to be dangerous.	It found that sitting for extended periods of time was not directly associated with any illness, but that being overweight contributed to a sedentary lifestyle, which in turn contributed to various health problems.	They indicated that engaging in even a little amount of physical exercise on a regular basis may help prevent sedentary behavior.
11	Syed Muhammad Azfar. et al (2019)	Evaluated the immediate impact of exercise and its link to low back pain in a cross-sectional research.	The researchers determined that a lack of exercise contributed significantly to the prevalence of low back pain. Therefore, IT recommended avoiding sedentary behavior in favor of exercise to prevent persistent low back pain.	The results showed that 32.5% of patients leading a sedentary lifestyle and 48.9% leading an underactive lifestyle participated in the research.
12	Pongsatorn Saiklang. et al (2020)	We explored how employees who spend long periods of time sitting and who suffer from chronic low back pain responded to the abdominal drawing-in movement approach.	According to the findings, the abdominal drawing-in movement may help activate deep trunk muscles and relieve back pain caused by sitting for lengthy periods of time.	In the treatment group, growth in height was restored by 3.292 mm compared to the control group (p 0.001).
13	Mohammad Ali. et al (2020)	Examined, through a cross-sectional research, the prevalence of low back pain among bank workers in Dhaka City and the occupational characteristics related with it.	The study's findings indicated that LBP was prevalent among sedentary bank workers who worked full-time, but that variables such as length of employment and shift duration also contributed.	Long work hours (more than nine hours) and being overweight were shown to go hand in hand with LBP.
14	Nidhi Gupta. et al (2015)	Cross-sectional investigation investigating the link between low back discomfort and	Time spent sitting was shown to be significantly associated with low back pain	In the study of time spent sitting, prolonged periods of sitting were positively associated with prolonged periods of LBP.

		objective measures of sitting duration.	among blue collar occupations.	
15	Philipp MORODER. et al (2011)	Studied low back pain among the medical students having sedentary lifestyle.	When the data was evaluated, it showed a shockingly high incidence of LBP among such young students, however it was not greater than among the physically active students. It's reasonable to infer that sedentary behavior or high sitting hours did not contribute to nsLBP.	No statistically significant difference ( $p = 0.329$ ) was found between the 12-month prevalence of (sub)acute and chronic LBP in the medical student sample and that in the physical education student sample.

Table 1: Analysis of the articles reviewed

## CONCLUSION

The results of this study indicate that inactive adults are more likely to have non-specific low back pain than their more active counterparts. It should be noted, however, that even those who engaged in strenuous physical activity during their free time still had an increased risk of developing chronic low back pain.

Recommendation for future studies

More comprehensive population-based studies are needed to more precisely evaluate the relationships between non-specific low back pain, sitting time, leisure activity, physical activity, posture, and body mass index. It should be possible to determine whether inactivity is a factor in the development of the non-specific low back pain.

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