

## Physical Activity as A Major Low Back Pain Complaints Among Office Worker in Their Working Life: Cross Sectional Study

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### ABSTRACT

Low back pain is a very common problem that can affect a variety of ages. The symptoms of low back pain can be caused by lumbar spine problems such as root pain, radiculopathy, and spinal tract stenosis. The intervertebral disk and the joint facet are two lumbar structures that can cause pain. One element that contributes to low back discomfort is physical activity. The study design used correlation analysis with a cross-sectional approach. The sampling technique used in this study is consecutive sampling. The sample is 37 teachers with an age range of 35 – 60 years. To identify physical activity is used Short-Form International Physical Activity Questionnaire and for identifying low back pain complaints is used Pain and Distress Scale (William J.K. Zunga) in the Primala study was analyzed using the Chi-Square test. The teachers and perform moderate activities, don't have complaints of low back pain of 15 (40,5%), heavy activity, did have a complaint of low back pain of 22 (59,5%). The results of the Chi-square test showed that there was a significant relationship between physical activity and low back pain complaints ( $p$  value=0,000; $\alpha$ <0,05). Appropriate and consistent activity that is adapted to the body's capacities and age will have a positive influence on the building of stronger muscles and bones. Adequate and regular physical activity can help prevent low back pain complaints

**Keywords:** *physical activity, low back pain complaints*

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### INTRODUCTION

Symptoms of low back pain are very common and can be found at any age. The prevalence of low back pain worldwide showed, that the association between limited activity and low back pain was around 7.3% in 2015 and suggests that about 540 million people have experienced low back pain at least once in their lives (Vos et al., 2015). Over the past few decades, low back pain has been the number one cause of poverty and disability in the world. It occurs in low-income and middle-income countries, including in Asia, Africa, and the Middle East. Where social and health systems lack resources to cope

with growing challenges, in addition to infectious diseases (Hartvigsen et al., 2018). The Global Burden of Disease Study 2013 (GBD, 2013) conducted in 188 countries, the incidence of acute and chronic diseases achieved the number of low back pain in 1990 a total of 4.1 million and in 2013 to 6.5 million with a percentage increase of 56.7%(Hoy et al., 2014).

Some diseases can cause low back pain. There are no known pathogenetic causes when diagnosing non-specific low back pain. Special disorders affecting the lumbar spine; root pain, radiculopathy, and spinal tract stenosis. Pain can originate from several lumbar structures, such as the intervertebral disk and the joint facet (Maher et al., 2017). However, clinical tests are not reliable to determine the relationship between pain and such structures. The majority of about 90% are non-specific low back pain. In addition, 2% are caused by compression fractures, spinal stenosis, 0,5% visceral diseases, 7% tumors or metastases, and 0,5% infections (Ben-Ami et al., 2017).

Low back pain is a complex condition associated with feelings of pain and disability. In addition, low back pain is caused by psychological, social, physical, and comorbidity factors. The disability of low back pain is an emerging condition with the highest prevalence among working-age groups worldwide(Alzahrani et al., 2019). Heavy workloads, frequent lifting, bending and turning, excessive exercise is a risk factor for low back pain. Low back pain is also caused by someone who has a sedentary lifestyle (Picavet, 2012). A lack of physical activity for a long time causes weaknesses, degeneration, and aberrations in metabolism, which lead to and manifest as functional deficiencies and diseases in several organ systems(Vuori et al., 2013).

## **METHOD**

The research design was in the form of a cross-sectional study. The study was conducted from January to April 2023. The population in this study are all teachers in the City of Mojokerto, East Java, Indonesia. The sampling technique used in this study is Simple Random Sampling. The sample is 37 teachers with an age range of 35 – 60 years. The independent variable of this study is physical activity and the dependent variable of this study is low back pain complaints.

In this study, to identify physical activity is used Short-Form International Physical Activity Questionnaire and for identifying low back pain complaints is used Pain and Distress Scale (William J.K. Zunga) in the Primala study. Short Form International Physical Activity Questionnaire (SF-IPAQ) consists of 7 questions. The 7 questions are divided into 3 categories of activity level, 2 questions for the heavy-activity category, 2 questions for the medium-activity category, and 3 questions for the low-activity category. To obtain the values of each category question is formulated with: (METs-min x duration (minutes) x frequency day/week). The standard METs-min value is determined by SF-IPAQ. MET is the energy emitted per minute/Kg of weight from an adult (1 MET = 1.2 kcal). The low-activity query category was multiplied by 3.3 MET's-min, the medium-activity query category was

multiplied by 4.0 MET's-min, and the heavy-activity query category was multiplied by 8.0 MET's-min. All the results of the calculation were then summed up and compared to three categories of activity levels, the low-activity category equivalent to <600 METs, the medium-activity category equivalent to 600 – 3000 METs, and the weight-activity category equivalent to >3000 METs. The Pain and Distress Scale (William J.K. Zunga) questionnaire in the Primala study consists of 20 questions about back pain complaints in various conditions, which are divided into the “yes” and “no” categories. Statistical tests are used in this study, Chi-Square test to assess the relationship between physical activity and low back pain complaints.

## FINDING AND DISCUSSION

Table 1: Baseline characteristics of the study population, stratified by low back pain complaints

	Low back pain complaints	
	No Number(%)	Yes Number(%)
<b>Physical activity</b>		
>600-3000 METs	15(40,5%)	
> 3000 METs		22 (59,5%)
<i>p value = 0.000*</i>		
<b>Age</b>		
36-45	14(37,8%)	15 (40,5%)
46-55	0 (0%)	2 (5,4%)
56-65	1 (2,7%)	4 (10,8%)
>65	0 (0%)	1 (2,7%)

Based on table 1 showed, that teachers or office employees who perform moderate activities with energy consumption between 600 – 3000 METs, don't have complaints of low back pain of 15 (40,5%), while the teacher or office staff who perform heavy activity with energy consumption more than 3000 MET's, did have a complaint of low back pain of 22 (59,5%). The results of the Chi-square test showed that there was a significant relationship between physical activity and low back pain complaints (p value=0,000). According to previous research, it was found that people who suffer from low back pain are more likely to experience heavy activity, and that activity should be adapted to the respondent's abilities and strengths (Yan et al., 2021). There are several factors that contribute to the development of low back discomfort after one or two years, but physical inactivity is not one of them. Physical exercise during leisure time may lessen the incidence of persistent LBP by 11%-16% (Lunde et al., 2015). Activities that involve muscle activity during a certain period are called an exercise program. Regular exercise can improve your

quality of life in the prevention of skeletal disease. Regular exercise programs can be done at least three times a week. In terms of prevention to avoid injury to the muscles and joints, then the exercise program is carried out with low intensity and gradually (Andini, 2015). An essential stimulus for the development and maintenance of healthy structures and functions of the human body is physical activities. The amount of physical activity, and particularly the energy expenditure (EE) caused by it, is necessary to prevent the development of various diseases (Gordon & Bloxham, 2016). Adequate and regular physical activity can help prevent low back pain complaints (Andini, 2015).

Based on table 1, which is the result of crosstabs between age and low back pain complaints, shows that low back pains occur in almost all ages, especially between the ages of 36 – 45 years of age for 15 (40.5%) of people. Low back pain can occur at age, according to research conducted by Suri et al., 2011 that showed 36% of adults aged 44 years or younger, 48% of adults aged 45 to 54 years, 84% of adults aged 55 to 64 years, 89% of adults aged 65 years or older. The prevalence of LBP grows from the age of 12 to about the age of 20, with a decrease in LBP symptoms beyond the age of 40 (Lunde et al., 2015). This is because the increase in age will be followed by degenerative processes in all organs. To prevent the emergence of low back pain complaints, then this adequate activity needs to be adjusted dosage (Yan et al., 2021).

## CONCLUSION

Appropriate and consistent activity that is adapted to the body's capacities and age will have a positive influence on the building of stronger muscles and bones. According to our results, low back discomfort can develop at any age, but as one gets older, strenuous exercise should be avoided since the joints in the spine have lost flexibility.

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