



Workplace Stretching Exercise toward Reduction Job Burnout among Workers Pt. X International, Indonesia

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Abstract

BACKGROUND: Occupational safety and health are health sciences that are applied through work and the work environment to obtain the highest degree of health both physically, mentally, and socially through preventive and curative efforts in the workplace. The emergence of work fatigue in workers is evidence of a decrease in bodily functions caused by both individual factors and the work environment so that precautions are needed.

AIM: This study aimed to see the effect of workplace stretching exercise on work fatigue in workers at PT. X International, Indonesia.

METHODS: This study used a quasi-experimental study with one group pre-test and post-test design. Respondents were 30 people selected by purposive sampling and met the study inclusion criteria. The provision of workplace stretching exercises was carried out for 15 working days and is given every 10 am after workers work for 2 h.

RESULTS: The mean of work fatigue before intervention (pre-test) is 454.8133 and the average work fatigue after an intervention (post-test) is 321.9133 so that there are differences in the average work fatigue before and after the intervention.

CONCLUSION: Workplace stretching exercise intervention affects reducing work fatigue in production workers of PT. X International Indonesia.

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Introduction

An occupational illness is a disease that arises due to occupational factors (environment and work tools). According to the World Health Organization, about 50% of the global population are workers, with reports from the International Labor Organization (ILO) that there are at least 2.34 million cases of deaths caused by accidents or work-related diseases [1]. Meanwhile, 160 million workers suffer from occupational diseases with non-fatal work. Losses due to occupational illnesses and deaths due to occupational factors account for 4%-6% of the gross domestic product in related countries and regions in the world [2].

Work fatigue is one of the risk factors for the decrease in the health status of workers, which can also be measured by increasing the pulse rate [3], whereas workers who experience integrated health improvement are proven to increase work productivity [4]. The development of muscle fatigue is usually quantified as a decrease in muscle power capacity [5]. Fatigue felt

by workers varies, among others, feeling sleepy, dizzy, bored, palpitations, and lazy to move. Things that cause work fatigue could come from work environment factors (work intensity, work climate, lighting, noise, etc.) and individual factors [6].

Based on the survey results, residents of developed countries are identified as having work fatigue of around 10-50%. Then, data released by the ILO in 2010 showed that around 2 million workers die every year because work accidents are preceded by work fatigue. A study conducted in New Zealand from 2002 to 2004 reported that there were at least 134 work accident cases where 11% were caused by risk factors for work fatigue [7].

PT. X International, Indonesia, is one of the largest wood processing companies in Makassar city, whose main products are furniture for storing the ashes for Japanese people called Butsudana. This company has four factories which are still operating today. At factory 1, cutting or woodcutting process, factory 2 sanding wood, factory 3 painting, and factory 4 assembly and packing, there were also wood drying machines,

boilers, several wood warehouses, and 2 offices. The long production process requires that the company has a stretching program or workplace stretching exercise to give the company a break and stretch the muscles of the workers.

The selection of factory 2 as a place of research is because homogeneous forms of work carried out by workers are sanding cut wood. Besides, the number of factory 2 workers is the highest compared to other factories. The length of the wood processing process to become butsudana and the target of the sandpaper that must be achieved requires them to do work from 8 to 12 noon without any break for workplace stretching exercise. Based on the results of previous studies it was published that the percentage of work fatigue of 58.5% experienced by workers at PT. X International Indonesia [8]. Based on this study, this study aims to see whether workplace stretching exercises can reduce work fatigue in factory workers 2 PT. X International Indonesia.

Materials and Methods

This research was conducted at PT. X International Indonesia, Makassar City, South Sulawesi. The type of research was a quasi-experiment with one group pre-test and post-test design.

The population in this study was factory workers 2 PT. X International Indonesia, sample 30 respondents who were selected by purposive sampling and met the inclusion criteria, namely, men, working period of at least 1 year, experiencing work exhaustion, and willing to follow the research by signing informed consent.

Data collection was carried out by researchers using questionnaires, digital reaction timers, analog scales, and stature meters. Measurement of work fatigue is done twice, namely, before giving workplace stretching exercise intervention and after giving workplace stretching exercise. The provision of workplace stretching exercises is given for 15 days and every 10 am.

Data on individual factors in this study include (age, years of service, body mass index, smoking status, and exercise habits) and work fatigue before and after workplace stretching exercise intervention using SPSS for windows 23. The average difference in work fatigue before and after the intervention is used analysis paired sample t-test.

Results

Table 1 showed that the average age of research respondents at factory 2 PT. X International

Indonesia, 38.67 years and the average respondent have work period 14 years. The mean body mass index of the respondent is 25.1. Meanwhile, the category of smoking habits of respondents 90% had smoked the past year and 10% had never smoked the past year. Then, the exercise habits category showed that 26.7% had exercise habits and 73.3% had exercise habits. Category of body mass index showed that as much as 56.7% of workers have normal BMI, 30% overweight, and 13.3% obesity category.

Table 1: Characteristic respondents

Characteristic	%	Mean	Standard deviation
Age	100	38.7	7.7
Working periods	100	14.07	6.2
Sports habits			
Ordinary	26.7		
Unusual	73.3		
Smoking status			
Smoke	90.0		
Do not smoke	10.0		
BMI			
Normal	56.7	25.1	2.8
Overweight	30.0		
Obesity	13.3		

BMI: Body mass index

Table 2 showed that category of work fatigue before giving workplace stretching exercise intervention was the most in the moderate category by 46.7%, mild category 33.3%, and the severe by 20%. Then, after being given intervention workplace stretching exercises mild category 93% and moderate category 6.7%.

Table 2: Distribution by category of work fatigue in workers

Category of work fatigue	Measurement of work fatigue			
	Pre-test		Post-test	
	n	%	n	%
Normal	0	0	0	0
Mild	10	33.3	28	93.3
Moderate	14	46.7	2	6.7
Severe	6	20.0	0	0

Table 3 showed that there was a change in the average work fatigue before and after the workplace, stretching exercise intervention. The average work fatigue before the intervention was 454.8 and after work intervention was 321.9. Then, the results of paired sample T-test analysis resulted in sig. 0.001 <0.05 which means that there were differences in the average work fatigue before and after the workplace stretching exercise intervention in factory workers PT. X Internasional, Indonesia.

Table 3: Paired sample t-test analysis

Work fatigue	Mean	Mean	Standard deviation	Sig.
Pre-test	454.8	132.9	68.2	0.001
Post-test	321.9			

Discussion

Studies show that at least 46.7% of workers experience fatigue in the moderate category and 20.0% for fatigue in the severe category, after giving interventions perceived level of fatigue is dominant in the mild category or 93.3%. This change is supported by results of the significance test that

there are differences in the average work fatigue before and after the workplace, stretching exercise intervention in factory workers PT. X Internasional, Indonesia.

Fatigue and drowsiness in the workplace are consequences of modern industrial society, which can cause many accidents and poor mental and physical health outcomes, mostly due to work in high demand, long service periods, and circadian rhythm disturbances, to accumulative sleep debt common in many industries [9], [10]. According to Krausman *et al.* [11], fatigue can also be caused by intense cognitive activity on physical demands.

The effect of muscle fatigue is most likely explained by the composition of the type of muscle fibers, where absolute strength is higher when young and generally higher for men [12]. Age is one of the individual factors that can cause work fatigue in workers, which is associated with changes in physiology in a person's body and affects physical endurance and capacity as well as productivity [13]. This is in line with research conducted by Budiman *et al.* [14] that increasing the age of a worker will also increase the level of fatigue due to a decrease in mental and social functional capacity before the age of 45 years. An interesting thing resulted from research conducted by Amin *et al.* [15] that the peak of human physical capacity is when they enter the age of 25 years. And will experience a decrease in muscle strength, sensory ability, decreased visual acuity, speed to distinguish things, and the ability to remember long-term at the age of 50–60 years.

The influence of work tenure on work fatigue so far has not been proven clearly because there are still studies that explain that work tenure is not related to work fatigue. The same thing is explained in the research of Salasa *et al.* [16] that there is no relationship between work period with work fatigue in Loining workers at PT. X Foods Internasional, where the longer the work period, the more skilled a worker will be the average tenure at factory 2 PT. X Internasional is 14 years or it could be said that workers have a long work period and have directed habits.

Good nutrition in the workforce will increase the degree of worker's health, efficiency, work productivity, maintain endurance, balance the nutritional, and calorie needs of the work done. Body mass index is one of the factors causing work fatigue in workers because, with good nutritional status, a worker will have a better work capacity and endurance compared to workers who have less nutritional status [17]. This is supported by the study of Langgar *et al.* [18] that there is a relationship between the nutritional statuses of workers with work fatigue experienced by workers from the company Tahu Baxo Bu Pudji on the Ungaran. Besides, nutrition for workers can also maintain the body, repair tissue cells so that a person can do his job well. Research conducted by Diana *et al.* [19] showed

that workers with underweight nutritional status have poor capacity and endurance compared to workers with normal nutritional status. Thus, these workers need food as a source of energy, protein, vitamins, and minerals. The substance is then burned in the body and then used as a source of energy for work.

Workplace stretching exercise is a workout stretching exercise adopted from the Toronto University and its movements are designed according to the principle of stretching the muscles which aim to extend the muscles, so they become relaxed and supple. Some of the benefits of stretching in the workplace are improving circulation, improving work posture, improving coordination, relieving stress, increasing flexibility, wiggle room [20], and preventing injury [21].

Work fatigue is a common problem that often experienced by the working population and usually appears after work and is acute or chronic. Work fatigue occurs due to a decrease in physical and cognitive functioning of the body [22]. In addition, work fatigue can also be caused by factors outside the work environment such as activities at home before going to the office/workplace, lifestyle, and nutrition/food intake at home. The effects of fatigue on workers can be in the form of disability and absenteeism [23]. More clearly stated by Prof. Meijman that work fatigue is an effect of physiological adaptation that can save the body from the risk of excessive energy released by the body, in contrast to physiological fatigue which is feedback from the body that causes reduced drive and motivation and causes mental and physical [24].

Paired sample t-test results showed that there were differences in the average work fatigue before and after the administration of workplace stretching exercise intervention. This happens because this intervention provides an opportunity for muscle relaxation or rest to prevent muscle tension. Besides, if the workplace stretching exercise is used as a routine, it will also affect the complaints of musculoskeletal disorders. This is consistent with research conducted by Hastuti [25] which states that there is a decrease in work fatigue after giving stretches to workers. Various relevant studies prove the positive influence of stretching on decreasing the level of fatigue [26], [27], [28]. Theory of conservation of resources states that every individual will try to get and maintain the things they value to avoid work stress. Besides, another way to deal with work fatigue is to do relaxation and physiological release at work [29], [30], [31], [32].

Conclusion

Workplace stretching exercise intervention affects reducing work fatigue in production workers of PT. X Internasional Indonesia.

Recommendation

It is expected that top management can make policies related to the provision of workplace stretching exercise interventions to workers in the industry so that the level of fatigue in workers can be minimized, which has a positive impact on results and increased productivity.

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