



The Effect Of Physical Workload On Work Fatigue Of Expedition Courier In Banda Aceh

Dara Maulida¹, Gerry Silaban², Umi Salmah³

¹Master Student, Faculty of Public Health, Universitas Sumatera Utara, Medan, Sumatera Utara, Indonesia

^{2,3} Faculty of Public Health, Universitas Sumatera Utara, Medan, Sumatera Utara, Indonesia

email: daramaulida000@gmail.com

Article details:

Published: 30th June 2023



Abstract

Along with the increasingly rapid development of technology and the broadening of markets, this technological advancement also requires that all transactions develop, such as conducting online activities. This causes business people to need courier services as a medium for delivering goods to costumers. Jobs as couriers require them to carry out physical and mental activities such as driving, controlling vehicles, carrying goods, looking for addresses, communicating with buyers, and also operating the delivery application. The activities carried out by the courier can cause problems for them, such as a decrease in body condition

or feeling tired, so there is a risk of an accident. The research objective was to determine the effect of physical workload on the work fatigue of expedition couriers in Banda Aceh with a cross-sectional study design with a sample of 75 couriers and to carry out statistical tests with a simple logistic regression test. The results of this study show that there is an influence between physical workload and courier work fatigue ($p\text{-value} = 0.013$). The number of physical activities carried out by the courier can directly affect his work fatigue. The activities carried out by the courier include *mapping* packages, carrying packages with a total of 88 to 150 packages, delivering packages by dividing certain areas, contacting customers, looking for addresses, and when the packages are delivered, they are required to return to the office to deposit COD money, return packages that have not been successfully delivered, and also for attendance. This has implications for couriers to make the best use of rest time by adjusting the strategy of package delivery, starting with dividing package delivery into several rounds so that the motorcycle is not too heavy.

Keywords: *work fatigue, workload, expedition courier.*

To cite this article :

Dara Maulida, Gerry Silaban, U. S. (2023). The Effect Of Physical Workload On Work Fatigue Of Expedition Courier In Banda Aceh. *International Journal of Health, Education and Social*, 6(6), 76–87



Introduction

Along with the increasingly rapid development of technology and also the development of an increasingly broad market, this technological advancement requires that all transactions also develop, such as conducting online activities. This causes business people to need courier services as a medium for delivering goods to costumers (IWG, 2021) . According to data from the Central Statistics Agency, there will be an increase in the distribution of e-commerce goods by 23.27% in 2022 and there are also 9.30% of sellers choosing delivery services as the distribution of their goods (CWS, 2022) . Therefore it is necessary to collaborate with shipping expeditions for the continuity of online shopping transactions, as mentioned by Yasmin (2019) in her research that the rapidly increasing in e-commerce business can be a great opportunity for expeditionary service entrepreneurs in shipping goods. Jobs as couriers require them to carry out physical and mental activities such as driving, controlling vehicles, carrying goods, looking for addresses, communicating with buyers, and also operating the delivery application. The activities carried out by the courier can cause problems for them such as a decrease in body condition or feeling tired so there is a risk of an accident. Data obtained from BPJS Ketenagakerjaan shows that 82 thousand accidents occurred at work and 179 cases of work-related illnesses, 65% of which were caused by COVID-19 (ILO, 2022) . Work fatigue is a problem that is often overlooked but has a major impact on the safety and health of its workers. According to WHO fatigue is the second leading killer disease with heart disease as the main cause.

Work fatigue can occur due to stress factors caused by the shift work system, work schedules that are not in accordance with the rules, and also excess working hours, monotonous work, time pressure and also demands at work (Kaleva, 2022) . According to Mahawati et al., (2021) there are two factors that cause work fatigue, external factors as the work environment and the work, also internal factors, as the characteristics of the individual himself . In addition to having an effect on work accidents, fatigue can also have an effect on the physical and mental health of workers so that the consequences that arise are changes in mood, decreased concentration,



physical decline, cognitive decline and can also cause diseases of the gastrointestinal system, such as diarrhea, constipation, ulcers, stomach, etc. (Techera, et. al., 2016).

Workload and attitudes towards work fatigue in nurses indicate there is an influence on work fatigue. This is caused by the level of excess workload which can have an impact on the occurrence of work fatigue. So if excessive work fatigue can be at risk of hindering concentration at work, it's hard to think, and it's also easy to forget (Abdullah and Nurlinda, 2021). According to Egozi et al., in his research on the picture of work safety and health, couriers explained that the problem was that 37% of couriers experienced musculoskeletal disorders, 13% of couriers had traffic accidents related to work, 10% felt stressed once a week and it was reported that 60% of couriers experienced increased stress caused by the COVID-19 pandemic and also related to the workload they were responsible for (Egozi, et. al., 2022). In research conducted by Sidiq concerning the effect of work fatigue and the relationship between superiors and subordinates on employee productivity, it was found that fatigue at work with relations between workers has a significant effect on work productivity with $F \text{ count} > F \text{ table}$ ($10.832 > 3.090$), $R^2 = 0.383$ and $p = 0.000$ (Sidiq, 2019). From these factors it can be concluded that workload is also included to the factor can affect employee fatigue, because many employees are unable to complete their work due to the time limit and it also depends on the level of difficulty for do the job. There are several factors in seeing the high or low workload such as work demands, work tempo, and also responsibilities (Kurniawan and Fathoni, 2016). In line with the systematic review conducted by Wei et al., (2021), regarding the risk factors for stress on couriers in the China and Malaysia regions, it was explained that 70% of the respondents said stress due to work was related to work fatigue as seen from long working hours and hard workload.

Indonesia has eight shipping companies engaged in distributing goods or packages to costumers through motorcycle delivery services. The eight expeditions used for delivery services are JNE, JNT Ekspres, POS Indonesia, TIKI, Sicepat Ekspres, Ninja Ekspres, Anteraja, ID Ekspres (ILN, 2023). The city of Banda Aceh has six expeditions that deliver packages from shopping



results in *e-commerce* using motorbikes . The expeditions include SiCepat Ekspres, Shopee Ekspres, JNT Ekspres, ID Ekspres, PT. Pos Indonesia, and Anteraja.

Based on the preliminary survey that was carried out from each of these expeditions, the 30 couriers who were briefly interviewed, there were 19 couriers (63.3 %) who experienced high levels of work fatigue as seen from the results of the questionnaires and observations. The factors that influence courier fatigue are the large number of packages so that the courier has to work outside of predetermined working hours. The number of packages that must be delivered every day is a minimum of 88 packages and for a monthly target of at least 2200 packages with information that the packages have been received by customers. The package delivery process is also carried out by lifting, carrying, moving and unloading the package from the motorbike and delivering it to each house which is carried out repeatedly. This is what causes the physical workload received by the courier to be assessed from the number of packages delivered and also the activities carried out in the process of delivering the package so that it can affect the working system of the heart. While the other 11 couriers only experienced moderate levels of work fatigue. This is influenced by the distance traveled for the package delivery which is not too far away, and also the number of packages delivered is not too much. Based on the above description obtained from interviews in the preliminary survey, the researcher is interested in knowing the effect of physical workload on the fatigue of expedition couriers in Banda Aceh.

Methods

This type of research is a quantitative study with a Cross Sectional Study design. The location of this research was carried out at the expedition booth in Banda Aceh with a total sample of 75 regular couriers which was conducted in May 2023. The data was obtained by measuring work fatigue using the Reaction Timer tool to see the reaction time to light and sound stimuli. The category for the level of work fatigue is that if the calculation results are 150.0 – 240.0 milliseconds then the category of work fatigue is normal, if the calculation results are > 240.0 - <410.0 milliseconds then the category of light work fatigue, if the calculation results are > 410.0 - <580.0



milliseconds means the category of moderate work fatigue, and if the calculation results obtained are ≥ 580.0 milliseconds then it is classified as severe work fatigue.

To see the physical workload, a Cardiovascular Load (CVL) measurement was carried out by measuring the pulse by recording the time using a stopwatch with 10 pulses. The category of physical workload from the Cardiovascular Load (CVL) calculation results is categorized as very low if the value of $\%CVL \leq 30\%$, is categorized as low if the value of $\%CVL$ is $30\% - \leq 60\%$, is categorized as moderate if the value of $\%CVL$ is $60\% - < 80\%$, is categorized as high if the $\%CVL$ value is $80\% - < 100\%$ and is categorized as very high if the $\%CVL$ value is $> 100\%$.

The data analysis used in this study is univariate and bivariate analysis. Univariate analysis was carried out to describe the characteristics of the respondents, while bivariate analysis was carried out to determine the effect of physical workload on the fatigue of expedition couriers in Banda Aceh. This research has received ethical approval from the Health Research Ethics Commission (KEPK) Universitas Prima Indonesia Number 035/KEPK/UNPRI/V/2023.

Results

Respondents in this study were expedition couriers who worked to deliver packages using motorcycles in the city of Banda Aceh. This research was conducted with a sample of 75 couriers with the characteristics used, as age and length of work.

Table 1. Distribution of Expedition Courier Characteristics in Banda Aceh

Characteristics	n	%
Age (years)		
23 - 28	47	62,7
29 - 33	25	33,3
34 - 38	3	4
Years of Service (years)		
< 1	32	42,7
1 - 3	39	52
> 3	4	5,3



Based on table 1, it was found that the highest frequency of couriers was aged 23 to 28 years with a total of 47 people (62.7%), then for ages 29 to 33 there were 25 people (33.3%) and for ages 34 up to 38 years as many as 3 people (4%). For the characteristics of the highest length of work in the range of 1 to 3 years with a total of 39 people (52%), for those with a length of work of less than 1 year there were 32 people (42.7%) and for a length of work over 3 years there were 4 people (5,3%).

Based on the carried out of bivariate analysis, as conducting Simple Logistic Regression statistical tests on the physical workload and work fatigue variables, the following results were obtained:

Table 2. Effect of Physical Workload on Expedition Courier Work Fatigue in Banda Aceh

Physical Workload	Work Fatigue				Amount		<i>p-values</i>
	Currently		Light				
	n	%	n	%	n	%	
Low	13	92.9	1	7,1	14	100	0.013
Very low	29	47.5	32	52.5	61	100	
Amount	42		33		75		

Based on table 2 above, it can be seen that of the 14 couriers who had a low physical workload, 13 (92.9%) experienced moderate fatigue and 1 person (7.1%) had mild fatigue. Whereas for couriers whose physical workload is in the very low category, there are 29 couriers (47.5 %) who have moderate work fatigue and also 32 people (52.5) have mild work fatigue. Based on the results of bivariate analysis with simple logistic regression it was found that there was an effect of physical workload on the fatigue of expedition couriers in Banda Aceh City (*p-value* = 0.013).

Discussion

Work fatigue can increase if the work is done for a long time so to reduce fatigue you need to get enough rest (Hutabarat, 2018). The occurrence of work fatigue has an influence or relationship with a decrease in work efficiency, boredom, skills, and also an increase in anxiety for the workforce (Ramdan, 2018). The state of work fatigue is seen by feeling tired, decreasing



output, and also the physical condition of routine activities. So that fatigue due to work is often interpreted as a decrease in efficiency, work performance and also a decrease in body strength in doing the work that must be done (Hutabarat, 2017) .

Based on the results of the study, it can be seen that the work fatigue of expedition couriers in Banda Aceh, out of 75 couriers, 33 couriers (44%) experienced mild work fatigue and for the moderate category, 42 couriers (56%) were obtained. For the physical workload of 75 couriers out of 14 couriers who had a physical workload in the low category, 13 people (92.9%) experienced moderate work fatigue and 1 person (7.1%) had mild work fatigue. Whereas for couriers whose physical workload is in the very low category, there are 29 couriers (47.5 %) who have moderate work fatigue and also 32 people (52.5) have mild work fatigue.

Based on interviews conducted with couriers, it was found that they work to deliver packages every day and start at 08.00 WIB until they are finished or until the packages run out. According to the information obtained, there is a target or minimum limit for the number of packages that must be delivered every day and there are also targets that must be achieved every week. The minimum number of packages that must be delivered is 88 packages per day and for a monthly target of at least 2200 packages provided that the packages have been received by customers. However, these couriers often deliver packages over working hours so they have to work overtime or have to deliver packages outside their normal working hours. In this case, the process of delivering the package to the recipient's address is also quite far away because the delivery process starts from each of the expedition's outlets, if the package load is too much, couriers usually carry out twice delivery processes which make them have to come back to pick up the package at the outlet.

Based on the results of research on physical workload and mental workload on expedition couriers from 75 couriers for physical workload as measured by the 10 pulse method, it was found that there were 61 people (81.3%) with the very low category and 14 people (18, 7%) with low category. Physical tasks will affect the occurrence of fatigue because there is a physical pressure load related to work situations, work attitudes, etc. (Budiasa, 2021). Based on the observations and



measurements that have been made, it is found that many couriers deliver the package in several rounds, so that when the measurements are taken they are already in a resting state. According to Datu et al., (2019) in his research on length of work with work fatigue at online motorcycle taxis, it was found that as many as 29 people (70.7%) worked more than 8 hours of work had work fatigue with a severe category of 15 people (51.7%)) and this is not in accordance with Law Number 13 of 2003 (Kemenperin, 2013) .

The results of statistical analysis using a simple logistic regression test obtained a value of $p = 0.013$ so that it can be interpreted that there is an influence between physical workload and work fatigue of expedition couriers in Banda Aceh. The number of physical activities carried out by the courier can directly affect his work fatigue, the activities carried out by the courier are starting from mapping packages, carrying packages with a total of 88 to 150 packages, delivering packages by dividing certain areas, contacting customers, looking for addresses, and when the packages are delivered after being delivered they are required to return to the office to deposit COD money, return packages that have not been successfully delivered, and also for attendance.

According to Reppi et al., (2019) in his research on physical workload and work fatigue, the results showed that there was a relationship between physical workload and work fatigue with a value of $p = 0.039$, this depends on the activities carried out by the worker, the heavier tasks or work as well as the physical workload they experience (Widodo, 2020) . In line with research conducted by Widodo (2020) regarding workload on fatigue levels in rice mill workers, it was found that workers with severe work fatigue also had a heavy physical workload, namely 9 people (21.4%), this could be due to not only because of this burden, but also because of age, overweight *BMI* and also because of a history of certain diseases ²¹ . This is also in accordance with research conducted by Zulhaidi & Daniati (2022) regarding physical workload and working time with feelings of fatigue, the results show that there is a relationship with a *p value of 0.000*, the physical workload in this case is a heavy burden in his job to lift goods manually from the warehouse to the first floor and also the 2nd floor and then unload the stock of goods from the shelves by relying only on muscles.



Based on research conducted by Ihsania & Iriani regarding the risk factors for work fatigue for delivery couriers, it was found that 60% of couriers experienced severe fatigue with the most felt symptoms, namely drowsiness and fatigue throughout the body caused by excessive working hours or working until outside of predetermined hours, then also physical weakness that is felt like back pain due to working in a static position while driving a motorcycle (Ihsania and Iriani, 2020). Working as a courier creates a risk of ergonomic disturbances that can harm them. Couriers can experience musculoskeletal disorders because they lift and carry packages from one place to another for a long time (Ervasti, et. al., 2019). According to Wardani et al. in their research on physical, mental workload, and breakfast habits on work fatigue on couriers, it was found that 48.6% of couriers experienced high fatigue and also high mental workload with the results of the rank spearman correlation test, the *p value* it is 0.003, which means that there is a significant relationship between mental workload and work fatigue (Wardani, et. al., 2021).

Conclusion

Based on the research that has been done, it can be concluded that 33 couriers (44%) experienced mild fatigue and for the moderate category, 42 couriers (56%) were found. Physical workload has an influence on the work fatigue of expedition couriers in Banda Aceh (*p-value*=0.013). As for the suggestions that can be given, for expedition companies the results of this research can be used as input in determining policies on the welfare of couriers, for example related to the minimum number of packages that must be delivered. Can provide food with balanced nutrition also provide drink. Couriers are expected to be able to use their rest time as good as possible, consume healthy food, and also adopt a healthy lifestyle such as stretching after work.

Acknowledgement

I would like to thank all those who have been willing to help and give directions, suggestions in completing this research especially the expedition in Banda Aceh.



References

- Abdullah R, Nurlinda A. The Effect of Workload and Attitudes on Work Fatigue in Nurses in the Inpatient Room of Faisal Islamic Hospital Makassar. 2021;2(3):81–94.
- Budiasa I.K. Human Resources Workload and Performance. Central Java: CV Pena Persada; 2021.
- Central Bureau of Statistics. eCommerce Statistics 2022. Central Bureau of Statistics; 2022.
- Datu MMD, Kawatu P, Mandangi C. The relationship between length of work and work fatigue of online motorcycle taxi drivers, the Manguni Rider Sario Community. J HEALTH. 2019;8.
- Egozi L, Hevlin NR, Dallasheh R, Pardo A. Couriers' Safety and Health Risks Before and During the COVID-19 Pandemic. Int Arch Occup Environ Health. 2022;
- Ervasti J, Pietilainen O, Rahkonen O, Lahelma E, Kouvonen A, Lalukka T. Long-term Exposure to Heavy Physical Work, Disability Pension due to Musculoskeletal Disorders and all-cause Mortality: 20-year follow-up—introducing the Helsinki Health Study job exposure matrix. Int Arch Occup Environ Health. 2019;
- Hutabarat J. Cognitive Ergonomics: Applications to Hand-drawn Batik Printing and City Transportation Drivers. Malang: Gajayana Partners; 2018.
- Hutabarat Y. Basic Knowledge of Ergonomics. Malang: Media Nusa Creative; 2017.
- Ihsania E and Iriani DU. Analysis of Subjective Work Fatigue Risk Factors on Goods Delivery Couriers in the South Tangerang Region in 2020. Pros of the ILM TAH Forum. 2020;
- Indonesia Logistics Network. Freight Forwarding Companies [Internet]. 2023 [cited 2023 Mar 14]. Available from: <https://indonesialogistik.id/company-expedisi/page/6/>
- International Labor Organization. The ILO and the Ministry of Manpower welcome the 2022 World Occupational Safety and Health (K3) Day by Encouraging Multi-stakeholder Collaboration [Internet]. 2022. Available from: https://www.ilo.org/jakarta/info/public/pr/WCMS_840812/lang--en/index.htm
- IWG employee. The Urgency of Courier Protection in E-commerce Transactions with the COD (Cash On Delivery) System. J Law Science Faculty of Social Sciences UNDIKNAS. 2021;



Kaleva T. Fatigue in Work-related accidents [Internet]. Insurance Solutions for Large Enterprises; 2022. Available from: <https://www.if-insurance.com/large-enterprises/insight/risk-consulting-magazine/risk-consulting-2022-3/fatigue-in-work-related-accidents>

Kurniawan H, W MM, Fathoni A. The Influence of Reward, Punishment, Workload, and Training on Employee Productivity (Case Study on Employees of Pt Andalan Arthalestari Semarang). J Manage. 2016;2(2):10.

Mahawati E, Yuniwati I, Ferinia R, Rahayu PP, Setijaningsih RA, Fitriyatunur Q, et al. Analysis of Workload and Work Productivity [Internet]. Our Writing Foundation; 2021. Available from: https://www.google.co.id/books/edition/Analisis_Beban_Kerja_dan_Produktivitas_K/a-0UEAAAQBAJ?hl=id&gbpv=0

President of the Republic of Indonesia. Law of the Republic of Indonesia Number 13 of 2003 concerning Manpower [Internet]. 2003. Available from: https://kemenperin.go.id/kompetensi/UU_13_2003.pdf

Ramdan IM. Work Fatigue in Traditional Samarinda Sarong Weavers. East Kalimantan; 2018.

Reppi G, Suoth L, Kandou G. Relationship between Physical Workload and Work Fatigue in Workers in the Wood Mabel Manufacturing Industry in Leilem Satu Village. Med Scope J. 2019;1.

Sidiq M. Effects of Work Fatigue and Relationships with Bosses and. 2019;7(2):284–93.

Techera U, Hallowell M, Stambaugh N, Littlejohn R. Causes and consequences of occupational fatigue: Meta-Analysis and systems model. J Occup Environ Med. 2016;58(10):961–73.

Wardani M, Widjasena B, Kurniawan B. The Relationship between Physical, Mental, and Breakfast Habits Workload on the Level of Work Fatigue in Expedition Couriers at PT Pos Indonesia, Semarang City. J Public Health. 2021;9.

Wei H, Li S, O'Toole T, Yu M, JC, Armitage, et al. Risk Factors for Burnout among Couriers: A Systematic Review of the Chinese and English Language Literatures. medRxiv. 2021;

Widodo AT. Workload on Work Fatigue Levels in Rice Mill Workers. HIGEIA J PUBLIC Heal Res Dev. 2020;4.

Yasmin GNS. The role of logistics in the advancement of e-commerce in Indonesia [Internet]. Indonesian Supply Chain. 2019 [cited 2022 Jun 10]. Available from:



<https://supplychainindonesia.com/peran-logistik-dalam-pemajuan-e-commerce-indonesia/>

Zulhaidi and Daniati A. Relationship between Physical Workload and Working Time with Feelings of Fatigue in Dazzle employees in Sleman Regency, Yogyakarta. J Lantern of Public Health. 2022;1.



International Journal of Health, Education and Social (IJHES)