

## RETURNING TO WORK AMONG ACQUIRED DISABLED WORKERS IN PENINSULAR MALAYSIA: ISSUES RELATED TO OCCUPATIONAL ERGONOMICS

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### Abstract

*Workers who suffered from injuries that caused by occupational ergonomics issues experience challenges to return to work. The purpose of this study is to identify the impact of occupational injuries, particularly industrial accidents (IA) due to occupational ergonomics issues to the victims in the Return-to-work (RTW) Program based on their socio-occupational status, location of injuries, type of accidents and type of workers' compensation claim to SOCSO. The data was obtained among workers who joined the RTW Program. As a result, it is found that the highest RTW rate were among male, Malays, who was married, and from Perak. The highest RTW rate based on location of injury were lower limb injuries, followed by upper limb and trunk and back in both Northern Region and entire Malaysia. The main findings of this study provide signal to policymakers to look at issues related to industrial accidents in various sectors and may provide as preliminary empirical evidence for the management to mitigate occupational injuries risks among workers and controlling ergonomic hazards in the workplace.*

**Keywords:** Occupational Ergonomics, Industrial Accident, Return-to-Work Program, Safety, Disability Management

### Abstrak

*Abstrak perlu dimulai dengan pengenalan dan diikuti dengan objektif kajian. Secara ringkas juga nyatakan metode, sampel, fokus kajian dan juga limitasi kajian. Rumuskan penemuan datadan perbincangan. Nyatakan kesimpulan kajian dan jelaskan implikasi kajian terhadap fenomena semasa dan nyatakan cadangan anda. Maksimum jumlah perkataan ialah 250.*

**Kata kunci:** Salah satu kata kunci perlulah mewakili tema jurnal, e.g. tamadun; politik; idea; (4-6 kata kunci)

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## **1. Introduction**

According to ILO (2011), an occupational accident is defined as “an unexpected and unplanned occurrence, including acts of violence, arising out of or in connection with work, resulting in one or more workers incurring a personal injury, disease or death”. According to ILO (2015), over 350,000 deaths occur in occupational accidents each year, which corresponds to over 800,000 accidents and 959 succumb per day. Occupational accidents are one of the most important concerns impacting the economy and should not be underrated.

Occupational ergonomics is a proactive approach of injury control that aims to fit tasks to specific individuals. It makes sure that the demands imposed on individuals are within their capabilities. Injury risk will be greatly decreased if this is accomplished. It should be noted that injuries will still occur even with ergonomically designed work, workplaces, tools, and equipment. The injured employees must then be given accommodations at work. The role of ergonomics is not simply making work accommodations to the injured employees. Instead, it entails assessing the residual work capacities of injured workers, creating physical training programs that are ergonomically designed to improve their capabilities, designing work and schedules during the transition from being occupationally disabled to a full return-to-work status, and subsequently making adjustments in the workplace, as necessary, to accommodate the individual.

The Social Security Organization (SOC SO), a statutory agency under the Ministry of Human Resources (MOHR) is responsible for handling industrial-related injuries and illnesses under its Act 4 or Employees’s Social Security Act 1969 (ESSA 1969). The industrial-related injuries is covered under Employment Injury Scheme which provides protection to employees from occupational injuries, apart from commuting accident and occupational diseases. Section 23 ESSA 1969 stated “For the purpose of this Act, an accident arising in the course of an insured person’s employment shall be presumed, in the absence of evidence to the contrary, also to have arisen out of that employment”. The term occupational accident and industrial accident are used simultaneously in this study. Occupational ergonomics on the other hand, is a discipline which attempts to adapt the job to the worker with the goal of promoting worker’s health, safety and comfort as well as productivity (Frederick et al., 1984). Due to the rising trend of industrial accidents (IA) in Malaysia, SOC SO has introduced the Return-to-Work (RTW) Program to help the workers who experiences disability to go back to work through the concept of case management (SOC SO, 2019) and occupational ergonomics. This paper focuses on the impact of Industrial Accidents towards RTW Program or Insured Persons (IP) or the Acquired Disabled Workers in returning to work.

### **1.1 Industrial Accident Situation in Malaysia**

According to Department of Statistics Malaysia, in 2020, there were 32,674 cases of occupational accidents in Malaysia, along with 312 cases of occupational fatalities (DOSM, 2022). Meanwhile, Institute of Labor Market Information and Analysis (ILMIA, 2020) stated

that, in year 2021 there are 15.06 million employed persons in Malaysia, including expatriates and low skill foreign workers. The total number of occupational accident in 2021 was 21,534 cases, with rate of 1.43 per 1,000 worker. Specifically, there are 1.41 per 1,000 workers for non-fatal occupational accident cases, and 2.00 per 100,000 workers for fatal cases. Based on SOCSO (2019), a total of 77,642 accident cases were reported in 2019, reflecting an increment of 5,011 cases or 6.90% in comparison to 72,631 cases in 2018 (Table 1). Of these, 51.26% were industrial accidents while the remaining 48.74% were related to commuting accidents. From the total number of accidents reported, it was found that Industrial Accidents showed an increase in comparison to 2018. **Table 1.** Number of accidents reported in SOCSO 2018-2019

<b>Accident reported</b>	<b>2018</b>	<b>2019</b>
Industrial accident	37,436	39,796
Commuting accident	35,195	37,846
Total number of accidents	72,631	77,642

*Note: Taken from SOCSO Annual Report (2018, 2019)*

Some agent causes that caused the Industrial Accidents are machine, other equipments, means of transport, lifting equipments, materials, substances and radiation and working environment (exclude occupational diseases reported). Table 1 also showed that in 2019, Industrial Accidents recorded the largest number of cases (39,796) followed by commuting accidents (37,846). It is also demonstrated that Industrial Accidents cases has increased by 5.15% just in one year from 2018 to 2019 and is the highest cases and benefit paid by SOCSO. The most prevalent occupational health disease in this industrialized world is work-related musculoskeletal diseases (Franco, 2010; Hossain et al., 2018). These demonstrate the importance of addressing ergonomic hazards in the workplace and the urgency with which relevant parties should act to stop the rate of Industrial Accidents in Malaysia from increasing.

## **1.2 Return-to-Work Program for Industrial-Related Accidents Victims**

In 2019, there were 7.2 million active employees registered with SOCSO, and there was a total of 77,642 accident cases were reported (SOCSO, 2019). The number of work-related accidents increases every year causing an increase in the number of chronic patients that impact on work productivity. In 2010, there were 57,639 reported accident cases; while in 2019, there were 77,642 reported accident cases. The growth was a 34.7% increase in just 9 years (SOCSO, 2010, 2019). In 2019, the total payment for Temporary Disablement Benefit increased by RM35.95 million or 16.03% to RM260.15 million compared to RM224.20 million in 2018. The expenditure for Permanent Disablement Benefit escalates by RM35.34 million or 6.26% to RM599.92 million in 2019, as compared to RM564.58 million in 2018 (SOCSO, 2010, 2019).

Thus, SOCSO made a paradigm shift in 2007 by introducing the RTW Program, a structured multidisciplinary intervention program. This was done in response to the rising trend in work-related injuries and illnesses, which increased the economic and social burden as well

as the implications of work in one's life. The aim of the program is to assist Malaysian citizen IPs or workers who have been suffered from accidents and disability including IA to return to work in a safe and timely manner by implementing a biopsychosocial approach and a case management strategy.

## **2. Problem Statement**

The focus of this study is to analyse the consequences of Industrial Accidents towards Insured Person's employment. From the total number of 2751 returned to work cases in northern region from year 2016 to 2019, it is recorded that 912 cases (33.15%) cases were caused by Industrial Accidents which were the second-highest percentage. The subgroups of those who had returned to work were compared by states using secondary data following the accident to assess the impact of Industrial Accidents to return to work. Disability that caused by Industrial Accidents may impact victim's physical, mental and socio-occupational life, particularly their ability to work.

## **3. Research Objective**

The objective of this study is to analyse the consequences of Industrial Accidents towards Insured Person's employment. This study is expected to be important to help SOCSO to understand the impact of Industrial Accidents focusing on Insured Persons's socio-occupational status (i.e., gender, state, marital status, ethnicity), and accident-related medical factors (i.e., location of injury, type of accident, type of worker's compensation claims). It will benefit SOCSO and have financial implications because Industrial Accidents have a significant negative impact on employees' life. If they are unable to return to work, social, economic, and industrial activities on all scales from the micro to the macro, will be disturbed (Llinares Insa et al., 2016). If the responsible party does not take drastic measure to overcome the issue of Malaysian Industrial Accidents cases, the number of patients and financial losses would increase.

## **4. Literature Reviews**

### **a. Human Factors and Ergonomics (HFE) in the Workplace and Return to Work**

According to Human Factors and Ergonomics Society, the HFE discipline advocates "Systematic use of the knowledge concerning relevant human characteristics to achieve compatibility in the design of interactive systems of people, machines, environments, and devices of all kinds to ensure specific goals" (Karwowski, 2006). To achieve organisational goals effectively and efficiently, the management discipline always takes important human

factors into account. Work stress, in the context of individual worker behaviour, and human resource management, in the context of safety and health management, are two examples of such factors.

Job design, human resource planning (job analysis and job specifications), work stress management, safety and health management, and other management discipline elements are crucial parts of the HFE sub-discipline, often known as occupational ergonomics. The field of occupational ergonomics embraces knowledge that is very central interest to management. It examines the human-system relationships at the level of the individual workplace (workstation) or at the level of the work system. From this viewpoint, occupational ergonomics is aligned with management and focuses on workplace organization and management through the design and assessment (testing and evaluation) of job tasks, tools, machines, and work environments to adapt these to the capabilities and needs of employees.

In the context of return to work, the main contributing factor to work-related musculoskeletal disorders (WMSD) is discovered to be ergonomic factors. Workstation design, repetitive movements, awkward posture, prolonged standing and sitting, manual handling, and vibrations are a few examples of ergonomics factors. According to Buckle (2005), the design of the workstation, the lighting, and the video display unit (VDU) are all contributing factors of WMSD. Meanwhile, some researchers stated that "work factors," such as workload, job demands, hours spent using a computer, consistently awkward postures, psychological stress, and psychosocial stress, could lead to WMSD (Bernard et al., 1994; Bongers et al., 1993; Carayon & Smith, 2000). Computers, also known as visual displaying units (VDU), are one of the factors that may cause WMSD in affected workers. This fact has been demonstrated by several researchers, including Ardahan & Simsek (2016), who concluded that the rising use of computers is one of the causes contributing to WMSD. Additionally, Wu et al (2012) found that prolonged computer use causes musculoskeletal problems (MSD), which often affect the neck, shoulders, and upper limbs of the body.

Employers must therefore take the necessary action to reduce the risk and prevent occupational diseases and injuries among their employees. Among the appropriate control measures that the management of organizations could implement to reduce the risks of occupational diseases are promoting ergonomic adjustments among workers and increasing exercise during work (Ming et al., 2004), imposing mini breaks to the involved workers (Wu et al., 2012), and ergonomic training (Sirajudeen et al., 2018).

#### **b. The concept of RTW Program and factors to return to work**

The length of the absence from work has been found to be negatively correlated with the likelihood of the employee successfully returning to work and positively correlated with increased costs to the employer (Arnetz et al., 2003). Many interventions and vocational rehabilitation programmes, including the return to work (RTW) disability management programme, have been introduced in response to the rising trend in work-related injuries and their impact on workers, families, employers, and governments in terms of the economic and

social burden. RTW is a concept refers to all programmes meant to ease the reintegration of people who have lost some of their ability or capacity to function in the workforce (ISSA, 2013).

Among the social demographic factors associated to RTW are the worker's gender (Awang et al., 2016, 2017), age (Htwe et al., 2015; Ramakrishnan et al., 2011), ethnicity, length of education (Ramakrishnan et al., 2011; Su et al., 2018), and employment status (Veeramuthu et al., 2014). Other than that are the disease and treatment-related factors including the comobid medical conditions, physical functioning, the severity of injury, health, pain, related symptoms and medical leave (Ramakrishnan et al., 2011). The type of employer, the nature of the work, the ability to drive a modified vehicle, the type of workplace injury, the employers' interest, assistance at work, employer and colleague support, the type of employment, and wage are among the work-related factors that were also associated to RTW outcomes (Awang & Mansor, 2018; Ramakrishnan et al., 2011).

## 5. Methodology

The statistical data from disability management system (DMS) of SOCSO from 2016 to 2019 were used in this study particularly from the northern region of Malaysia. These data provide information on the number of returned to work cases including those involved in Industrial Accidents amongst workers. Moreover, reference was made on related studies, which present issues indicating significance of Industrial Accidents to returning to work. Electronic bibliographic databases, conference proceedings, and reference lists were systematically searched for relevant documents.

The major concern in this study is on the impact of Industrial Accidents occurrence towards worker's ability to return to work. To get more input regarding the study aims, it is essential to review and compare several studies. Therefore, further explanations are discussed below. Hence, following the discussion, several negative impacts of Industrial Accidents on the workers as well as the organizations will be explained. The main goal of this study is to highlight the importance of employers providing a written statement of the general policies regarding safety and occupational ergonomics matter at work for their employees who may be exposed to occupational health and safety hazards.

## 6. Result and Discussion

**Table 2.** The number of cases referred to RTW Program at the initial stage of case management (motivated Insured Persons) involving Industrial Accidents based on location of injuries in the entire Malaysia from 2016 to 2019.

Location of Injury						
	2016	2017	2018	2019	Total	%

Diseases	5	2	5	12	24	0.45
General						
Injuries	11	8	35	43	97	1.80
Head	9	7	18	22	56	1.04
Lower Limb	340	279	586	955	2160	40.08
Multiple						
Locations	80	76	96	163	415	7.70
Neck	5	4	10	11	30	0.56
Psychology	0	0	1	1	2	0.04
Trunk &						
Back	116	106	201	233	656	12.17
Unspecified						
Location	1	1	2	3	7	0.13
Upper Limb	257	273	547	852	1929	35.80
Others	7	0	1	5	13	0.24
						100.0
Grand Total	831	756	1502	2300	5389	0

Note: All data taken from disability management system (DMS), SOCSO's RTW Department.

According to Table 2, most of injuries are lower limb injuries (40.08%) followed by upper limb (35.80%) and trunk and back (12.17%) from year 2016 to 2019. The data also show that the number of cases referred to RTW Program just from Industrial Accidents cases was shockingly increased every year except from year 2016 to 2017. The lower limb cases referred to RTW Program also increased every year from 2017 to 2019. Several research (Clay et al., 2010; Murgatroyd et al., 2016) demonstrated that the severity of the injury has a negative impact on return to work, particularly following orthopaedic trauma.

**Table 3.** The number of returned to work cases involving Industrial Accidents based on location of injuries in Northern Region of Peninsular Malaysia from 2016 to 2019 (Kedah, Perak, Perlis and Penang).

<b>Location of Injury</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>	<b>%</b>
Diseases	1	0	0	0	1	0.11
General Injuries	0	1	2	0	3	0.33
Head	1	1	2	2	6	0.66
Lower Limb	43	52	108	180	383	42.00
Multiple						
Locations	22	9	14	31	76	8.33

Neck	1	0	0	4	5	0.55
Psychology	0	0	1	0	1	0.11
Trunk & Back	16	8	29	34	87	9.54
Upper Limb	55	47	87	160	349	38.27
Others	1	0	0	0	1	0.11
Grand Total	140	118	243	411	912	100.00

According to Table 3, lower limb injuries show the highest returned to work rate (42.00%) followed by upper limb (38.27%) and trunk and back (9.54%). There is much evidence that demonstrate that the greatest difficulties in finding jobs and going back to work are caused by impairments that affect the lower limbs, spine, or eyes because they are commonly viewed as more serious. In Malaysia, impairment related to walking and movement is regarded to be most important because social conditions such as transportation, road conditions, and building structures are unfavourable for the disabled. According to experts in impairment evaluation, they considered that arm function to be 60% and leg function to be 40% of the whole body functioning (Rondinelli et al., 2008; Sohn et al., 2011).

**Table 4.** The number of returned to work cases involving Industrial Accidents based on state in Northern Region of Peninsular Malaysia from 2016 to 2019.

State	2016	2017	2018	2019	Total	%
Kedah	22	12	73	118	225	24.67
Perak	88	85	120	196	489	53.62
Perlis	1	0	3	10	14	1.54
Pulau Pinang	29	21	47	87	184	20.18
Grand Total	140	118	243	411	912	100.00

**Table 4** listed that the highest returned to work rate was from Perak (53.62%), followed by Kedah (24.67%) and Pulau Pinang (20.18%).

**Table 5:** The number of returned to work cases involving Industrial Accidents followed by gender in Northern Region of Peninsular Malaysia from 2016 to 2019.

Gender	2016	2017	2018	2019	Total	%
Male	113	95	201	328	737	80.81
Female	27	23	42	83	175	19.19
Grand Total	140	118	243	411	912	100.00



Table 5 listed that the highest returned to work rate was among male (80.18%) as compared to female (19.19%). Male workers returned to work more successfully than female workers, according to prior studies (Awang et al., 2016, 2017; Ramakrishnan et al., 2011).

**Table 6.** The number of returned to work cases involving Industrial Accidents based on SOCSO's type of claims in Northern Region of Peninsular Malaysia from 2016 to 2019.

Type of Claim	2016	2017	2018	2019	Total	%
Not invalid	1	1	2	7	11	1.21
Permanent Disablement Benefit	15	16	20	18	69	7.57
Temporary Disablement Benefit	124	101	218	386	829	90.90
Self-employed – Temporary Disablement Benefit	0	0	3	0	3	0.33
Grand Total	140	118	243	411	912	100.00

Table 6 revealed that the Temporary Disablement Benefit depicted the highest type of claims (90.09%), followed by Permanent Disablement Benefit (7.57%) and Invalidity Pension Scheme (1.21%). RTW Programs decrease long sick leaves and multimodal medical rehabilitation decreases the risk of disability pension (Kuoppala & Lamminpaa, 2008).

**Table 7.** The number of returned to work cases involving Industrial Accidents and marital status in Northern Region of Peninsular Malaysia from 2016 to 2019.

Marital Status	2016	2017	2018	2019	Total	%
Married	100	84	156	283	623	68.31
Single	35	29	77	113	254	27.85
Widowed	5	5	10	15	35	3.84
Grand Total	140	118	243	411	912	100.00

Table 7 revealed that married worker has the highest RTW rate (68.31%) as compared to single (27.85%) and widowed (3.84%). Previous research has demonstrated the benefits of having

positive social support such as relationships with significant others, for instance family and friends can help injured worker's psychological wellbeing and help in reinforcing better RTW outcomes (Awang et al., 2017; Eggert, 2010)

**Table 8.** The number of returned to work cases involving Industrial Accidents followed by ethnicity in Northern Region of Peninsular Malaysia from 2016 to 2019.

<b>Ethnicity</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>	<b>%</b>
Chinese	33	23	37	75	168	18.42
Indian	36	37	73	99	245	26.86
Malay	70	58	132	234	494	54.17
Others	0	0	0	1	1	0.11
Sikh	1	0	1	2	4	0.44
Grand Total	140	118	243	411	912	100.00

Table 8 shows that Malays recorded the highest returned to work rate (54.17%), followed by Indian (26.86%) and Chinese (18.42%). It has been discovered that the inclination to RTW is equal across ethnicities, which is in line with previous research (Ramakrishnan et al., 2011). The likelihood of RTW and the RTW time spent are unrelated to ethnicity.

**Table 9.** The number of returned to work cases based on type of accidents in Northern Region of Peninsular Malaysia from 2016 to 2019.

<b>Type of accidents</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>	<b>%</b>
Workplace injury (Industrial Accidents)	140	118	243	411	912	33.15
Commuting accident	286	207	517	814	1824	66.30
Occupational disease	4	5	4	2	15	0.55
Grand Total	430	330	764	1227	2751	100.00

Table 9 indicated that commuting accident made the largest returned to work rate (66.3%) followed by workplace injury (33.15%) and occupational diseases (0.55%).

**Table 10.** The number of returned to work cases according to type of accident and state

State	Type of accident	2016	2017	2018	2019	Total	%
Kedah	Workplace injury	22	12	73	118	225	27.61
	Commuting accident	69	46	183	287	585	71.78
	Occupational disease	1	1	2	1	5	0.61
	Total	92	59	258	406	815	100
Perak	Workplace injury	88	85	120	196	489	38.69
	Commuting accident	158	109	222	284	773	61.16
	Occupational disease	0	2	0	0	2	0.16
	Total	246	196	342	480	1264	100.00
Perlis	Workplace injury	1	0	3	10	14	30.43
	Commuting accident	1	0	13	17	31	67.39
	Occupational disease	1	0	0	0	1	2.17
	Total	3	0	16	27	46	100
Pulau Pinang	Workplace injury	29	21	47	87	184	29.39
	Commuting accident	58	52	99	226	435	69.49
	Occupational disease	2	2	2	1	7	1.12
	Total	89	75	148	314	626	27.61
	Grand Total	430	330	764	1227	2751	100

Table 10 revealed that Industrial Accidents made up the second-highest returned to work rate in all four states in Northern Region of Peninsular Malaysia sum up from 2016 to 2019.

## 7. Conclusion

In this study, Industrial Accidents issues related to return to work among Insured Persons was compared based on their socio-demographic characteristics and accident-related medical factors. Accordingly, it can be concluded that the highest RTW rate were among male, Malays, who was married, and from Perak. The highest RTW rate based on location of injury were lower

limb injuries, followed by upper limb and trunk and back in both Northern Region and entire Malaysia.

In this regards, the employer and disability management team should determine whether programs for worker education, health promotion, and job matching are necessary. A plant profile that describes the general working environment, workforce characteristics, the type of work undertaken, such as task demands, and any potential hazards to workers' health and safety should be developed. The disability management team can develop an action plan based on the findings of the assessment phase. Any program must have management and support to be successful. Lastly, any programs that were put in place need to be evaluated to see if they are effective.

In conclusion, this study may provide as preliminary empirical evidence for the management to mitigate occupational injuries risks among workers and controlling the ergonomic hazards in the workplace. The results of this study could contribute as additional empirical evidence in the ergonomics area to the body of knowledge. The results, however, could not be generalized because this study was only limitedly conducted in SOCSO. It is suggested that similar studies be carried out at other industrial sectors.

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