Tampere University

JARNA PASANEN

The Role of Earnings-related Social Insurance in Permanent Disability Risk Management

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ACADEMIC DISSERTATION
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To my beloved son Alex, you are my biggest dream come true.

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The course of an individual's life is neither straightforward nor predictable. Instead, it is full of surprising twists and turns that lead to unexpected situations, for both good and bad. Beyond the typical examples, such as unexpected changes in one's career path or family composition, such situations now include the ongoing global COVID-19 crisis, which has unavoidably changed the ways in which we all live, socialize, work, and move around. Surprising changes in life are also at the heart of this dissertation, since disability due to illness or injury is inevitably an upsetting event that affects the lives of disabled workers, their relatives, and their employers.

Indeed, the mere existence of this dissertation is an example of the unpredictability of life, because I was never supposed to be a teacher, or at least not a researcher. I have always loved to study, and academia, with its culture of discovery, erudition, critical thinking, and freedom, fascinated me. However, I was still determined to graduate on time with a master's degree and find permanent employment in the financial sector. However, a few years after graduating, I was offered a temporary post as a university teacher, and I decided to leave a "safe" career in the financial industry and seize upon this fascinating and relatively uncertain future. I have never regretted that decision, even though the path to a doctorate has not been the quickest or easiest for me. But now I finally feel that I have found my way. During this journey, I have been privileged to meet numerous intelligent, inspiring, and supportive people, both inside and outside academia, to whom I will be forever grateful.

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Finally, I want to thank those closest to me from the bottom of my heart. Dear mom and dad, thank you for equipping me with the best possible building blocks of life. With your (sometimes a little demanding) upbringing, love, and support, I have had the ability and courage to pursue my dreams. To my siblings, Ronja and Roope: thank you for always being there for me. I cherish our close relationship and am sure that we will always walk side-by-side in life. Lastly, I want to thank the love of my life, my husband, Kimmo. Not a single day goes by without you making me feel loved, admired, and valued. You are my best friend, my partner in crime, my other half. Your laid-back attitude to life balances my sometimes stressful nature, and your endless belief in my abilities helps me to flourish. Thank you also for being the best father to our son, Alex. The two of you are, by far, the best thing that has ever happened to me.

At home in Ylöjärvi, on January 13th 2022,

Jarna Pasanen

ABSTRACT

Work disability is a major social problem that causes a welfare loss for individual workers, employers, and the whole of society. Thus, disability risk management has gained increasing attention in recent years, and statistics show that the number of disability pensions has fallen sharply in this millennium in Finland. Despite the good development, serious problems remain, since the number of disability pensions among those under 40 has remained nearly unchanged. Reducing permanent disability to work among the younger age groups is a challenge for the future, in which workplaces, occupational health care, and social insurance have important roles to play.

Previous studies have identified a significant number of socio-demographic, medical, economic, and psychological factors that affect the probability of returning to work once the risk of disability has materialized. However, less research has addressed the role of social insurance and the impact of insurers' actions on the successful return to work (RTW). This dissertation contributes to this research gap.

Social insurance has traditionally been seen as a passive scheme limited to financial compensation for the losses incurred. However, both workers' compensation insurers and earnings-related pension insurers in Finland have been engaged in proactive disability risk management and rehabilitation for several decades. Over time, even more emphasis has been placed on the prevention of permanent disability. The insurers' motives to manage permanent disability risks are both financial and humanitarian. Above all, the aim is to avoid permanent disability benefits, which impose high costs on the insurance system.

This dissertation examines the role and significance of earnings-related social insurance in permanent disability risk management. It conceptualizes the role of social insurance in the return-to-work process and identifies the factors predicting a successful RTW. Thus, the focus is on secondary prevention, i.e., those measures aimed at preventing permanent disability to work after the realization of the risk (e.g., a severe occupational injury or long-term illness). The research is based on the experiences of disabled workers. It models their life course and reveals their views on the role of social insurance in managing permanent disability risks. The practical

motivation of this dissertation is to develop the permanent disability risk activities of social insurers by expanding the understanding of the phenomenon.

The results indicate that the social insurance system as well as social insurers are important actors in the prevention of permanent disability to work. The social insurer can reduce the probability of permanent disability through its own activities. The results reveal that, above all, the insurer's customer orientation and the customer's involvement in the RTW process support success. The contribution of this dissertation relies on the empirical evidence of the insurer-related factors connected to successful return to work. The synthesizing framework of the results reveals the perceived insurer roles within permanent disability risk management, their connection to the successful RTW, and the underlying mechanisms explaining this connection. The dissertation expands the understanding of permanent disability risk management by refining the previous theories related to the factors explaining the RTW, positive encounters between the insurers and the disabled workers, and the role and activities of the insurer in the RTW process.

TIIVISTELMÄ

Työkyvyttömyys on merkittävä yhteiskunnallinen ongelma, joka aiheuttaa hyvinvointitappiota niin yksilölle, työnantajille kuin yhteiskunnallekin. Työkyvyttömyysriskien hallintaan onkin alettu kiinnittää yhä enemmän huomiota, ja tilastojen mukaan työkyvyttömyyseläkkeiden määrä on laskenut Suomessa tällä vuosituhannella selvästi. Hyvästä kehityksestä huolimatta vakavia ongelmia on edelleen ja etenkin alle 40-vuotiaiden työkyvyttömyyseläkkeiden määrä on pysynyt lähes ennallaan. Pysyvän työkyvyttömyyden vähentäminen ennen kaikkea nuorempien ikäluokkien keskuudessa onkin tulevaisuuden haaste, jossa niin työpaikoilla, työterveyshuollolla kuin sosiaalivakuutuksella on oma tärkeä roolinsa.

Aiemmat tutkimukset ovat tunnistaneet huomattavan määrän sosiaalidemografisia, lääketieteellisiä, taloudellisia ja psykologisia tekijöitä, jotka vaikuttavat työhön paluun todennäköisyyteen työkyvyttömyysriskin realisoiduttua. Sosiaalivakuutuksen roolia sekä vakuuttajien toimien vaikutusta onnistuneeseen työhönpaluuseen on kuitenkin tutkittu vähemmän, ja tämä väitöskirja paikkaa osaltaan kyseistä tutkimusaukkoa.

Sosiaalivakuutus on nähty perinteisesti passiivisena järjestelmänä, jonka tehtävä rajautuu taloudelliseen kompensaatioon vahingon tapahduttua. Sekä tapaturmavakuutus- että työeläkelaitokset ovat kuitenkin Suomessa harjoittaneet proaktiivista työkyvyttömyysriskienhallintaa sekä työhönpaluuseen tähtäävää kuntoutustoimintaa jo usean vuosikymmenen ajan, ja työkyvyttömyyden ennaltaehkäisyyn panostetaan jatkuvasti enemmän. Vakuutuslaitosten motiivit liittyen työkyvyttömyysriskien hallintaan ovat sekä taloudellisia että humanitäärisiä. Ennen kaikkea pyritään välttämään pysyviä työkyvyttömyysetuuksia, jotka aiheuttavat suuria kuluja vakuutusjärjestelmälle.

Tämä väitöskirja tutkii ansiosidonnaisen sosiaalivakuutusjärjestelmän roolia ja merkitystä pysyvien työkyvyttömyysriskien hallinnassa. Tutkimus kartoittaa sosiaalivakuutuksen roolia työhönpaluuprosessissa ja selvittää onnistuneeseen työhönpaluuseen vaikuttavia tekijöitä. Työn fokus on siis sekundääripreventiossa, eli niissä keinoissa, joilla pyritään ehkäisemään pysyvää työkyvyttömyyttä riskin (esimerkiksi vakava työtapaturma tai pitkäaikainen sairastuminen) realisoiduttua. Tutkimus perustuu työkyvyttömien työntekijöiden kokemuksiin, mallintaa

työntekijöiden elämäntilanteita sekä avaa heidän näkemyksiään sosiaalivakuutuksen roolista ja vakuuttajien toiminnasta pysyvien työkyvyttömyysriskien hallinnassa. Käytännönläheisenä tavoitteena on kehittää sosiaalivakuutuslaitosten toimintaa laajentamalla ymmärrystä tutkimusilmiöstä ja tätä kautta osaltaan edesauttaa työurien pidentämistä.

Tutkimustulokset osoittavat, että sosiaalivakuutusjärjestelmä sekä vakuuttajat ovat tärkeitä toimijoita pysyvän työkyvyttömyyden ehkäisyssä. Vakuuttaja pystyy omalla toiminnallaan vähentämään pysyvän työkyvyttömyyden todennäköisyyttä, ja väitöskirja osoittaa, että ennen kaikkea vakuuttajan asiakaslähtöisyys ja asiakkaan osallistaminen työhönpaluuprosessiin tukevat onnistumista. Tämän väitöskirjan kontribuutio muodostuu empiirisestä evidenssistä, joka osoittaa, mitkä vakuuttajaan liittyvät tekijät ovat yhteydessä työhön paluuseen. Tutkimuksen tulokset yhdistävä integroitu viitekehys havainnollistaa sosiaalivakuuttajien toimintatavat ja erilaiset roolit, niiden yhteyden onnistuneeseen työhönpaluuseen sekä taustamekanismit, jota selittävät tätä yhteyttä. Väitöskirja laajentaa pysyvien työkyvyttömyysriskien hallintaan liittyvää ymmärrystä jalostamalla aiempia teorioita liittyen työhönpaluuta selittäviin tekijöihin, myönteisiin kohtaamisiin vakuuttajan sekä työkyvyttömän työntekijän välillä sekä vakuuttajan rooliin ja toimintaan työhönpaluuprosessissa.

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ORIGINAL PUBLICATIONS

Article I	Able or unable to work? Life trajectory after severe occupational injury
Article II	The nature of positive encounters between disabled workers and insurers in the return-to-work process
Article III	Facilitator or Enforcer, Ally or Enemy? Claimants' Perceptions of Insurers' Roles in Occupational Rehabilitation
Article IV	How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study.

1 INTRODUCTION

Long working careers are of paramount importance for workers, entrepreneurs, companies, and the whole of society. In the context of career extension, attention is usually paid to early retirement age and a late start to the working career. However, the inability to work due to disability is also a key problem, as it shortens careers and causes significant social costs in addition to personal welfare losses.

Societies have acknowledged the need for disability prevention, and the development in Finland has been promising, with a decreasing number of employees retiring on a disability pension over the last 20 years. At the same time, the role of occupational rehabilitation has increased. The aim of rehabilitation is to enable a growing number of employees to stay in work longer, which delays retirement and reduces the pressure to raise social insurance contributions.

Regardless of the positive developments, there are worrying news indicating that among younger employees under 40, the number of disability pensioners has remained almost unchanged, and for females the numbers have even increased (FCP, 2021c). The increase is mainly due to mental disorders, which overtook musculoskeletal disorders as the most common cause for disability pensions in 2019 (FCP, 2021a). Thus, the disability to work remains a major societal problem in Finland, and it is exacerbated by the aging population and falling fertility rate that burden the financing of social security.

This dissertation enlarges the understanding of permanent disability to work from the viewpoint of social insurance. By doing this, it contributes to the wider societal discussion related to the extension of working careers. The purpose of this dissertation is to explore the role and significance of earnings-related social insurance system in the permanent disability risk management. The objective is to reveal the perceived insurer roles within the rehabilitation process and the individual factors connected to a successful RTW. As a practical objective, this dissertation seeks to reveal how earnings-related social insurance may develop its practices related to the prevention of permanent disability.

The concept of permanent disability risk management refers to secondary prevention; it includes the risk management measures targeted to prevent the risk of

an employee retiring on a disability pension after an illness or injury has already occurred. These measures include, for example, workplace-driven return-to-work programs, the compliance of the 30-60-90-day rule in Finnish health legislation, and occupational rehabilitation. This dissertation focuses on the perspective of insurance. The earnings-related insurance systems of interest include the worker's compensation insurance and pension insurance that compensates the loss of earnings due to prolonged disability, and they are deeply involved in disability risk management in Finland. More specifically, the examination concentrates on disabled workers as the unit of analysis and the social insurers as active stakeholders in permanent disability risk management.

In this first section, the dissertation is positioned in the field of insurance science and in the context of social insurance. This section also describes disability risk management as a research phenomenon and presents the purpose, research questions, and outline of the dissertation.

1.1 The field of insurance science

This dissertation is placed within insurance science, and thus it approaches the research phenomenon from the viewpoint of risk management and insurance business. At the heart of insurance science lies the concepts of risk and probability – that is, the risk behavior of individuals and organizations and the various ways of coping with risks (including insurance). The discipline is also interested in the social aspects of risks; why and how governments intervene when insurance markets fail to deliver. Thus, insurance science deals with financial theories, including asset pricing and option theories, as well as theories of public policy and the welfare state (see, e.g., Zweifel & Eisen, 2012).

The first explanations of an economic theory of insurance can be traced to the 18th century and Adam Smith: "The trade of insurance gives great security to the fortunes of private people, and, by dividing among a great many that loss which would ruin an individual, makes it fall light and easy upon the whole society. In order to give this security, however, it is necessary that the insurers should have a very large capital." (Smith, 1776, 619) Later, in the 19th century, the essence of insurance was defined, for example, by the German A. Wagner (1881, 36), who highlighted the ability of insurance to eliminate or reduce the negative consequences of risks by distributing assets and the risks between a large number of individuals.

In Finland, O.W. Louhivuori defined the concept of insurance in 1938 as follows:

> Insurance is the compensation of financial loss (insured event) that threatens the benefit of an individual and is unforeseeable in its timing or consequences, in such a way that a large group enough of individuals at risk of injury collectively collect funds (insurance premiums) for this purpose (to be managed by the insurer), each of the members of the group according to the amount of his benefit in question and the threat of damage (liability) to it. (Louhivuori, 1938, 50-51, translated by the author)

The theory of insurance economics has evolved over time, and the modern versions of it emerged during the latter half of the 20th century. In the 1960s, Kenneth Arrow, an American economist, modelled an optimal insurance contract between customers and the insurance company, explaining the insurance from the viewpoint of rational consumer behavior (Arrow, 1963). The context of the article was the medical care industry, and thus it stirred a continuing debate about the optimal balance between individual decisions in market settings (e.g., private health-insurance plans) and collective decisions in non-market settings (e.g., public health coverage). The article has even been noted as a significant factor in the emergence of a new discipline, health economics (Savedoff, 2004).

About the same time, Karl Borch, a Norwegian actuary and economist, made some fundamental contributions to the field of insurance economics. He used new ideas about the economics of uncertainty to explore the optimal form of reinsurance contracts, and by doing this, he illuminated some of the problems in insurance (Borch, 1968). During the latter decades of the 20th century, he provided several important insights with the use of game theory to analyze insurance problems and the nature of optimal risk sharing and incentive effects (see, e.g., Borch, 1974; 1990).

Louhivuori (1937) categorized insurance into private and social insurance, and this division is used also in current theories (see, e.g., Rantala & Kivisaari, 2020). Private insurance is based on private contracts between the insurer and the insured, the content of which is not controlled by law, except for general provisions. Social insurance, on the other hand, is a statutory scheme covering social risks, such as old age, disability, unemployment, and death, executed by public authorities. Empirical research reveals that the role of the public sector in social risk management usually increases with the socio-economic development of the country (Harris, 2012).

In the broad field of insurance science, this dissertation is positioned under the concept of social insurance and social risk management; the research focuses on permanent disability risk and its management through the statutory insurance system. As is typical for research within the field, the individual articles are

multidisciplinary in nature; they can be seen to combine some aspects of health, social, and business science, but together with this introductory part they form a unified dissertation on insurance science.

1.2 The context of social insurance

In this subchapter, the dissertation's research context, social insurance, is presented in a concise form. Social insurance systems and their implementation are typically country-specific, and since the research data in this dissertation are Finnish, the following subchapters pay special attention to the Finnish system.

Social insurance is part of social security, which is usually defined as protection provided by society for individuals and households to ensure access to health care and to guarantee income security (ILO, 2001). In Finland, social security programs include social insurance, social assistance, social welfare, and social and health services (Rantala & Kivisaari, 2020). By definition, social insurance is a statutory or compulsory scheme that compensates the loss caused by the social risks defined by law (Kangas & Niemelä, 2017). According to Havakka (2018), social risks refer to risks that threaten the economic survival of an individual or household. Traditional social risks include illness, disability to work, unemployment, old age, and the death of a family caregiver. These traditional social risks are the ones usually defined by law and managed by a social insurance system in most developed countries (Havakka, 2018). Over time, so-called new social risks have emerged, and they include, for example, reconciling work and family life, social exclusion and single parenthood (see, e.g., Taylor-Gooby, 2004).

Social insurance is only one way to manage social risks, and thus, it is part of the wider concepts of social security and Social Risk Management (SRM). SRM is a conceptual framework, initially put forward by the World Bank, that extends the traditional image of social security as the main measure of managing social risks. According to Kulmala (2018), "social risk management refers to public and private measures that enable individuals, households, communities, and societies to manage the social risks associated with economic survival" (translated by the author).

SRM is based on the idea that all individuals and households face numerous social risks from different sources, both natural (such as epidemics, injuries, and natural disasters) and man-made (such as financial crises, unemployment, and wars) that can be managed not only through the public provision of social protection but also through several informal and market-based arrangements. Thus, the SRM

framework covers both traditional and new social risks related to health, life cycle and family- and working life, and social risks can be managed through informal, market-based and public risk management methods that are both proactive and reactive in nature (Kulmala, 2018). Table 1 illustrates the variety of measures of social risk management and positions the social insurance in the SRM framework. The table has been prepared from a Finnish perspective, and thus, the described risk management measures may not be generalizable in an international context.

Figure 1. The measures of social risk management (based on Kulmala, 2018 and Holzmann & Jørgensen, 2001)

	Informal	**Market-based**	**Public**
Risk reduction	• Hygiene • Healthy lifestyle • Investments in human and social capital (e.g., education, work experience and social networks)	• In-service training • Occupational well-being services • Other market-based services promoting mental and physical health	• Labor legislation • Labor market policies • Public school system • Stable macroeconomic policies • Social- and health services (e.g., maternity health clinics, public healthcare)
Risk mitigation	• Investments in human, social and financial capital (e.g., expanding expertise, reciprocal social relationships, real assets) • Community arrangements (e.g., peer insurance)	• Investments in financial capital (e.g., stocks and mutual funds) • Private insurance (e.g., disability, accident, death and other personal insurance)	• Activation of the unemployed • Subsidized employment • Youth Guarantee • Social assistance (e.g., housing allowance) **• Social insurance (e.g., unemployment, old age, disability and sickness insurance** • Social and health services (e.g., care for alcohol and drug abusers, home care)
Risk coping	• Selling of real assets • Intra-community charity and borrowing • Multiple jobs	• Selling financial assets • Borrowing from financial institutuions	• Social and health services (e.g., 24-hour social services) • Social welfare (basic social assistance)

As Table 1 shows (based on Kulmala, 2018; Holzmann & Jørgensen, 2001), social risk management can be implemented with three different strategies and with informal, market-based, or public measures. First, social risk management includes services and income transfers that prevent social risks from occurring (the risk reduction strategy), such as good hygiene, a healthy lifestyle, in-house training, education, and public health care. Second, the consequences of social risks can be

mitigated (the risk mitigation strategy), for example, by community arrangements such as peer insurance, stock investments, private and social insurance, subsidized employment, housing allowances, and treatment for alcohol and drug abusers. Third, the risk-coping strategy refers to the measures of last resort and include, for example, selling off real and financial assets, borrowing, and social welfare.

In the context of social risk management, social insurance is classified as a public measure for risk mitigation (bolded in Table 1). According to Kangas and Niemelä (2017), insurance is an attractive risk management tool for social risks because of the idea of risk sharing. The functioning of insurance is based on the law of large numbers; when divided among a sufficiently large group, the risk will move closer to the expected value and eventually will not endanger the system's carrying capacity.

The expansion of social insurance into a compulsory national system is partly related to the same idea of risk-sharing. Both Rantala & Kivisaari (2020) and Kangas & Niemelä (2017) describe the development of social insurance in Finland in the basic textbooks of insurance. According to these descriptions, benefit funds in the 19th century were usually local and owned by a certain professional group or workplace. Thus, the risk pool was often too small and if the social risk materialized, the fund was not able to cover it. Nationwide and compulsory social insurance expanded the risk pool and therefore was able to handle the losses successfully. Furthermore, from the viewpoint of employers it harmonized the conditions of competition at the national level (Rantala & Kivisaari, 2020; Kangas & Niemelä, 2017).

The use and expansion of social insurance has been justified by the failure of the private market. The failure of the private market has been handled in insurance economics (e.g., by Zweifel & Eisen, 2012) and in social insurance textbooks (e.g., Kangas & Niemelä, 2017). Social insurance is claimed to be able to better manage the two phenomena caused by incomplete information: adverse selection and moral hazard. A single insurance company cannot base its operations on the probability of loss for each individual client, but the loss frequency is assessed with probabilities in a wider group. However, the insurance portfolio always differs from the entire population and the customer base may become unfavorable for the insurance company, i.e., there are a considerable number of high-risk individuals among the insured. This problem is called adverse selection and it is especially large in personal insurance lines, such as unemployment or sickness insurance. First, adverse selection leads to the withdrawal of unprofitable insurance products, thus, the private market is not able to offer insurance against all risks. Second, it results in some individuals being excluded from insurance coverage based on their pre-existing conditions.

Compulsory social insurance can avoid the problem of adverse selection by obligating all citizens to participate, and thus, everyone has insurance based on the average risk (Zweifel & Eisen, 2012; Kangas & Niemelä, 2017).

The other problem with incomplete information in the context of insurance is called moral hazard, which refers to the change in the behavior of the insured. The presence of insurance weakens the incentives for risk reduction through careful behavior. Zweifel & Eisen (2012) argue that compulsory social insurance actually exacerbates the problem of moral hazard, but on the other hand, according to Kangas & Niemelä (2017), the public sector has wider leverage on the problem, since it can guide the behavior of individuals through legislation, taxes, and subsidies.

For decades, two views have been distinguished in setting the ultimate goals of social insurance. According to the first view, the goal of social insurance is to reasonably guarantee the level of consumption for workers, whereas according to the second view, the goal is to guarantee a minimum security for all citizens (Rantala & Kivisaari, 2020). Thus, scientists tend to classify social insurance systems according to their goals and the relation between insurance contributions and benefits.

Several books and articles concentrating on the history of social insurance describe the birth of these two basic systems (e.g., Hu & Manning, 2010; Rantala & Kivisaari, 2020). The first social insurance system, representing the "worker's insurance" view, originated in Germany during the reign of Chancellor Otto Von Bismarck in the 1880s, when laws on compulsory health insurance, worker's compensation, old age, and disability insurance were enacted. This so-called Bismarckian social insurance system consists of contribution-based, corporatist benefits that are related to income. Hence, eligibility for the social insurance system requires employment and the system includes no redistribution. The Bismarckian model is also referred to as "earnings-related social insurance," which is the term used in this dissertation.

The other option, a minimum-security system, received strong support from Lord Beveridge, who, on Churchill's mandate, designed the British social insurance system after World War II. Under this Beveridgean model, all citizens are entitled to basic social insurance benefits with flat rates. The Beveridgean system is heavily redistributive and guarantees the equalization of benefits. This model is also referred to as "residence-based social insurance," which is the term used in this dissertation (Hu & Manning, 2010; Rantala & Kivisaari, 2020).

The birth and development of Finnish social insurance is presented by Rantala & Kivisaari (2020). According to them, Finnish social insurance is based on mutual

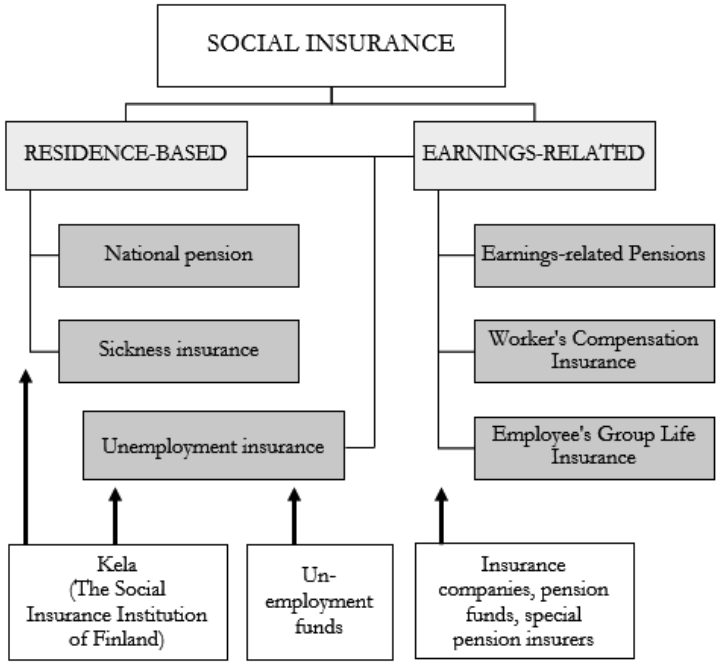
assistance, the employer's liability for maintenance, and church charity. However, in Finland, social insurance systems developed mainly later than in the other Nordic countries due to the relative underdevelopment of economic and social conditions before World War II. The first social insurance system, worker's compensation, came into force as early as 1887, but was followed by a period of stagnation, since political decision-making was hampered by supporters of different social insurance systems (Rantala & Kivisaari, 2020).

As Rantala & Kivisaari (2020) state, the long period of stagnation ended in the late 1930s with the enactment of the National Pensions Act, which was reformed in 1957. This new social insurance system based on flat-rate pensions did not satisfy wage-earners, and earnings-related pension acts were enacted to enter into force in 1962. The earnings-related pensions were supplemented in 1967 with survivors' pensions and in 1970 with entrepreneurs' pensions. The laws on health insurance and unemployment security were enacted in the 1960s.

As a result, Finnish social insurance includes statutory pensions (both national and earnings-related), sickness insurance, unemployment insurance, worker's compensation insurance and employee's group life insurance. As illustrated in Figure 1, the Finnish social insurance system is a mix of the Beveridgean and Bismarckian models, containing both residence-based and/or earnings-related insurance types that are further divided into several different benefits.

As Figure 1 shows, the national pensions and sickness insurance are Beveridgean, residence-based systems, and the Social Insurance Institution of Finland, a government agency, is responsible for their implementation. On the contrary, earnings-related pensions, worker's compensation insurance and employee's group life insurance are Bismarckian, employment-based, and earnings-related systems, and their implementation has been entrusted to private insurance companies, industry-wide pension funds, company pension funds and special pension insurers for farmers, seafarers and public-sector employees. This kind of public-private partnership (PPPs), where private companies perform public tasks, are nowadays quite common in European statutory pension systems (Johanson & Sorsa, 2010). Unemployment security in Finland is a hybrid system that includes a resident-based unemployment benefit scheme implemented by the Social Insurance Institution of Finland and a voluntary earnings-related insurance scheme implemented by the unemployment funds (Ylikännö, 2017).

Figure 1. The social insurance types and implementers in Finland



1.3 Disability risk management as a research phenomenon

In Finland, the share of disability pensioners in the working age population has been high by international standards. The OECD statistics (OECD, 2021) show that in 2010, 7.9 percent (n = 280,100) of the working-age population received disability benefits in Finland, while the OECD average was less than 6 percent. However, the number of recipients of disability benefits in Finland has decreased significantly over the last ten years, reaching 6.3% (n = 217,852) of the working age population in 2018, which is already approaching the OECD average (OECD, 2021). The downward trend can also be seen in long-term disability to work in the earnings-related pension system, where the number of disability pensioners at the end of 2020 was 130,000, which is over a third less than in 2010 (FCP, 2021a).

According to the Finnish Centre for Pensions (FCP) (2021a), in 2020, the most common reasons for disability in Finland were mental disorders (33%) and musculoskeletal disorders (31%). The same statistics show that mental disorders began to rise sharply in 2016 and depression-based pensions, especially for young people and women near retirement age, have increased in recent years. In 2019, for

the first time, mental health causes passed musculoskeletal disorders as the most common reason for disability pensions (FCP, 2021a).

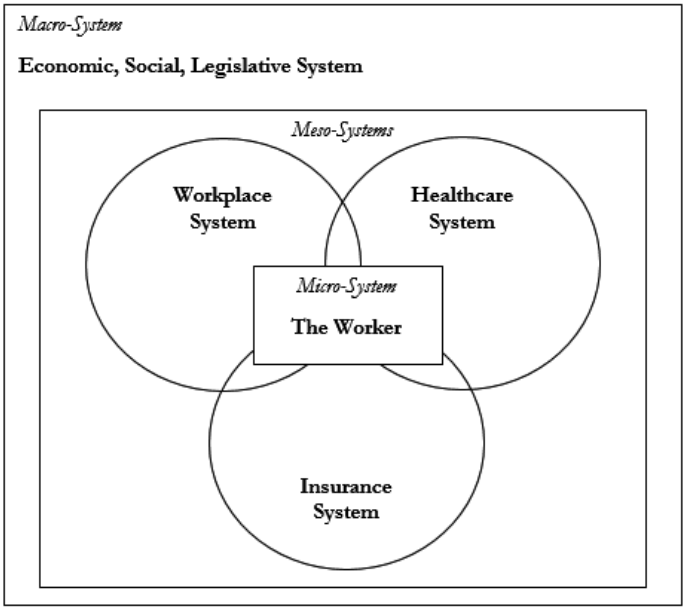
A successful return to work (RTW) after prolonged sick leave or an occupational injury is important above all for the disabled workers themselves. In most cases, the individual's employment situation and earnings level are interrelated, and the economic benefits of returning to work are undeniable especially in the longer term. From the individual's point of view, a successful RTW also has other benefits, such as improved health and quality of life, maintaining or achieving a desired social status, and restoring self-esteem and knowledge, especially if work had been an important part of life in the past (Szymanski et al., 2003). Studies have also found that successful experiences associated with returning to work were primarily related to the pleasure of doing meaningful and valuable work rather than to an increase in earnings (e.g., Levack et al., 2004; Young et al., 2005).

The prevention of long-term disability is also an important goal for the whole of society, especially in the context of the debate on longer working careers. Measures to promote an RTW affect the middle and final stages of careers by preventing premature retirement due to disabilities. In addition, the costs of disability constitute a significant expense item for insurance companies, employers, and society at large, i.e., support for returning to work has a significant financial impact. In 2020, insurance companies paid disability pensions of almost EUR 2.5 billion (FCP, 2021b). In addition, disability to work causes a lot of indirect costs that are not reflected in the amount of pension benefits. It is impossible to determine the cost of losing the entire contribution of a key person in a company, but from a financial point of view, there is a loss of hundreds of thousands of euros when a skilled worker is lost at a young age due to permanent disability (Joensuu, 2017). Rissanen & Kaseva (2014) have calculated that the potential loss of work contribution due to disability pensions in 2012 was €8.0 billion. This number describes the loss of potential labor input over a period of one year: 2012 (Rissanen & Kaseva, 2014). Thus, disability risk management has become a priority for several parties in society.

Both theoretical and empirical studies show that disability risk management is a complex phenomenon and involves several stakeholders from different system levels. Several models of disability prevention and return-to-work have emerged over recent decades. These models have evolved from pure physical functioning to more expansive multi-stakeholder models enhancing our understanding of occupational disability and, consequently, improving the prevention and management of it (Loisel et al., 2001; Friesen et al., 2001; Franche et al., 2005a; Schultz et al., 2007).

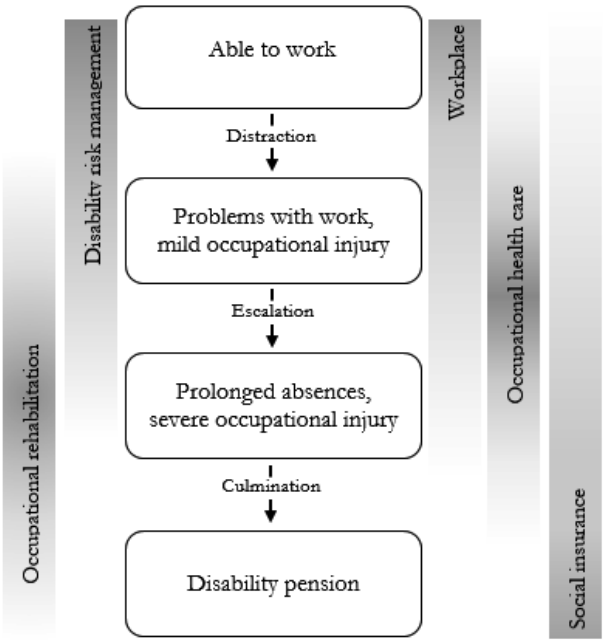
The arena of disability risk management, as understood in this dissertation, is pictured in Figure 2, which is based on the work of Friesen et al. (2001). The micro-system of disability risk management consists of the worker's characteristics, attitudes and behaviors, which have been shown to affect the ability to work and to recover from an illness or injury. The mesosystems include the workplace, insurer and health care systems, which are essential stakeholders in maintaining well-being at work and supporting the RTW after an illness or injury. The macro-system involves the economic, social, and legislative environment within which the occupational disability occurs. Hence, the insurance system, referring mainly to social insurance, is one essential part of the arena of disability risk management.

Figure 2. The arena of disability risk management (based on Friesen et al., 2001)



Disability risk management may also be illustrated through the disability path of an individual worker, as shown in Figure 3. The figure provides an outline of the disability path from the early problems with work to the disability pension, and it shows the emphasis of different risk management measures and the key stakeholders along the way. These measures and key stakeholders in the different phases of the path may vary from country to country. Hence, this figure and the following examples of the role of social insurance in disability risk management focus mainly on Finland.

Figure 3. An outline of the disability path



Maintaining the employee's ability to work and the primary prevention of illnesses and injuries is mainly the responsibility of the workplace and the employees themselves. According to the definition offered by Terveyskirjasto (2021a), primary prevention refers to preventing the illness or injury before it even occurs. This can be done by preventing exposures to hazards and by altering unhealthy or unsafe behavior that might cause an illness or injury. Through disability risk management, including managing well-being at work and investing in occupational safety, companies have been able to reduce absences due to illness, increase the employee's retirement age, and reduce disability costs (Hendriksen et al., 2016; Lerner et al., 2013; Arocena et al., 2008).

The role of occupational health care becomes stronger when an employee begins to have minor work ability problems. At this point, the shift from primary to secondary prevention happens, which, according to Terveyskirjasto (2021b), refers to reducing the impact of an illness or injury that has already occurred. This can be done by treating the illness or injury to stop its progression, and by implementing rehabilitation and return-to-work programs to prevent long-term disabilities. The term "permanent disability risk management," used often in this dissertation, refers to this secondary prevention, where the goal is the worker's successful RTW and the avoidance of a disability pension.

Social insurance is mostly responsible for prolonged disability cases, and therefore the secondary prevention of disability, since social insurance compensates for the financial losses caused by disabilities with sickness, disability, and rehabilitation allowances and disability pensions. However, insurers also use measures of primary prevention, including financial incentives, disability risk, consulting, and electronic services related to different aspects of safety and well-being at work. The activities of insurers related to disability risk management are described more thoroughly in Chapter 2.3.

It is also important to understand the relationship between employers, disabled workers and the social insurers responsible for disability compensation. Under Finnish law, employers must arrange both workers' compensation and pension insurance for their employees. Thus, the employers are the direct corporate customers of non-life insurers (providing workers' compensation insurance) and pension insurers. However, it is the employees who are entitled to the compensations in the case of disability, which naturally makes them also (private) customers of the insurers.

1.4 Purpose of the dissertation

The purpose of the dissertation is to explore the role and significance of earnings-related social insurance system in the permanent disability risk management. The objective is to reveal the perceived insurer roles within the rehabilitation process and the individual factors connected to a successful RTW. A pragmatic objective of the dissertation is to develop the insurers' practices related to permanent disability prevention and by doing so, contribute to the prolongation of working careers to benefit not only the individual workers and employers but also the social insurance system and the society at large. The concept of permanent disability risk management refers to secondary prevention, including measures to mitigate the consequences and prevent the permanent disability to work after an illness or injury has occurred. Thus, the ultimate objective of permanent disability risk management is the successful long-term RTW of the employee.

In this dissertation, permanent disability risk management is studied from the perspective of earnings-related social insurance, and more specifically from the perspective of worker's compensation insurance and the earnings-related pension insurance that are responsible for the compensation of the permanent disability cases in Finland. Thus, the engagement in disability risk management and rehabilitation is

evident in these insurance systems. The focus is on studying the activities of the insurers based on the experiences of disabled workers as individual customers. The unit of analysis is disabled workers, since all the gathered data contain information regarding these claimants.

The dissertation addresses the following questions:

1. What worker- and insurer-related factors predict a successful return to work after injury or illness absence?
2. What is the role of social insurers within the RTW process?
3. Through what underlying mechanisms do social insurers affect the outcomes of the RTW process?

The introductory part and the four articles together answer the research questions from slightly different viewpoints, fulfilling the research purpose. Article I lays the foundation for the dissertation by focusing on the outcomes of a severe occupational injury and the worker-related factors explaining RTW. Articles II, III, and IV deepen the focus on insurance in the arena of permanent disability risk management and the insurers' influence on the outcomes of the RTW process. Article II explores positive encounters between insurers and disabled workers, article III focuses on the different insurer roles during the RTW process, and article IV studies the correlation between different insurer actions and the results of occupational rehabilitation. Table 2 combines the research questions of the dissertation and the individual research articles, and Table 3 summarizes the title and purpose of each article. As shown in Table 2, multiple articles provide answers to the same top-level research question from a slightly different perspective.

Figure 2. Articles answering the research questions

Research question	Articles
1. Worker- and insurer-related factors predicting RTW	Article I, Article IV
2. The role of insurers within the RTW process	Article II, Article III, Article IV
3. The underlying mechanisms of the insurers' influence on RTW	Article II, Article III

Figure 3. The titles and purposes of the individual articles

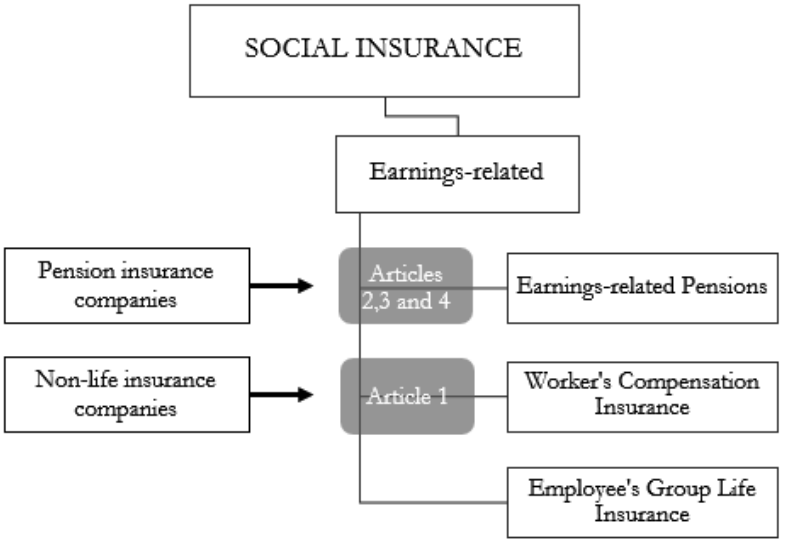
Article title	Purpose
Able or unable to work? Life trajectory after severe occupational injury	To study the probabilities and permanence of return to work, disability to work, and rehabilitation, and to explore the connection between these life situations and later working after a severe occupational injury.
The nature of positive encounters between disabled workers and insurers in the return-to-work process	To explore and conceptualize perceived positive encounters between disabled workers and insurers in order to identify the mechanisms that support successful rehabilitation outcomes.
Facilitator or Enforcer, Ally or Enemy? Claimants' perceptions of insurers' roles in occupational rehabilitation	To create a framework of the different perceived insurer roles within the RTW process and reveal the underlying mechanisms that explain the relationship between perceived insurer roles and occupational rehabilitation outcomes.
How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study	To study the connection between insurer actions and occupational rehabilitation outcomes and reveal the critical actions that best promote success.

The synthesizing framework (pictured in section 5.1) illustrating the role and the significance of earnings-related social insurance in permanent disability risk management is formed by refining the previous theories, investigating the worker- and insurer-related determinants of RTW with quantitative methods, and exploring the role and actions of insurers in the RTW process with qualitative methods. Thus, the dissertation is integrative in nature, combining both descriptive and explorative findings together.

1.5 Outline of the dissertation

This chapter illustrates the positioning of the dissertation in the context of social insurance in the arena of disability risk management and in the disability path of the individual employee. The position of the individual articles in the context of social insurance is shown in Figure 4.

Figure 4. The position of the individual articles in the context of social insurance



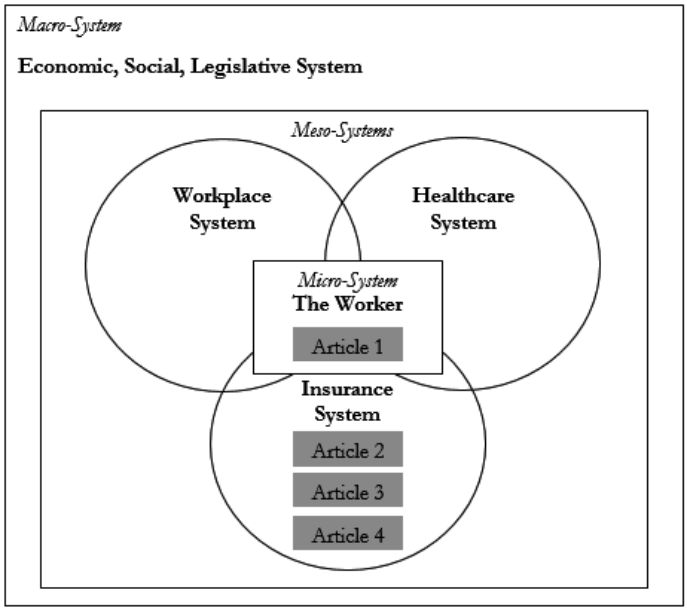
As the figure illustrates, the focus of this dissertation is on earnings-related social insurance with incentives to manage permanent disability risks. Hence, the relevant types of social insurance are earnings-related pensions and worker's compensation insurance. The first article deals with permanent disability risk management and the determinants of RTW in the context of worker's compensation insurance, and the next three articles focus on earnings-related pension insurance. The insurance companies of attention are the private pension insurance companies implementing the Employees Pensions Act (TyEL, 395/2006) and the non-life insurance companies providing workers' compensation insurance. Consideration of both these earnings-related social insurance systems gives a more comprehensive picture of the research phenomenon.

The study focuses on the private customers of these insurance companies, in other words, the disabled workers entitled to compensation. The research is limited to wage earners, and entrepreneurs are excluded due to the slightly different rules in the insurance systems and differences in register data between these groups. In addition, regarding the earnings-related pensions, the study focuses on private-sector employees, who account for more than 60% of all employees (FCP, 2021a) and are insured under the Employees Pensions Act (TyEL, 395/2006). There are some differences in the management of disability risks between different employment pension laws, and the registers containing information about disabled workers also differ from each other. Furthermore, this study sought to focus specifically on the

activities of private non-life and pension insurance companies, and thus, the exclusion of disabled workers insured with other earnings-related pension acts implemented by various insurance organizations was a clear choice.

In the arena of disability risk management, this dissertation focuses on the micro and meso systems, more precisely on the disabled workers themselves and the insurance system, as illustrated in Figure 5. The first article of the dissertation considers the worker-related factors, including demographic, work-related, and injury-related variables, and their impact on the RTW. The following three articles are more clearly positioned in the insurance system by exploring the role and actions of insurers and their impact on the RTW. However, the articles are written from the perspective of disabled workers, and thus, the microsystem and the worker are present in this way in all of them.

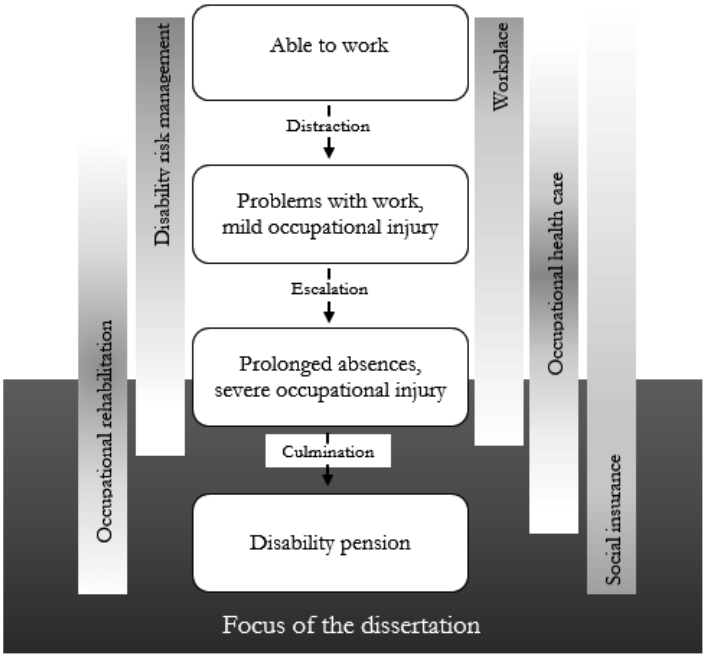
Figure 5. The position of the individual articles in the arena of disability risk management



The focus of this dissertation is on permanent disability risk management, so the research focuses on individuals whose work ability is severely endangered and who have already prolonged absences from work or experienced a severe occupational injury. At this stage, the role of traditional insurance activities and the occupational rehabilitation organized by insurers is emphasized. Figure 6 shows the positioning of the dissertation in relation to the disability path of the individual employee. Although the path in the figure ends with a disability pension, it is of course not the

desired outcome of the RTW process; permanent disability risk management seeks to reverse the path and return the individual back to work.

Figure 6. The focus of the dissertation in relation to the disability path



The dissertation consists of five chapters. The first chapter introduced the research context and research phenomenon, presented the purpose and research questions of the dissertation, and gave a brief overview of the four independent articles and their positioning in the research context and the research phenomenon. The second chapter conceptualizes the role of earnings-related social insurance in disability risk management by presenting the evolution of the RTW models, the factors predicting RTW, and the Finnish disability insurance scheme for disabled workers. The third chapter describes and explains the research strategy of the dissertation by describing pragmatism as a research paradigm, the mixed methods approach, the used datasets and the article-specific methodological approaches. The fourth chapter presents the four independent articles more thoroughly, also introducing their contribution in relation to the objectives of the dissertation and the role of the current author in composing the articles. The fifth chapter fulfills the purpose of the dissertation by gathering the most relevant results in relation to the research questions from the multiple articles and viewpoints and presenting the integrative framework of the role and significance of earnings-related social insurance in permanent disability risk

management. Furthermore, Chapter 5 specifies the theoretical and managerial contributions of the dissertation, evaluates the limitations related to this work, and provides suggestions for future research.

2 CONCEPTUALIZING THE ROLE OF SOCIAL INSURANCE IN DISABILITY RISK MANAGEMENT

This chapter lays the conceptual and theoretical ground for the role and significance of social insurance in disability risk management. Section 2.1 describes the evolution of occupational disability and RTW models and prepares the ground for the conceptualization by introducing the biopsychosocial model of disability on which this study is based. Section 2.2 delves deeper into the multi-stakeholder system of RTW and combines insights from earlier studies to illustrate the role of different stakeholders in disability risk management. Section 2.3 zooms in on the role of social insurance and introduces both theoretical and practical examples of social insurers working in the field of disability risk management. Overall, this chapter provides conceptual tools to assess the role and significance of social insurance from the perspective of disability risk management.

2.1 The evolution of occupational disability and RTW models

Historically, three major paradigms, the biomedical, social construction, and the biopsychosocial, have formed a foundation to the development of occupational disability and RTW models (Knauf & Schultz, 2016; Verbrugge & Jette, 1994; Bickenbach et al., 1999; Tate & Pledger, 2003; Olkin & Pledger, 2003; Imrie, 2004). The number of different models has increased as different factors explaining disability and RTW have been considered meaningful. The major paradigm shift has been from the purely medical model to a more holistic view about disability and RTW.

Schulz et al. (2007) classified RTW models into six main groups on theoretical grounds. The biomedical model (1) is based on the medical research tradition and states that work ability is primarily determined by clinically proven damage. The psychosocial model (2) has evolved within the framework of health and rehabilitation psychology, and it examines different work-related beliefs, experiences, and expectations as determinants of the RTW. The forensic model (3) is based on psychological research on insurance law issues, and it considers the

benefits and losses associated with returning to work or receiving a permanent disability pension. Ecological and case management models (4) are based on the cognitive-behavioral and organizational psychological research traditions, where work ability and the RTW are viewed from both the individual and the workplace perspective. The economic framework (5) relies on health economics, looking at the social and financial incentives built into the macro system. Finally, the biopsychosocial framework (6) is based on multidisciplinary research and the RTW is seen as the interaction of medical, psychosocial, and systemic factors.

Knauf & Schultz (2016) later supplemented this classification with ergonomic models and highlighted the need for multi- and interdisciplinary models that support key stakeholders and the further operationalization of definitions and processes. According to them, the boundaries between different models have never been completely clear, and in addition, developments in the 21st century have led to the convergence of models based on different research traditions. Table 4 summarizes the key factors from the five model groups (based on Schultz et al., 2007; Knauf & Schultz, 2016; Järvikoski et al., 2018).

Figure 4. A description of the basic theoretical models of occupational disability and RTW (based on Schultz et al., 2007; Knauf & Schultz, 2016; Järvikoski et al., 2018)

	Understanding of working ability	Underlying values	Focus	Orientation in interventions
Biomedical and forensic	The damage determines the working ability	Scientific evidence and objectivity	The individual	Treatment orientation; determining intervention according to the pathology; physical care
Psychosocial	Working ability is based on psychosocial individual, and environmental factors that also affect goals and motivation	Scientific truth; understanding the impact of psychosocial factors	Initially in the individual (expectations, ability, attitudes, coping), later also in different systems (workplace, health care, insurance system)	Psychosocial factors are assessed at all stages; readiness to return to work is defined (ability, motivation, etc.); rehabilitation utilizes cognitive-behavioral methods, and attention is paid to the psychosocial factors of the workplace

Ecological/ case manage-ment and economic models	Working ability is a systemic phenomenon determined by the interaction of macro-, meso-, and micro-systems	Integration of prevention, rehabilitation and return to work as well as harmonization of the cooperative relations	Macro-systems (economic, social, legislative systems)	Assessing the importance of macro- and mesosystem interactions (including conflicting interests); assessment of barriers to employment and factors supporting it; emphasis on disability management; integrated case management approaches
Ergonomic	Working ability is based on the interaction of individual and system factors	Identifying and reducing work-related risk factors; problem prevention and return to work	Macro-ergonomics: policies, and processes, attitudes. Micro-ergonomics: the individual and his work and tools	Preventive measures play a key role; rehabilitation as a collaboration between the individual and the system
Biopsychosocial	Working ability is a multi-dimensional concept, based on the interaction among medical, psychosocial, and system-based factors in RTW	The customer as an active partner; the well-being of the rehabilitees and the improvement of their functional capacity	Initially, in the multidisciplinary individual factors; later also in multidisciplinary environmental and work-related factors	The employee as an active partner in the process, also partly responsible for the outcome; coordinated and flexible case management approaches based on readiness to return to work; contact with all RTW stakeholders

According to Knauf & Schultz (2016), the importance of biomedical and forensic models that focus purely on curing the disease or treating the injury itself have clearly diminished in recent years. The more current biopsychosocial model is clearly more holistic in nature and considers the interaction between the physical, psychological, and social factors that together determine the RTW outcome and the efficacy of the rehabilitation process. With the development of RTW models, also the approach to workers with disabilities has moved from being predominantly medical to one that considers also the psychological and sociocultural aspects (Wade & Jong, 2000). Hence, the focus is not purely on healing the patients but also on helping the rehabilitees to cope with their problems. This also means that the role of the rehabilitees has changed from passive recipients to active partners that share the responsibility for the progress of the RTW process (Knauf & Schultz, 2016).

The biopsychosocial model has been a significant trigger for the development of multidisciplinary RTW and rehabilitation programs (e.g., Guzman et al., 2001; Stanos & Houle, 2006). It is noteworthy that this model shifts the responsibility for the RTW outcomes from the health care–patient relationship to a multi-stakeholder system, where the worker, the workplace, health care, the insurance system, and the economic, legal and societal systems all influence the outcomes with their own understanding of RTW (Vandenbroeck et al., 2016). With this paradigm shift, the role of the insurance system has also been recognized.

This dissertation leans on the biopsychosocial model of disability and RTW. The first disability models can be criticized as being overly simplistic and failing to acknowledge all the dimensions of the disability, including medical, psychological, environmental and social aspects and both worker- and stakeholder-related factors. The biopsychosocial model contains the assumption that even if disabled workers have a similar medical diagnosis, they still have different RTW outcomes. Thus, the model suggests that even if the physical factors are identical, the RTW outcomes vary depending on the psychological and/or social-environmental factors. This assumption is essential from the viewpoint of this dissertation.

2.2 RTW stakeholders and factors predicting the return to work

The previous research on employment patterns after an injury or illness has occurred suggests that most of the workers RTW within a few years of the event (Post et al., 2006; Lange et al., 2007; He et al., 2010; Kulmala, 2016). Furthermore, the RTW has proven to be an evolving, nonlinear process (Young, 2014) with disability recurrences and a declining RTW rate with time (Young, 2014; Butler et al., 1995; Bültmann et al., 2007). The earlier studies have identified a substantial number of socio-demographic, clinical, economic, and psychological factors that affect the probability of the RTW. Since the RTW process is nowadays understood as a multi-stakeholder system where the worker, workplace, health care and insurance system all influence he outcomes of RTW, this chapter briefly presents all stakeholders, their motivations and the related determinants of RTW outcomes.

RTW is usually seen as a desired result for workers with disabilities. The worker's motivations for a successful RTW include financial security, physical independence, and the achievement of work-related goals and esteem (Franche et al., 2005a). According to the biopsychosocial model of disability, the worker is seen as an active partner in the recovery process, learning about the illness or injury and its treatment,

participating in the planning and execution of the rehabilitation plan, building self-management skills, and providing information and seeking support from relevant stakeholders as needed (Knauf & Schultz, 2016; Corbière et al., 2020).

Studies reveal that there are numerous worker-related factors – including socio-demographic, psychological, clinical, and job-related determinants – predicting the outcomes of the RTW. The results of these studies (e.g., Krause et al., 2001; Lange et al., 2007; Kenny, 1998; He et al., 2010; Berecki-Gisolf et al., 2012; Young, 2010; Kulmala & Luoma, 2017) indicate that sociodemographic factors promoting the RTW include a younger age, higher education, higher pre-injury income, white collar occupation, no unemployment periods, being a breadwinner, and solid social and economic support. Psychological factors include, for example, a history of anxiety, depression, or childhood abuse, which all prolonged the RTW. Also, poor general health, activity limitations, previous episodes of pain, a decline in health, and injury or illness severity as clinical measures prolonged the RTW. When it comes to individual job characteristics, heavy physical work, an uncomfortable working position, noise exposure, and monotonous work are examples of factors prolonging the recovery (Krause et al., 2001; Lange et al., 2007; Kenny, 1998; He et al., 2010; Berecki-Gisolf et al., 2012; Young, 2010).

The biopsychosocial model of disability also acknowledges the role of various other RTW stakeholders that are usually categorized into groups based on a system theory perspective: employers (work system), insurers (insurance system), and health care providers (health system) (Power et al., 2001; Young et al., 2005; Corbière et al., 2020). According to Corbière et al. (2020), in order to promote the worker's RTW process, all stakeholders should: (1) understand the role and perspectives of the other stakeholders involved; (2) aim at mutual support and good communication between the teams in the workplace and between the various RTW stakeholders; (3) take an empathic, positive and supportive approach towards the worker's recovery; (4) respect the confidentiality of the worker's personal information; and (5) adopt an open, flexible, and creative attitude towards RTW measures, including work accommodations considering the possible functional imitations of the worker.

The ultimate goal of the employer is to keep the workplace financially viable, which requires maintaining or increasing productivity (Franche et al., 2005a). At the same time, employers may feel responsible for the well-being of their employees (Eakin et al., 2003). According to Franche et al. (2005a), despite these genuine concerns about employee well-being and safety, the actions to increase them are usually associated with financial or regulatory interests. Thus, the main employer motivator behind the disability management and RTW programs is usually mainly

related to the reduction of the insurance or sick leave costs. In recent decades, however, more attention has been paid to the well-being and safety of employees, and disability management has increasingly emerged in companies as a management objective (Franche et al., 2005a).

Employers are one of the most documented RTW stakeholders in the literature. According to a scoping review by Corbière et al. (2020), in order to best promote the RTW, employers should (1): implement a clear procedure and positions regarding worker support on sick leave while ensuring the worker's confidentiality; (2) inform, prepare, and evaluate the role of all stakeholders in the RTW process; and (3) prepare for different work accommodations and their implementation. In addition, the manager's role is first and foremost to monitor and support all the members of the team during the worker's sick leave. With the consent of the worker, the manager should also maintain contact with him or her during sick leave to maintain a feeling of belonging to the workplace. The same applies for co-workers, who are encouraged to continue inviting the disabled worker to join the team's social events and activities. Both managers and co-workers should be respectful of the colleague on sick leave and prevent all inappropriate or stigmatizing comments (Corbière et al., 2020).

According to the system theory, another RTW stakeholder is health care providers (health system), whose primary goal (according to Franche et al., 2005a) is to ensure the health of patients. In addition, health care providers are driven by economic factors, so it is in their interest to ensure a certain level of medical treatments and patient follow-ups. Health care providers may still view disability as purely medically determined when the RTW is seen as a result of successful medical or surgical treatment (Franche et al., 2005a).

According to Corbière et al. (2020), in order to best support the RTW, health care professionals should focus on the following four components: (1) care and evaluation of the worker's illness or injury considering the work environment; (2) adoption of the role of a caregiver, including a secure and stable relationship meeting the needs of the worker; (3) consultation with and education of the worker by suggesting appropriate health interventions/services; and (4) therapeutic follow-up. Occupational health care is a significant actor in RTW processes in Finland and often present also elsewhere in Europe. It has a specific position since the occupational physicians work in the organizations and are consequently already familiar with the work environment, the risk factors, and the work accommodation possibilities for the disabled worker. They have the knowledge and values similar to other health care

professionals, but they are able to work directly with the workplace to initiate preventive interventions and RTW programs (Corbière et al., 2020).

In addition, the insurance system is considered as one of the RTW stakeholders, and its primary objective is to return the employee back to work at the lowest possible cost (Franche et al., 2005a). Thus, there may be some conflicting interests between insurers and disabled workers, which may cause friction. The insurer is in a dominant position over the worker since it ultimately determines the worker's financial situation and professional reintegration (Young et al., 2005; Corbière et al., 2020). In order to best promote a successful RTW, the insurer should maintain a positive relationship, including an ongoing collaboration and information exchange with (1) workers, (2) employers, and (3) health care professionals (Corbière et al., 2020).

The earliest work combining the social insurance system and RTW outcomes examined how entitlement to disability benefit, or the amount of compensation affects RTW. The research results on this matter are contradictory. Some studies do not find a link between eligibility or the amount of compensation and RTW (e.g., Butler et al., 1995; Hyatt, 1996; Hogelund, 2000), but other studies suggest that eligibility as well as higher compensation are associated with a higher number of disability claims and a longer duration of disability (e.g., Kralj, 1995; Thomason & Pozzebon, 1995; Atlas et al., 2000).

Furthermore, few scholars have highlighted the need to acknowledge the differences in insurance systems that are usually divided into two main types: cause-based and disability-based systems (Or et al., 2010). Lippel & Lötters (2013) have compared these two different systems in terms of the RTW. According to them, it is important to consider the specific system effects, acknowledging the uniqueness of each individual system and their varying positive and negative effects on the worker. There is still some evidence indicating that cause-based systems are more limited in supporting the RTW process since they require a proof of causation of disability to justify interventions (Lippel & Lötters, 2013; MacEachen et al., 2019). According to MacEachen et al. (2019), the scientific articles within the cause-based system address challenges with accessing work disability benefits and procedural fairness, whereas within disability-based systems, the discussion focuses mostly on the problematic role of health care providers acting as gatekeepers to disability benefits.

Subsequent studies have demonstrated the diversity of the phenomenon by examining the interaction between disability compensations and other explanatory factors. Eligibility or amount of disability benefits do not unequivocally lead to

poorer RTW outcomes, but the benefit and its size are linked to many other explanatory factors (such as employment security, benefit-to-earnings ratio, number of dependents, economic pressure, gender, and social status), which together affect disability to work (Bloch & Prins, 2001; Franche & Krause, 2002).

Another viable research line has been considering the interactions and encounters between social insurers and workers with disabilities (e.g., Strunin & Boden, 2004; Müssener et al., 2008; Upmark et al., 2011; Kilgour et al., 2015; Nordgren & Söderlund, 2015; Thornthwaite & Markey, 2017). According to a systematic review by Kilgour et al. (2015), most encounters between insurers and disabled workers were negative, involving perceived claims manipulation, communication deficits, disrespectful treatment, and a lack of control and knowledge. The interactions were described as cyclical and pathogenic, resulting in considerable harm for injured workers (Kilgour et al., 2015). Positive interactions between insurers and disabled workers have been reported less frequently, but there are also studies reporting the respectful, supportive, and understanding attitude of insurers (Ostlund et al., 2001; Klanghead et al., 2004; Müssener et al., 2008).

According to current theories, more positive relationships between insurers and disabled workers promote successful RTW outcomes and vice versa (Loisel et al., 2001; MacEachen et al., 2006). Qualitative empirical research indicates that encounters including mutual trust, respect, support, and claimant participation may promote success (Müssener et al., 2007; 2008; 2015; Hubertsson et al., 2011). Furthermore, quantitative studies reveal that negative encounters with insurers are related to poor recovery (Grant et al., 2014) and lower self-rated mood, health, and ability to work (Lynöe et al., 2013; Nordgren & Söderlund, 2016). On the contrary, positive claims experiences are associated with positive RTW outcomes (Lynöe et al., 2013; Nordgren & Söderlund, 2016; Collie et al., 2019).

2.3 Social insurance and disability risk management in Finland

Traditionally, social insurance has been seen as a passive scheme to compensate for loss (such as disability due to illness or injury) once an incident has occurred. Insurance companies and public organizations implementing social insurance are thus easily perceived as purely payers of compensation rather than proactive risk preventers. However, the recent developments of the insurance industry include a shift from the practices of compensation to more proactive risk detection and

prevention. This shift is evident also in social insurance and includes, for example, new practices and the growing interest in disability risk management and occupational rehabilitation. Insurers have also become more involved in the process of RTW also through case managers (Franche et al., 2005a).

The insurers' motives for disability risk management are both financial and humanitarian. According to Young et al. (2005), insurance organizations strive to avoid the payment of disability benefits, so they gladly take part in occupational well-being and safety work to prevent disability cases. Above all, the aim of the insurance system is to prevent permanent disability, which is the biggest cost to the scheme. As a result, insurers are committed to promoting a timely and permanent RTW once the risk of short-term disability has occurred. If the motives for the insurance system are purely economic, the resources used to support primary prevention and RTW programs must be effectively targeted and ultimately pay for themselves (Young et al., 2005; France et al., 2005a). In addition to financial goals, the insurance system may, depending on the country, also have more humanitarian goals related to social responsibility, such as improving the quality of life of insured persons, in which case the boundary conditions for supporting the RTW are less strict (Sim, 1999).

In the context of social insurance, disability risk management is naturally associated with sickness and worker's compensation insurance. These insurance systems supporting injured or ill individuals can be divided into two main types: cause-based and disability-based systems (Or et al., 2010). Bonoli (1997) has further classified this two-dimension approach in his article. According to him, the cause-based system relies on the Bismarckian tradition; thus, the coverage and the compensations are occupational. For example, North America and Australia have cause-based worker's compensation plans funded by employers. In the cause-based system, eligibility for compensation requires proof of the causality between working and the injury or illness. On the contrary, the disability-based system relies on the Beveridgean tradition; thus, the coverage and compensations are universal, and the entire population is covered by the system in the case of illness or injury – whatever the cause. These systems are typical of the Scandinavian countries and the United Kingdom (Bonoli, 1997).

In Finland, illness and disability insurance form a hybrid, containing both cause-based and disability-based systems. First, there is a worker's compensation system, which is a purely Bismarckian, cause-based insurance compensating for occupational injuries and illnesses. Second, there is disability-based sickness insurance, which offers universal coverage for the whole population in the case of illness or injury – no matter the cause. Third, there is pension insurance that is responsible for long-

term disabilities, covering the disability and rehabilitation allowances and disability pension (after the 360 days sick leave covered by sickness insurance). Furthermore, pension insurance is divided into two systems: the universal national pension and the earnings-related pension. Today, the objectives of all these social insurance classes include both the primary and secondary prevention of disability risks, and the next chapters introduce practical examples of the role of social insurance in disability risk management in Finland.

Over the last ten years, several laws have been enacted aimed at speeding up the RTW and achieving a better co-operation between employers and occupational health care in preventing prolonged disabilities in Finland. Following amendments to the 2012 Health Insurance Act (1223/2004) and the Occupational Health Care Act (1383/2001), the employer must notify occupational health care of the prolongation of the employee's sick leave after 30 days and apply for compensation from the Social Insurance Institution two months after the onset of incapacity to work. In addition, the continuing payment of a sickness allowance requires a statement from occupational health care on the employee's remaining ability to work and the possibility of RTW after 90 days. These changes in the laws have been commonly referred to as the 30-60-90-day rule, and they are intended to prevent prolonged disability and facilitate the RTW. So far, there is little research on the effectiveness of these changes, but an empirical study conducted shortly after the amendments showed no effect on the RTW in less than a year of follow-up (Viikari-Juntura et al., 2017). However, the shift towards more proactive measures and disability risk management is evident in legislation concerning sickness insurance in Finland.

In worker's compensation insurance, the primary prevention of occupational injuries has been part of the insurers' daily activities for decades. Non-life insurance companies offering worker's compensation insurance invest in the occupational safety of their corporate customers through information sharing and financial incentives. According to Hietala et al. (2012), the traditional insurance model provides little incentive to improve working conditions, as a workplace reaching the zero-accident target still pays for the accidents of other companies in its insurance premiums. However, Finnish non-life insurance companies have developed various payment systems that have quite a significant steering effect (Hietala et al., 2021). In larger companies, worker's compensation premiums are directly affected by injuries in the workplace, and in small companies, the premiums can often be reduced by demonstrable preventive measures of occupational safety. The financing of disability pensions for larger employers is based on a category model in which the earnings-

related pension contribution of the employer is affected by the granted permanent disability pensions for its employees. The contribution category model only applies to large employers covered by private sector earnings-related pension insurance (TyEL) and whose salaries paid during the year total at least more than EUR 2 million (Salo, 2015).

The Finnish Workers' Compensation center (WCC) also participates actively in promoting occupational safety by producing statistics, studies, and analyses of the occurrence, causes, and consequences of occupational injuries. Empirical research indicates that the frequency and costs of injuries have been significantly reduced through systematic occupational safety work as well as cooperation between companies and the financial incentives of worker's compensation insurance (Tompa et al., 2013; Elsler et al., 2010; Arocena et al., 2008; Tompa et al., 2007).

According to Tela, the Finnish Pension Alliance (2020), disability risk management is also a daily activity for insurers in the earnings-related pension system. In practice, this means projects, training, seminars, consulting, guides, surveys, and electronic services related to different aspects of well-being at work. These services for the customer organizations can also be arranged together with occupational health care (Tela, 2020). Such activities in supporting disability risk management in workplaces are usually targeted at all employees and implemented in the workplace when problems have not yet arisen. Thus, it is an example of the social insurers' role in primary prevention. Pension insurers implement this kind of primary disability prevention voluntarily – there is no obligation for it in legislation – so every pension insurer also uses its own methods. However, the contribution under the Employees Pensions Act (395/2006) includes a disability component, which then includes a disability risk management component that is reserved for financing the above-illustrated disability risk management activities by pension insurers.

The disability risk management activities implemented by pension insurers have expanded significantly since the 1990s, and the pension insurers' own service offering in this field has increased. However, the activities of pension insurers are a key part of the implementation of statutory social insurance, and thus, the borders of their actions are strictly regulated. According to the Finnish Financial Supervisory Authority FIN-FSA (2016), assessing the boundary between permitted and prohibited disability risk management measures has become more difficult with the various occupational well-being activities and the general expansion of the related service sector. The various structural links of pension insurers and companies in the health and well-being sector have also increased. As a consequence, the FIN-FSA considered it necessary to issue new regulations and instructions to pension insurers

concerning disability risk management in 2016 and a supervision release to clarify the quality and scope of the permitted measures of disability risk management for pension insurers.

According to these regulations and instructions (FIN-FSA, 2016; 2019), the disability risk management practiced by pension insurers must be risk-based and clearly belong to the field of earnings-related pension insurance. Furthermore, disability risk management activities must not be targeted on a competitive basis. The activities will normally start after the insurer has selected the customer based on a risk assessment. The insurer advises and educates the client on matters related to the disability risk, helps them to understand the hazards and causes of disability, and suggests risk management measures. Once the disability risk handling techniques are clear, the customer can either take the necessary measures themselves or turn to an external service provider. Within the limits of regulations, the insurer may, at its discretion, provide the customer with financial support from the disability risk management component. Thus, the insurer cannot itself implement the actual measures to reduce the disability risk of the customer, since the duties defined for them by law do not include the provision of such services. In addition, insurers are not allowed to conclude agreements in which it would finance the service provider to take the actual disability risk management measures for its clients. All agreements regarding the actual risk handling methods must be concluded between the customers and service providers (FIN-FSA, 2016; 2019).

There is also some empirical evidence on the role of worker's compensation and pension insurers in the primary prevention of disability in Finland. The report by Pehkonen et al. (2017) is related to work ability management and disability costs, but it also reveals how employers utilize external partners, such as occupational health care and insurance institutions. The employers involved in the project utilized both worker's compensation and pension insurers, for example, in drawing up disability risk management goals, creating operating models and plans, implementing operations, training supervisors and employees, providing information, and monitoring and evaluating. The pension insurers were utilized clearly more often than the worker's compensation insurers (Pehkonen et al., 2017).

When the disability path in Figure 3 is taken forward and the absences from work are prolonged or the worker encounters a severe occupational injury, disability risk management moves clearly to secondary prevention. At this point, the possibilities of rehabilitation in maintaining or restoring the ability to work must be determined. Rehabilitation supports the RTW at a stage when the loss of ability to work threatens to lead to a disability pension, so the objective is specifically to prevent permanent

disability. Hence, the rehabilitation, which is an essential part of the social insurance system, is also part of the disability risk management.

Rehabilitation is an atypical social insurance benefit, as it includes, in addition to cash benefits, rehabilitation services. There are various rehabilitation providers in Finland, but the Social Insurance Institution, non-life insurance companies, and pension insurance institutions organize rehabilitation directly related to social insurance. In accordance with the Act on Rehabilitation Benefits and Rehabilitation Allowance (566/2005), the Social Insurance Institution of Finland organizes vocational rehabilitation, demanding medical rehabilitation, and discretionary rehabilitation; provides income compensation during the rehabilitation period; and compensates for rehabilitation psychotherapy. Non-life insurers, on the other hand, are responsible for compensating for the costs of treatment and medical and vocational rehabilitation when a person's ability to work and function or means of earning have decreased due to an occupational injury or illness (Workers' Compensation Act, 459/2015) or compensable traffic accident (Act on Governing Motor Liability insurance 420/2016).

Earnings-related pension insurers have the statutory task of organizing occupational rehabilitation linked to the permanent disability risk. According to earnings-related pension acts,[1] the criterion for employment pension rehabilitation is the threat of a disability pension, which without vocational rehabilitation would probably materialize in the next few years. The second criterion is that this threat can be reduced through occupational rehabilitation. In addition, the applicant must be permanently involved in working life, have sufficient earnings from previous years, be younger than the statutory minimum retirement age, and not be entitled to rehabilitation under worker's compensation or motor liability insurance. The earnings-related pension acts also define the means of occupational rehabilitation, which include counselling and guidance, work trials at the person's own workplace or in another job, training for work, supplementing occupational skills or training leading to an occupation, and support for starting or continuing a business.

To conclude, social insurance is deeply involved in disability risk management, from primary preventative measures, such as consulting and electronic services related to different aspects of safety and well-being at work, to secondary prevention,

[1] Employees Pensions Act (TyEL), 395/2006; Seafarer's Pensions Act (MEL), 1290/2006; Public Sector Pensions Act (JuEL), 81/2016; Self-employed Persons' Pensions Act (YEL), 1272/2006; and Farmers' Pensions Act (MYEL) 1280/2006.

including medical and occupational rehabilitation. Furthermore, the role of social insurance in disability risk management has also been identified in the holistic theoretical models describing disability prevention. In these models, social insurance is placed alongside other stakeholders of disability risk management; the workers themselves, the workplace, health care, and the wider societal context.

3 RESEARCH STRATEGY

This dissertation consists of four articles with a different methodological approach, including both quantitative and qualitative data and analysis. This section introduces the dissertation's paradigmatic grounding in pragmatism and the use of a mixed methods research strategy. Furthermore, the selected methodological approaches and the ontological and epistemological assumptions of the dissertation will be justified.

3.1 Pragmatism as a research paradigm

The term "paradigm" was introduced by Thomas Kuhn (1962), and it refers to the philosophical assumptions, beliefs, and values regarding the nature of reality and knowledge. The underlying research paradigm guides the choices and defines the worldview of the researcher. Here, the paradigm is conceptualized based on Morgan (2007): "Systems of beliefs and practices that influence how researchers select both the questions they study and methods that they use to study them" (p. 49). These include, for example, post-positivist, constructivist, pragmatist, pluralistic, and realistic philosophical positions with different epistemological and ontological assumptions (Mertens et al., 2016).

The underlying research paradigm (or according to Morgan, 2007, an "approach" rather than a paradigm) of this dissertation is called pragmatism. The word pragmatism is derived from the Greek word pragma, meaning action, practice, and practicality. As the word suggests, pragmatism emphasizes finding a practically useful method to find answers to specific questions. Thus, pragmatism is characterized as outcome-oriented and interested in determining the meaning of things (Johnson & Onwuegbuzie, 2004). According to Shannon-Baker (2016), pragmatism emphasizes communication and shared meaning-making to create practical solutions to various social problems. Furthermore, while considering the epistemological questions, pragmatism focuses on what things will make a difference (Shannon-Baker, 2016).

At the ontological level of pragmatism, the realistic and social dimensions are intertwined in an inseparable way (Morgan, 2007). According to the pragmatist view, it is not possible to separate human activity from its context. Practices arise when people interact with each other using the tools provided by their culture and operating environment. Thus, pragmatism shares the assumptions of the constructivist paradigm, including social ontology and epistemological relativism, but emphasizes pragmatist epistemology, indicating that most of the time we are pragmatic people, not philosophers, in which case the best course of action is the best available truth (Morgan, 2007; Tashakkori & Teddlie, 2016).

The holistic ontology of classical pragmatism is "the idea that we find ourselves in the middle of our own experience, in the middle of a world in which fact and value, natural and social factors, humans and other beings, are not distinct nor neatly categorized" (VanKlink & Taekema, 2012, 3; Dewey 1989). Johnson & Onwuegbuzie (2004, p. 17) state that pragmatism offers an "immediate and useful middle position philosophically and methodologically."

In this study, pragmatism as a philosophical background may be summarized as three basic assumptions. First, the goal of pragmatist research is primarily to produce useful information, so the research must be of practical significance. The need for research related to permanent disability risk management from the viewpoint of insurance arose within the insurance industry. The Finnish Workers' Compensation Center wanted more information on the life trajectory of the victims of severe occupational injuries, and the Finnish Service Network of Occupational Rehabilitation was interested in the functionality and effectiveness of occupational rehabilitation. This dissertation was inspired by these pragmatic research projects and the society-wide real-life challenges related to the aging population and falling fertility rate, which burden the financing of social security. Thus, besides the empirical and theoretical contributions, this dissertation has the pragmatic objective of developing the insurers' practices related to permanent disability prevention.

Second, in this dissertation, the production of knowledge is considered a social and discursive activity, and scientific knowledge is formed in flexible interaction with the scientific community. Because of the flexibility of interaction, the pragmatist does not lock in absolute, pre-defined methodological rules and views, but favors interdisciplinarity, scientific experimentation, and open discussion. In this dissertation, the pragmatist approach is reflected in the use of diverse methods and datasets (described more thoroughly in the next chapters) as well as the interdisciplinary nature of the study.

Third, pragmatism believes that theories can be both contextual and generalizable and similarly, the pragmatic researcher is able to maintain both subjectivity in his/her own reflections and objectivity in the data collection and analysis (Shannon-Baker, 2016). According to Morgan (2007), pragmatism uses "abduction," where different ways of reasoning (inductive and deductive) alternate over the course of research – first observations are converted into theories and then those theories are assessed through action and/or vice versa. Abduction was also used in this dissertation within the whole research process, where the states of justification and discovery alternated between different articles and finally form an integrated framework in this introductory part.

3.2 Mixed methods research strategy

One of the most common topics of scientific debate is the differences between quantitative and qualitative research. This debate is based on the general idea that qualitative and quantitative research are different and partly contradictory approaches that attach to different philosophical positions or paradigms. Differences in qualitative and quantitative approaches are sometimes seen as so fundamental that their use in the same study is perceived as impossible (Onwuegbuzie & Leech, 2005), and researchers refer to "paradigm wars" having lasted several decades (e.g., Shannon-Baker, 2016). On the other hand, quantitative and qualitative research also has much in common; both aim to explain the complex relationships that emerge in the field of different disciplines – to understand people and the world around them (Onwuegbuzie & Leech, 2005).

In this dissertation, following the thoughts of Morgan (2007), the constant confrontation between the two approaches is perceived as fruitless. Hence, the division into quantitative and qualitative is replaced by a pragmatic combination of these methods, a mixed methods research strategy. According to Shannon-Baker (2016), the most common paradigmatic perspectives of mixed methods research include pragmatism, transformative-emancipation, dialectics, and critical realism. In particular, the pragmatic paradigm has been considered supportive of mixed methods research, as it states that any method suitable for solving a problem should be used in research (Tashakkori & Teddlie, 2016). The research strategy of mixed methods was chosen, since it was considered the best way to achieve the study objectives and answer the research questions.

Mixed methods research has gained popularity in recent years, and it is often referred to as the third research paradigm alongside quantitative and qualitative research (Johnson & Onwuegbuzie, 2004; Johnson et al., 2007). Mixed methods research began to be discussed as a "distinct and self-conscious strategy" in the late 1980s (Maxwell, 2016), but it is still unclear to what extent multidisciplinary research is perceived as its own methodology (Mertens et al., 2016).

Mixed methods research is defined here as in Johnson & Onwuegbuzie (2004, 17) and in Leech & Onwuegbuzie (2009): "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study or in a series of studies that investigate the same underlying phenomenon." Mertens et al. (2016) also highlight the importance of the integration of results based on different methods as a key component of mixed methods research. Overall, this research strategy offers an alternative to purely quantitative or qualitative research.

Academic literature often distinguishes mixed methods research and multimethod research. With the most common definitions, mixed methods research combines qualitative and quantitative data, whereas multimethod studies involve multiple types of qualitative research (e.g., focus groups and case studies) or multiple types of quantitative research (e.g., controlled trials and surveys) (e.g., Venkatesh et al., 2013; Tashakkori & Teddlie, 2016). However, Anguera et al. (2018) propose a wider definition for multimethod studies, stating that "a study is multimethod whenever it uses a series of complementary methodologies, and whether it has a predominantly qualitative or quantitative nature has no bearing."

The strength of mixed methods is the interaction of statistical observations (quantitative data) and personal experiences (qualitative data), which provides a broader, deeper, and more comprehensive understanding of the subject matter (Creswell, 2015; Venkatesh, 2013). Multimethod strategies have therefore been considered particularly suitable for the study of complex social phenomena and so-called wicked problems as well as vulnerable groups (Gómez, 2014; Mertens, 2015).

RTW and rehabilitation are multidisciplinary processes that involve individuals in vulnerable positions and social interaction in complex systems (see MacEachen, 2013). Furthermore, RTW processes are often non-linear and involve many actors with their own interests (see Franche et al., 2005a). Thus, the nature of the research subject, permanent disability risk management in the context of social insurance, guided the author to the use of a mixed methods research strategy.

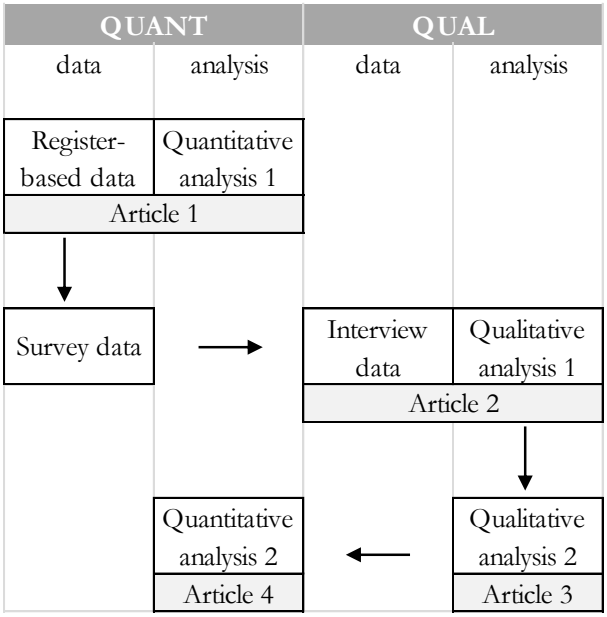
Furthermore, both quantitative and qualitative methods are necessary to reach the research objectives of this dissertation. Usually, quantitative methods are seen as

experimental in nature and used for testing causal relationships and producing descriptions. Qualitative methods, on the other hand, are seen as interpretive in nature and are used for discovery. They can also be used to provide causal explanations because they can answer the "why" question (Howe, 2012). In this dissertation, the generalizable statistical approach is needed to demonstrate the connection between worker- and insurer-related factors and the outcomes of the RTW process. Thus, the quantitative methods are used to achieve the descriptive objectives of the dissertation. Second, the qualitative methods are needed to increase the understanding of the perceived roles and underlying mechanisms that might explain the relationship between insurer actions and RTW outcomes. Thus, the qualitative methods are used to achieve the explorative objectives of the dissertation. Without the use of mixed methods, the understanding of the research phenomenon would have remained more one-dimensional, and both the theoretical and practical implications would have been narrower.

This dissertation uses both qualitative and quantitative research within all the four components of mixed methods research: (a) the research objective, (b) type of data and operations; (c) type of analysis; and (d) type of inference (Leech & Onwuegbuzie, 2009). Both qualitative and quantitative approaches have approximately equal emphasis in the overall research. However, in the continuum of mixed methods research, this dissertation still falls into the category of partially mixed methods, since both the quantitative and qualitative elements are conducted sequentially in their entirety before being combined in this summary.

Figure 7 illustrates the quantitative and qualitative phases of the research. The figure shows the chronological research timeline indicating the phases of data gathering and analysis with quantitative and qualitative methods (the arrows represent the timeline and progress of the research project). The first article of this dissertation was quantitative in nature, including the use of the register-based data of workers with a severe occupational injury and its statistical analysis. With this approach, it was possible to get objective and generalizable results on the life trajectory of claimants and various factors affecting a successful RTW. The whole research process started by gathering and analyzing this data, followed by the writing of the first article. This register-based dataset is completely separate from the other data used later in the study.

Figure 7. The quantitative and qualitative phases of the research process



The first data on national registers was limited to worker- and accident-related information and did not enable a more detailed examination of the role of insurance. Thus, after the first article, the author designed and conducted a survey for workers with disabilities as part of a separate research project to be able to explore the role of insurance more thoroughly. Thus, the second phase of the research project was the gathering of the survey data, which were later used in the quantitative fourth article before a more profound quantitative analysis.

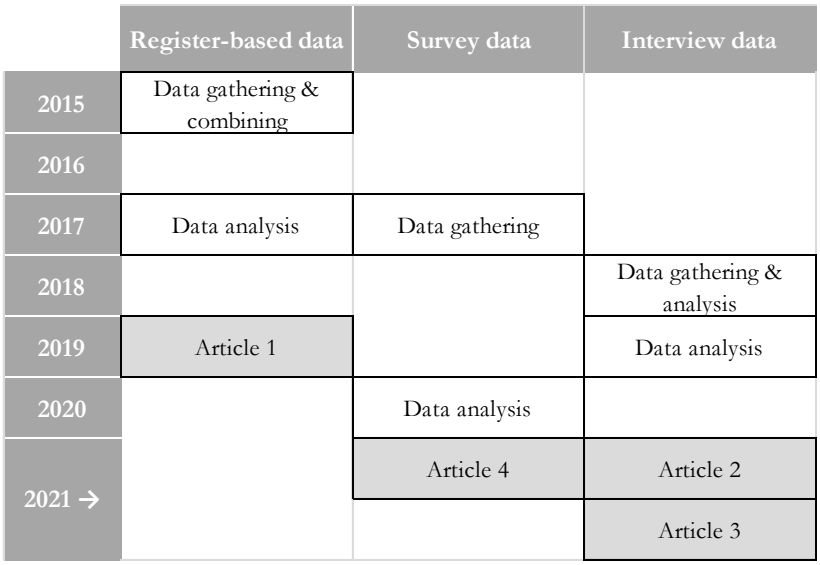
Before a second quantitative analysis, the author wanted to gain a deeper understanding of the claimants' perceptions related to the actions, roles, and significance of the social insurers in the RTW process. This was achieved by individual interviews with disabled workers who had participated in an occupational rehabilitation process. Thus, the survey data were first used for the purposive sampling to select interviewees among the respondents, leading to the fact that the sample persons are partly the same in the survey and the interviews. This interview data were used in both the second and third article of this dissertation. The second article used the data and inductive content analysis to explore the positive encounters between insurers and occupational rehabilitees, and the third article explored the perceived role of insurers in occupational rehabilitation, exploiting theory-guided content analysis.

After gaining a deeper understanding of the insurers' actions and the assumed underlying causal mechanisms between these actions and RTW outcomes, it was still necessary to test whether the connection was statistically detectable and if it could be generalized. Thus, the formed theory of the relationship between insurer actions and rehabilitation outcomes based on the earlier articles in this dissertation and other significant publications was tested in the fourth article, which investigated the connection between insurer actions and the results of occupational rehabilitation exploiting statistical methods. Therefore, the last phase of the research project was again quantitative and used the survey data that was collected earlier.

3.3 Data used

A total of three different datasets have been utilized in the dissertation. The first article uses combined register-based data from the Workers' Compensation Center (WCC) and the Finnish Center for Pensions (FCP), the second and third article use interview data, and the fourth article is based on survey data. All datasets have been collected, compiled, and modified by the author herself. This section focuses on describing the gathering and modifying of the various datasets used in this dissertation. Figure 8 illustrates the timeline of gathering and analyzing the different datasets and their use in the four articles.

Figure 8. The timeline of data used



3.3.1 Register-based data

The initial data for the first article was obtained from the WCC and was combined, where applicable, with other datasets from the WCC and the FCP. The WCC's datasets included information on all severe occupational injuries that occurred in Finland in 2008, all worker's compensation benefits paid for these injuries within 2008–2014, and all other occupational injuries for the sample persons during the observation period.

Workers (i.e., wage earners insured with compulsory worker's compensation insurance) with a severe occupational injury in 2008 were selected for the research material. Both workplace and commuting injuries were classified as occupational injuries, and an injury was considered as severe if it had caused disability to work for at least 31 days by the end of 2009. Only Finnish citizens were included in the data since other essential information about them is most likely to be found in the available national registers. After these delimitations, there were a total of 12,128 sample persons.

When delimiting the final sample, workers who had suffered a previous occupational injury during 2006 or 2007 were excluded from the data so that previous injuries would not distort the results (n = 443). In addition, sample persons who received an old-age pension during the event of injury (n = 100) were excluded from the final sample. Thus, the eventual sample size was 11,585 people. Among these, there were 71 people who had suffered more than one severe occupational accident in 2008. For these people, the first of the severe occupational injuries in 2008 was selected for examination.

Thus, the WCC's datasets included some background information (age, gender, type of work, and municipality of occurrence), injury information (part of body injured, type of injury, and place of occurrence), and compensation information (all compensable injuries during 2006-2014, type of compensation, the date of compensation, and the amount of compensation) for 11,585 sample persons. Additionally, more information on the sample persons during the observation period were acquired from the FCP. This data were extracted from two different registers, the earnings register and the pension register. The FCP's datasets included annual earnings, unpaid periods, and the received pensions benefits of the sample persons during 2008-2014. The final data were compiled by combining the essential parts of all 10 datasets from the WCC and FCP.

The final data included all the background and injury-related information of the sample persons, as well as their annual life situation for the five anniversaries

following the severe occupational injury. Information on the date of the occupational injury was obtained from the WCC's register and used to compile anniversary variables for each injured person for a period of five years. The life situation variable included eight classes: dead, fully unable to work, partly unable to work, in rehabilitation, unemployed, retired, employed, and other life situation.

Information on deaths and dates of death was obtained from the FCP register and information on deaths caused by occupational injuries from the TVL register. The data were combined, and a cause of death variable was formed, which was divided into two categories: occupational injury and other cause.

Total and partial disability to work, rehabilitation, unemployment, and retirement were determined based on the received social insurance benefits according to the WCC's and FCP's register data. The WCC's register data included all information of the received daily allowances, rehabilitation allowances, and disability pensions (both temporary and permanent) based on the worker's compensation insurance. The register data did not distinguish the recipients of partial and full benefits, so the author separated the full-benefit recipients from all recipients using the variable describing the loss of earnings. Persons who received a temporary or permanent worker's compensation benefit and whose loss of earnings were 100% were classified as fully unable to work. Correspondingly, persons with a loss of earnings less than 100% were classified as partly unable to work. For seven persons, no information on loss of earnings could be found in the WCC's data. In line with the precautionary principle, these persons were classified as receiving a full disability pension (thus, the results would not give an overly optimistic picture of the outcomes).

The FCP's register data included information of the received social insurance benefits, including sickness allowance, rehabilitation allowance and disability pensions (from pension insurance), old-age pensions, unemployment benefits, and parental allowances. However, this register only includes information of the sickness benefits paid after the employer's sick pay period is over.[2] Thus, due to the restrictions of the register data, those on employer's sick pay on the anniversary of a severe occupational injury could not be classified as unable to work but were instead classified as employed.

Employment on the anniversary of the injury was determined by the validity of the earning period. Information on work was taken from the FCP's earnings register,

[2] The duration of the employer's sick pay is specified in the collective agreement. In accordance with the Employment Contracts Act (568/2007), it is at least one day of illness and the following nine working days.

which included information on all the earning periods of the sample persons during 2007–2013. A person was classified as employed if he or she had a valid earning period on the anniversary of the injury and did not receive any of the above social insurance benefits. Thus, for example, persons receiving partial disability benefits were not classified as employed, but partially unable to work.

The persons with "other life situation" included those who received a rotation allowance or parental benefits. In addition, those sample persons who did not have a valid earning period indicating employment and who did not receive any of the above benefits were included in the "other life situation" group.

Gender, age, type of work, annual earnings, and the municipality where the accident occurred were used as background variables for the study. Annual earnings were obtained from the FCP's earnings register and indexed to the 2013 level using the wage-level index. All other background variables were obtained from the WCC's register. Furthermore, the WCC's registers included some injury-related information, including the type of injury and part of body injured, which were also added to the final data. The classification of injury types and the injured body part were identical with the European Statistics on Accidents at Work (ESAW).

This register-based data have also been used in two national articles published in the WCC's publication series, and one can find even more detailed descriptions of the data combining and classification process from these publications (Kulmala, 2016; Kulmala & Luoma, 2017).

3.3.2 The survey data

The data used in articles 2, 3, and 4 are partly overlapping. First, a survey related to rehabilitation experiences and outcomes was sent to workers who had participated in occupational rehabilitation under the earnings-related pension system, and later some of them were interviewed in order to acquire a more in-depth understanding about the perceived promoters and hinderers of RTW and the role of the insurance system. The survey data were used in article 4 and the interview data were used in articles 2 and 3.

The survey sample was obtained from KuntoutuNET, a Finnish online service focusing on occupational rehabilitation. The system was maintained at the time by the Service Network of Occupational Rehabilitation, which was a network of subscribers and producers of various services related to occupational rehabilitation. The KuntoutuNET was used by private-sector pension institutions (as subscribers)

and various rehabilitation service providers (e.g., institutions, companies, communities, and health-care units providing occupational rehabilitation services) for the communication and processing of customer data on occupational rehabilitation. According to the Service Network of Occupational Rehabilitation (2016), service providers are used to assess the claimant's abilities and opportunities for employment or studying and to assist with the planning of the most suitable rehabilitation measures. The pension insurers usually turn to service providers when the application for rehabilitation compensation lacks a rehabilitation plan, the former or current employer is unable to offer a new job or work trials to the claimant, or the claimant needs close guidance.

The study sample included all the private-sector wage earners who had a service provider involved in the rehabilitation process and whose occupational rehabilitation case was closed in the system in 2015. When the rehabilitee's case is closed in KuntoutuNET, the service providers are no longer a part of the process. The main reason for this is that the rehabilitation assessments have been done, the rehabilitation measures have been planned and accepted, and all other necessary actions (e.g., finding an internship or a place of study) have been conducted. Thus, the actual occupational rehabilitation measures (such as work-trials or retraining for an occupation) and the continuous contact with the insurer often continue after this stage. On the other hand, the rehabilitation case might be closed in the KuntoutuNET system also after unsuccessful rehabilitation planning or a cancellation of the rehabilitation, due to, for example, a clear worsening of the claimant's health status or other changes in rehabilitation conditions.

The cross-section was taken in 2017, about two years after the sample persons' rehabilitation case had been closed on KuntoutuNET. This moment was chosen, because the occupational rehabilitation measures would probably be over for most sample persons by this time, and thus, they would be able to evaluate the whole rehabilitation process and its outcomes. Furthermore, it was important that not too much time had passed after the rehabilitation, so the respondents would still be able to clearly recall the process and related events.

The final sample included 2,264 individuals whose occupational rehabilitation case was closed in the online system in 2015. The data obtained from KuntoutuNET included the respondents' identification number, age, gender and contact details (phone number and/or email address). Both text messages and emails were used to collect the data, since not all sample persons had their email addresses stored in the online system. An online/mobile questionnaire was sent on June 6, 2017, and reminder messages were delivered on June 13 and June 20, 2017. The online survey

was sent by email to 836 people whose email addresses were found on KuntoutuNET. Furthermore, the link to a mobile survey was sent by text message to 1,428 people who only had a telephone number stored on KuntoutuNET as a contact detail. The response rate of the survey was 29% (n = 661).

The survey was a part of a larger research project related to the functionality of occupational rehabilitation executed by the service Network of Occupational Rehabilitation. The questionnaire was originally designed by the author, reviewed by the steering group of the service network, and then modified by the author according to recommendations from the review process. The original survey contained 39 formal questions, most of which were structured. In addition, a few questions provided the opportunity to specify the answer in free writing and some of the questions were semi-structured. The sections of the questionnaire were structured as follows: (1) background information and life situation before the start of occupational rehabilitation, (2) occupational rehabilitation and service network actors (insurers and service providers), and (3) life situation after rehabilitation and evaluation of the outcomes.

The questions used in this dissertation can be found in attachment 1. The final data used in this dissertation included 17 propositions concerning the actions of insurers. These propositions were formed based on earlier research (e.g., Kilgour et al., 2015; Müssener et al., 2015; Nordgren & Söderlund, 2016; Olsson et al., 2016; Collie et al., 2019) and they were answered on a five-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). A sixth alternative, "doesn't concern me," was coded as a missing value. Furthermore, several background variables were included in the final data, including age, occupation, level of education, monthly net income, and the cause of rehabilitation. The respondent's objectives and motivation were measured on a five-point Likert scale and included in the final data used in this dissertation. Finally, the questions regarding self-rated ability to work and the life situation after the rehabilitation were used to determine the outcome of the occupational rehabilitation.

In this study, the employment status alone was not an ideal measure of success, since the RTW rate was only 30% and a considerable number of respondents (16%) were still in the middle of the rehabilitation process (usually in education leading to a degree) or unemployed (22%). Therefore, a binary indicator of rehabilitation success was formed by combining the self-rated ability to work and RTW variables. The rehabilitation was regarded as successful if the rehabilitee's self-rated ability to work (after rehabilitation) was at least satisfactory (grade 7) or the rehabilitee had fully returned to work. The objective of occupational rehabilitation is to improve the

chances of a disabled individual to earn income in the future and to prevent permanent disability, and this objective can be seen to be achieved in both these situations. With this binary indicator, 59% (n=395) of respondents had a successful rehabilitation outcome.

3.3.3 The interview data

The second and third article of the dissertation are based on the same data, consisting of 24 individual interviews with occupational rehabilitation claimants, conducted in July 2018. The interviewees were selected among the respondents of the survey sent a year earlier (described in more detail in the previous chapter). In connection with the questionnaire, the respondents were asked whether they could be contacted for a follow-up interview. A total of 661 people responded to the survey, and 447 respondents gave their consent to the follow-up.

To comprehensively understand the rehabilitation process and the role of the insurance system, it was essential to gather varying rehabilitation outcomes and experiences. Thus, criterion-based, purposive sampling was utilized to obtain claimants with different sociodemographic backgrounds and rehabilitation experiences. The first selection criterion was the success of the rehabilitation. First, all the possible respondents were divided into three groups based on the outcomes of the occupational rehabilitation. The first group consisted of claimants whose self-rated ability to work remained unchanged or improved during rehabilitation and who also found employment after the rehabilitation (= "rehabilitation was successful"). The second group consisted of claimants whose self-rated ability to work improved during rehabilitation, but who did not find employment after the rehabilitation (= "rehabilitation was partially successful"). The third group consisted of claimants whose self-rated ability to work did not improve during rehabilitation (= "rehabilitation failed"). Second, the following variables were used as selection criteria for each subgroup: life situation before rehabilitation, age, sex, diagnosis, and pension insurance company.

The interview guide covered the entire rehabilitation process in chronological order (Appendix 2). The chronological progression was chosen to help interviewees to remember all the events and emotional states during the occupational rehabilitation process. Consequently, the insurers' role was also thoroughly described at different stages of the rehabilitation. Prior to the actual research interviews, three pilot interviews were conducted, and the interview guide was slightly modified based

on the observations. A new first section was added to the guide, where rehabilitators were asked to describe their previous careers and education. In this way, the researcher was able to understand the pre-rehabilitation situation of the claimants more quickly. As the pilot interviews were more successful than expected and produced rich and fully usable research material, it was decided to include them in the final research data.

According to Hirsjärvi & Hurme (2008), the study's objectives and the research questions determine the required number of interviewees. In practice, interviews are conducted for as long as the author feels that new answers to the research questions continue to be received. The selection of interviewees was an open and flexible process, and the author did not decide the final number of interviewees in advance, as is typical for qualitative research (Hirsjärvi & Hurme, 2008). The concept of data saturation was also used in order to determine the right number of interviews. According to Fusch & Ness (2015), "data saturation is reached when there is enough information to replicate the study, when the ability to obtain additional new information has been attained, and when further coding is no longer feasible." Initially, a rough estimate of the number of interviewees was 15-30 people, and the final amount, 24, fell into this range. Interviews were started from the first group (= "rehabilitation was successful"), but the interviews were conducted intermittently between the three groups. In the end, it was decided that eight people from each main group were to be interviewed to have a balance across the different rehabilitation outcomes. This amount was sufficient to answer the research questions, achieve the objectives of the study, and meet the requirements for data saturation.

Interviewees were contacted in advance, about a week before the actual research interview was conducted, and every contacted person agreed to the interview. They were told where their contact information had been obtained and why they had been contacted. The interviewees were also provided with key information about the study, its objectives, and the use of the data. They were guaranteed anonymity, meaning their names would not be published in any context related to the study. However, all interviewees granted permission for the author to use their gender and age information as identification in the studies utilizing the data.

All interviews were conducted by telephone and recorded with permission. The telephone interview was chosen due to its cost and time efficiency since the claimants were living all over the country. The duration of the interviews ranged from 19 minutes to 61 minutes, with an average of 43 minutes. The recorded interviews were transcribed verbatim in spoken language, and filler words (e.g., true, like) and

repetitions were also included. However, in addition to speech, breaks and emotional expressions (e.g., laughter, movement, etc.) were not included, as the purpose was to analyze the content of the narratives, not the aspects related to expression or interaction. The transcribed interviews formed the basis of the analysis.

3.4 Article-specific methodological approaches

Since the four articles approach the research purpose from different viewpoints and use different data, they also apply different methodological approaches. These methodological choices and their rationales are outlined in Table 5.

Figure 5. Methodological approaches chosen for the articles

Article	Methodological choices	Rationale for choices
Article I: Able or unable to work? Life Trajectory after severe occupational injury	**Data collection:** Register-based research, a historical cohort of Finnish workers with a severe occupational injury during 2008 (N=11,585) **Data analysis:** Markov chain analysis and logistic regression with generalized estimating equations	Offers unbiased, reliable, and comprehensive data of disabled workers. Allows a 5-year observation period and the annual follow-up of the disabled workers. Enables the investigation of the probabilities of different life situations and transitions between them. Describes the effect of the previous life situation and other determinants of return to work.
Article II: The nature of positive encounters between disabled workers and insurers in the return-to-work process	**Data collection:** Semi-structured interviews with 24 occupational rehabilitation claimants **Data analysis:** Inductive content analysis	Enables rich descriptions of the experienced encounters with insurers during occupational rehabilitation. Increases understanding and creates constructs for an understudied topic. Creates broader and purely empirically driven themes from insurers' practices.

Article III: Facilitator or Enforcer, Ally or Enemy? Claimants' Perceptions of Insurers' Roles in Occupational Rehabilitation	**Data collection:** Semi-structured interviews with 24 occupational rehabilitation claimants **Data analysis:** Theory-guided content analysis	Enables rich descriptions of the insurers' role in occupational rehabilitation. Reveals the value of previous theories in analyzing the data. Permits the utilization of role theory in developing the framework of insurer roles.
Article IV: How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study	**Data collection:** Survey among occupational rehabilitation claimants (n=661) **Data analysis:** Explorative factor analysis (EFA) and confirmatory factor analysis (CFA), followed by binary regression	Allows a wider sample with specific questioning. Enables the determination of the dimensions related to the insurers' actions. Describes the connections between insurer actions and the results of occupational rehabilitation.

The first article aimed to model transitions between different life situations after a severe occupational injury and to examine the worker-related determinants of RTW. The chosen methodological approach was a quantitative, register-based study with a historical cohort of Finnish workers with a severe occupational injury during 2008 (N=11,585). This data offered comprehensive and objective information on the consequences of a severe occupational injury and the worker-related determinants of RTW.

The probabilities and transitions between different life situations during the five-year observation period were examined with a simple Markov chain analysis. A Markov chain is a stochastic model that describes transitions from one state to another in which the probability of each state depends only on the previous state. In the first article of this dissertation, five life situations were used as states: (1) working, (2) fully unable to work, (3) partly unable to work, (4) rehabilitation, and (5) other situation.

The worker-related determinants of the RTW were investigated with logistic regression analysis. First, we examined which factors were related to working on the first anniversary of a severe occupational accident. Next, the logistic regression model was extended to consider the values of the dependent variable on each of the five anniversaries. Because the values of the same person on different anniversaries are correlated, analysis of the data by standard logistic regression could have given overly significant results. Therefore, the data were analyzed using the generalized estimation equations method in combination with the logistic link, which allows the

specification of various correlation structures between observations. In this case, an exchangeable correlation structure was used to model within-individual correlation and between-individual variability. However, the estimator and its covariance matrix are consistent even if the correlation structure is incorrectly specified (Liang & Zeger, 1986).

The final regression model in the article consists of statistically significant worker-related determinants of RTW. In this study, model selection was performed by a step-by-step method by adding explanatory variables to the model one by one in the order in which the variables increased the explanatory power of the model. The addition of variables was stopped when no new variable significantly improved the explanatory power of the model or was statistically significantly related to RTW. After adding the new variable, it was also checked whether it was necessary to delete any of the variables already added to the model. The significance of the variables was tested with the likelihood ratio test. The results of the analysis are interpreted in the same way as in the logistic regression; the linear part of the model explains the logarithm of the odds of the dependent variable. The analysis was performed using the "geepack" library of R software (Højsgaard et al., 2006).

The second and third article used the same data, which consisted of 24 semi-structured interviews with occupational rehabilitation claimants. The purpose of these articles was to gain a deeper understanding of the claimants' perceptions of encounters with insurers during the RTW process. Furthermore, the objective was to explore and create an understanding of the insurer-related mechanisms leading to a successful RTW. Such research questions are best answered by qualitative research, and the individual interviews offered rich and profound descriptions of the insurers' actions and role during the RTW process.

Both articles (2 and 3) also utilized content analysis, which is classified as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005). However, the data analysis was performed differently in the two articles; the second article of this dissertation used inductive content analysis whereas the third used theory-guided content analysis.

The aim of the second article was to explore and conceptualize the perceived positive encounters between disabled workers and insurers during the RTW process. The inductive approach meant that the results, including the broader categories of encounters, were purely based on data, not on pre-formed theory. The inductive approach was chosen since the previous knowledge of positive encounters between rehabilitation claimants and insurers was fragmented and somewhat limited. Thus,

the researcher wanted to avoid wasting any new information on the phenomenon. However, pure inductivity is usually impossible since qualitative analysis is always guided by research questions and the previous knowledge of the researcher (Hyvärinen, 2010).

The inductive content analysis started with the repeated listening of the recordings and reading of the interview transcripts, which led to a comprehensive view of the data. The second step was open coding, including searching for all the meaningful expressions and concepts relevant to the phenomenon under consideration and describing them in a few words. The grouping of the data started by attaching similar codes together and creating sub-categories. Gradually, these sub-categories and the quotations illustrating them were grouped under higher themes.

The original, transcribed data were read repeatedly also during the category creation and abstraction to test and refine the parses generated. To validate the categorization, the interviews were also compared with each other. The data and the research questions were in close dialogue throughout the study, and thus, as is typical for qualitative analysis, the questions were refined during the data exploration.

The third article applies role theory to discover the claimants' perceptions of insurer profiles within the RTW process. The analysis in the third article closely resembled the methods used in the previous one, but it was theory-guided and leaned heavily on role theories, for example, in considering that insurers, as actors, may assume multiple roles. The analysis began with a data-driven approach, including finding the meaningful text units, paraphrasing them, and labelling them with a code. The next step was to form the 3rd-level categories, and at this point, the process evolved into a theory-driven analysis and differed from the second article. The categorization phase utilized role theories and revealed the twofold perception of the insurers' roles: (1) the role in relation to other rehabilitation stakeholders, and (2) the role in relation to the claimants themselves. Thus, the 3rd-level categories were divided into two groups depending on the context of the insurer roles.

The next step was the forming of the 2nd-level categories, which combined the previous categories (such as flexible attitude, disrespectful treatment, unprompted communication, avoidance of responsibilities) into the different approaches of insurers (democratic, autocratic, passive, and active approach). The final step of the analysis included the creation of the 1st-level categories illustrating the final insurer roles. During the categorization and abstraction, the transcribed data were repeatedly read and systematically reviewed from the perspectives of the study objectives, the research questions, and the key theories to confirm the credibility of the analysis.

The credibility was also increased by identifying and grouping the meaningful quotes and adding the most relevant ones to the manuscript.

The second and third article offered a deeper understanding of the insurer actions and their impact on the RTW outcomes and contributed to the development of theory. However, they did not enable generalizations, and thus, the fourth article complements them by investigating quantitatively the connection between insurer actions and the outcomes of the occupational rehabilitation to discover the actions that best promote success. The fourth article is based on survey data from occupational rehabilitation claimants (n=661). This survey enabled both a wider sample and insurer-specific information gathering.

Factor analysis was used to determine the dimensions of the insurer actions and binary regression to study the connection between insurer actions and rehabilitation outcomes. Some 108 cases of the total 661 observations had missing values in the insurer-related propositions, and to include these partially missing observations in the analysis, the full information maximum likelihood (FIML) method was used. First, exploratory factor analysis (EFA) was used to determine the constructs of the insurer actions. The data were not normally distributed, and the factors were obviously correlated, so principal-axis factoring and the promax rotation were used in the explorative analysis (Fabrigar et al., 1999).

Second, confirmatory factor analysis (CFA) was used to check the adequacy of the adopted factor model (Fabrigar et al., 1999). An identical model was fitted in CFA and the resulting factor scores were used as exploratory variables in a binary regression model of rehabilitation success. The high factor correlation resulted in ambiguous factor effects, so another factor model with independent factors (labelled F1 to F4) was fitted, but this model was not very well-fitting. Therefore, one further factor (labelled G) was added presenting the tendency to answer in a similar way to all the insurer-related propositions and to account for the correlations between independent factors.

Third, the regression method was used to compute the factor scores and they were used as independent variables in the logistic regression model explaining the outcomes of occupational rehabilitation. How plausible confounding variables would affect the results were considered by adding several factors to the logistic regression model: gender, age, level of education, employment situation, occupation, monthly net income, cause of rehabilitation, motivation, and rehabilitation objectives. We used SPSS Version 26.0 for Windows to compute the demographics and the explorative factor analysis, the lavaan package of R software to run the CFA, and the R function glm to run the logistic regression.

4 SUMMARY OF THE ORIGINAL ARTICLES

This chapter describes and summarizes the four articles that form the dissertation. The articles are independent studies with their own research questions and varying research designs, but together they contribute to the objective of the dissertation – to examine the role and significance of earnings-related social insurance in permanent disability risk management. Besides summarizing, this chapter also illustrates the contribution of each article to the overall objectives and research questions of the dissertation:

1. What worker- and insurer-related factors predict a successful return to work after injury or illness absence?
2. What is the role of social insurers within the RTW process?
3. Through what underlying mechanisms do social insurers affect the outcomes of the RTW process?

4.1 Article I: Able or unable to work? Life trajectory after severe occupational injury

RQ1: What worker- and insurer-related factors predict a successful return to work after injury or illness absence?

The first article focuses on the life trajectory of workers with a severe occupational injury. In the context of the dissertation, this article contributes to the first research question related to the factors predicting a successful RTW after an injury or illness absence.

Every year, about 120,000 Finnish wage earners experience an occupational injury and about 6% of these injuries are severe, causing a work absence of more than 30 days (WCC 2020). Even though statistics on occupational injuries in Finland are relatively comprehensive, they do not contain information on the life trajectory of the injured. This information would be highly important to evaluate the success of worker's compensation insurance, whose major objective is to restore the worker's

ability to return to work after the injury. Furthermore, successful RTW after a severe occupational injury is significant from the point of view of employee well-being, prolonging working careers and reducing disability pensions.

Earlier research on the matter is mainly focused on RTW rates, determinants, and patterns. Thus, the probabilities and permanence of other life situations, such as full disability and rehabilitation, are largely ignored. The purpose of the first article is to study different life situations and the transitions between them after a severe occupational injury. The objectives include examining the probabilities of an RTW, full disability, and rehabilitation after a severe occupational injury; investigating the permanence of these life situations and transitions between them; and exploring the connection between these life situations and working at a later stage.

The article studies the life course of all Finnish wage earners with a severe occupational injury in 2008 (i.e., Finnish citizens with compulsory working time insurance) on an annual basis for five years following the injury. The data set is created by combining the register data of the Finnish Workers' Compensation Center and the Finnish Centre for Pensions. The final sample size was 11,585 people. The transition probabilities from one life situation to another are examined with Markov chain analysis, and the effect of register-based determinants on the RTW are assessed with logistic regression including generalized estimating equations.

The results of the article reveal that 85% of the injured were working, 2% received rehabilitation, and 9% were partly or fully unable to work at least on one of the five anniversaries of the injury. The working rate and the permanence of working is quite high, so a successful RTW predicts the continued ability to work in the long term. This indicates that worker's compensation insurance has been successful in its objective of a successful RTW. However, rehabilitation also proves to be a relatively permanent life situation, and only a fraction of rehabilitees returned to work during the observation period. This might be partly explained by the length of occupational rehabilitation measures, but the poor results should be studied more thoroughly in the future.

On the contrary, full disability is only a temporary life situation for most of the injured at least during the first years. Within a few years of the injury, a significant number of the injured transitioned from full disability to other life situations, such as working, but the transition probabilities decreased with time. However, the probability of recovery was still nearly 20% even for those with long-term disabilities. This result is highly positive, since it encourages the further development of intervention strategies and measures to prevent permanent disability for this group, which accounts for the most of workers' compensation costs.

The annual life situation also proves to be a significant determinant of RTW. The odds of working were clearly highest for those who had worked previously. However, an interesting finding was that the odds for working were also fairly high for those who had been fully unable to work on the previous anniversary, confirming the results of the Markov Chain analysis. Other significant determinants include age, gross annual income, type of work, injured body part, and injury type. In the context of the dissertation, one noteworthy result is also a relatively low coefficient of determination in the regression model. The model including only worker-related factors is not enough to explain the RTW alone, which indicates that there are also other factors, for example, related to the insurance system, that are important determinants for a successful RTW after a severe occupational injury.

This study contributes to the existing literature by revealing the occurrence, permanence, and transitions between different life situations after a severe occupational injury. The article enhances our understanding of the life trajectory of injured workers and enables the evaluation of the success of worker's compensation insurance. Enhanced knowledge of the consequences of a severe occupational injury is important for developing the insurance system and secondary prevention. As for the practical implications, disability management will benefit from the comprehension of different life situations and transitions between them, since it enables the optimal use and allocation of limited resources, i.e., targeted rehabilitation or intervention measures can be offered in a timely manner to those benefitting most from them.

The article was co-authored. I acted as a corresponding author and framed the preliminary research design, reviewed the previous literature, acquired the register data from different organizations and combined them all into one dataset. I also took part in conducting the data analysis, which was the main responsibility of another author, and wrote most of the article. Furthermore, I was responsible for the submission process, including one revision and a response letter.

4.2 Article II: The nature of positive encounters between disabled workers and insurers in the return-to-work process

RQ2: What is the role of social insurers within the RTW process?

RQ3: Through what underlying mechanisms do social insurers affect the outcomes of the RTW-process?

The second article focuses on positive encounters between disabled workers and insurers within occupational rehabilitation. In the context of the dissertation, this article contributes to the second and third research question related to the role of the insurers and the underlying mechanisms explaining the correlation between the insurers' actions and the outcomes of the RTW.

Previous research concerning the encounters between insurers and workers with disabilities reveals predominantly negative experiences. There is evidence, for example, of perceived mistrust, claims manipulation, lack of professional expertise, and a deficit of support, guidance, and control in the RTW process (e.g., Hubertsson et al., 2011; Kilgour et al., 2015; Thornwaite & Markey, 2017; Black et al., 2019). This negativity surrounding the interaction between the two parties is often explained by the partly conflicting incentives; insurers aim at a successful RTW for the least cost, whereas the objectives of the disabled worker may be far more versatile, including disability pension or long-term sick-leave with physical and/or mental rehabilitation or re-education (Franche et al., 2005b).

However, there is also some scientific evidence of positive encounters between insurers and disabled workers. The examples of positive experiences include timely and prompt compensations, a personalized service, and feelings of being respected, heard, supported, and well-informed (e.g., Klanghed et al., 2004; Müssener et al., 2008; Hubertsson et al., 2011). Further research and conceptualization of the positive encounters is still required to identify the successful mechanisms supporting the RTW and to generalize the beneficial strategies to other claimants. Thus, the objectives of the second article include (1) identifying and conceptualizing the insurer encounters that claimants perceive as positive, and (2) revealing the underlying mechanisms that explain the correlation between positive insurer encounters and a successful RTW.

The data consist of 24 semi-structured interviews with occupational rehabilitation claimants who had completed the process in 2015. The participants were purposively selected from among those who had responded to a rehabilitation-related questionnaire a year earlier (n=667), and the included rehabilitees had varying demographics and rehabilitation outcomes. The data were transcribed, coded, and analyzed with inductive content analysis.

The research identifies four main themes that arose from the 24 key concepts relating to the positive encounters: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude. The process flow, including high-quality decisions, accurate compensation, and the smooth progress of the rehabilitation, is described as the most important insurer-related issue in promoting

an RTW. The second concept, customer-orientation, consists of proper consultation, genuine empowerment, and thoughtful consideration of the rehabilitee's situation, and it is also seen as a key factor for a successful RTW. The third main theme includes decent information and comprehensive guidance. Lastly, the fourth theme, service attitude, consists of the appreciation, kindness, and encouragement of the insurers' representatives. These last two concepts are not usually seen as decisive factors in the RTW but may foster it indirectly.

The study reveals that the underlying mechanisms explaining the correlation between positive encounters and a successful RTW go beyond the direct effects. The results show that positive encounters promote an RTW also indirectly by improving all three areas of the claimants' motivation: namely, a strong will or desire to return to work, faith in one's competence, and faith in one's employment opportunities (Berglind & Gerner, 2002). Motivation has previously been ranked as one of the most significant determinants of successful rehabilitation (Maclean et al., 2000; Grahn et al., 2000), and thus, also the latter concepts of this article, with, for example, proper guidance and encouragement, have an indirect effect on the results of the rehabilitation.

This study contributes to the existing literature by conceptualizing the positive encounters between insurers and disabled workers within the RTW process. Furthermore, the results reveal the underlying direct and indirect mechanisms that explain the correlation between the nature of the insurers' encounters and the outcomes of the rehabilitation. As for practical implications, the insurers will benefit from the conceptualization of the positive encounters, which can be used as a best-practice approach to promote RTW.

The article was a single-author piece. Thus, I acted as the only corresponding author, and designed, carried out, and reported the entire study.

4.3 Article III: Facilitator or enforcer, ally or enemy? Claimants' perceptions of insurers' roles in occupational rehabilitation

RQ2: What is the role of social insurers within the RTW process?

RQ3: Through what underlying mechanisms do social insurers affect the outcomes of the RTW process?

The contribution of the third article to this dissertation is significant. First, the third article answers the second research question about the insurers' role within the RTW process by creating a framework of perceived insurer roles in relation to other stakeholders and the claimants. Second, this article answers the third research question by exploring the connections and the explanatory factors between the perceived insurer roles and the outcomes of RTW.

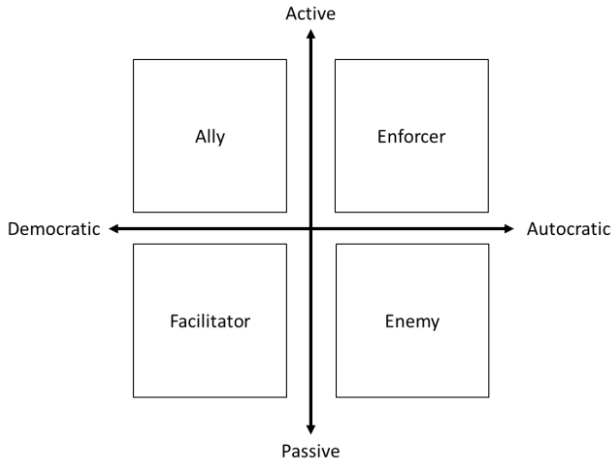
Since rehabilitation leading to successful RTW has become the primary option over disability pensions, the role of insurers has expanded from the payer of compensation to a coordinator of the RTW process (MacEachen et al., 2010; Franche et al., 2005a). However, earlier research reveals that the customer experiences of disabled workers with insurance companies are very diverse. There are differences in the insurers' responsibilities within rehabilitation networks as well as their attitude and actions towards the claimants (Kilgour et al., 2015; MacEachen et al., 2010). These differences between insurers are often ignored in academic literature and the role of the insurer is generalized and handled narrowly.

In this article, role theory (Solomon et al., 1985; Broderick, 1998) is applied to insurers handling RTW processes to reveal the multiple insurer roles and understand the dynamics between the insurers' role and rehabilitation outcomes. The specific research questions of the third article are as follows: (1) What roles do claimants perceive insurers carrying out during the RTW process? (2) What kind of underlying causal mechanisms exist between perceived insurer roles and occupational rehabilitation outcomes?

The data consist of 24 semi-structured interviews with occupational rehabilitation claimants that had answered a rehabilitation-related questionnaire a year earlier. The interviewees were selected by criterion-based purposive sampling, and all the interviews were conducted in 2018. The transcribed interview data were analyzed with theory-guided content analysis consisting of three overlapping steps: classification, analysis, and interpretation.

The results reveal that the claimants' perceptions of insurer roles were twofold; the interviewees described the insurers' role, first, in relation to other rehabilitation stakeholders, and second, in relation to the claimants themselves. The three perceived network roles of the insurer were: (1) a financier, (2) a coordinator, and (3) a leader. Depending on the role, the insurer had a different number of responsibilities and influence on the outcomes of the RTW process. The four perceived actor roles of the insurer were: (1) ally, (2) facilitator, (3) enforcer, and (4) enemy. These roles were defined by the level of democracy and activity in the insurers' actions (figure 9).

Figure 9. Perceived insurer roles in relation to the claimants



The network role of the insurer was not associated with the rehabilitation results, and both success and failure stories were linked with insurers in different network roles. On the contrary, all claimants found the actor role of the insurer to be an important factor explaining the outcomes of rehabilitation. The democratic actor roles of an ally and a facilitator were strongly associated with successful rehabilitation outcomes, whereas the autocratic actor roles of an enforcer and an enemy often led to poor results. Thus, according to this study, all rehabilitation stakeholders would benefit from an insurer using democratic and participatory methods in the decision-making, planning, and implementation of rehabilitation.

This article contributes to the existing literature by developing a new framework of perceived insurer profiles, revealing the dynamic nature of the insurers' roles in the RTW process. Furthermore, it reveals the explaining factors between the assumed causal relationship of insurers' actions and the outcomes of rehabilitation process. By doing this, it shows how insurers acting in different roles in the rehabilitation network can still promote an RTW by adopting democratic and participatory actor roles.

The article was a single-author piece, and I was responsible for the study design, literature review, collection and analysis of the data, reporting the entire study, and the whole submission process.

4.4 Article IV: How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study

RQ1: What worker- and insurer-related factors predict a successful return to work after an injury or illness absence?

RQ2: What is the role of social insurers within the RTW process?

The fourth article investigates the connection between insurer actions and the results of occupational rehabilitation with quantitative methods. Thus, in relation to the purpose of the dissertation, it focuses on the first and second research question by examining the insurer-related factors predicting a successful RTW and demonstrating the role of insurers in the RTW process.

Earlier studies and theories indicate a causal relationship between insurer actions and RTW outcomes. Thus, a positive insurer experience, including a respectful, supportive, and participatory approach are positively correlated with a successful RTW. On the contrary, negative insurer experiences, including mistrust and neglect of the claimants' views resulting in high stress levels, are associated with poor long-term recovery (Müssener et al., 2008; Lynöe et al., 2013; Grant et al., 2014; Nordgren & Söderlund, 2015; Olsson et al., 2016).

The earlier studies do not usually distinguish the different actions of the insurer but rather consider the positivity or negativity of the whole customer experience. However, it is important to get information about the specific insurer actions that best promote an RTW. Furthermore, there is also a need for further evidence regarding the connection between insurer actions and RTW outcomes within the context of occupational rehabilitation. The specific objects of the fourth article are: (1) to investigate the connection between insurer actions and the results of occupational rehabilitation, and (2) to explore which insurer actions best promote the occupational rehabilitation success.

The analysis is based on survey data of occupational rehabilitation claimants (n=661). The sample was obtained from KuntoutuNET, a Finnish online service for subscribers and producers of occupational rehabilitation services, and it included all closed cases from 2015 (n=2264). A factor analysis was used to determine the dimensions of the insurer actions, and it was followed by a binary regression analysis

that revealed the connection between different insurer actions and a successful rehabilitation.

The results reveal four dimensions of insurer actions: (1) high-quality informing and guidance, (2) customer orientation, (3) smooth process flow, and (4) a positive service attitude. All these dimensions of the insurer actions were statistically significantly connected to the successful rehabilitation after adjusting for all likely confounders. The most important insurer-related factors predicting an RTW were a smooth process flow and a customer-oriented approach.

This study contributes to the existing literature by enhancing the evidence and our understanding regarding the connection between insurer actions and the RTW especially within occupational rehabilitation. As a quantitative study, it provides more generalizable conclusions than many earlier studies that have used qualitative methods. In addition, it reveals the ways in which the insurer can best promote successful rehabilitation.

The fourth article was co-authored. I was the corresponding author and responsible for the study design, literature review, questionnaire design, and data gathering. I also did most of the writing and took care of the submission process. The second author was mainly responsible for the data analysis, in which I also took part. Furthermore, the second author participated in the writing and revision process of the article.

5 DISCUSSION AND CONCLUSIONS

The *research purpose* of this dissertation is to explore the role and significance of earnings-related social insurance system in the permanent disability risk management. The *research phenomenon* of the dissertation is disability risk management, and the focus is on secondary prevention. This phenomenon is studied in the *context* of earnings-related social insurance, thus, in the arena of disability risk management, the focus is on the insurance system. The results are based on empirical research, but the *theoretical framework*, consisting of the most recent and relevant literature in the fields of social insurance and disability risk management, grounded the research and guided the researcher's interpretation of the findings.

This section conceptualizes the role of social insurance in permanent disability risk management by synthesizing the analyses and results of the individual articles. The research questions of the dissertation are answered, and the results are compared to previous studies and theoretical frameworks. Furthermore, the contribution and limitations of this dissertation are considered alongside suggestions for future research.

5.1 Synthesis of the results: A framework for earnings-related social insurance in permanent disability risk management

The first research question of this dissertation focused on the worker- and insurer-related factors that predict a successful RTW. According to the theoretical framework used, an RTW after an illness or injury is determined by a number of different systems, including the micro- (the worker), meso- (insurance, health care, and workplace), and macro-system (economic, social, and legislative system) (Friesen at al., 2001). The results of this dissertation show that worker-related factors (the micro-system), including age, gross annual income, type of work, injured body part, injury type, and annual life situation of the disabled person after the injury were all significant determinants of an RTW. However, the coefficient of the determination of worker-related factors remained low ($R2 = 0.419$), indicating that these factors alone are insufficient to explain and model the RTW as a phenomenon.

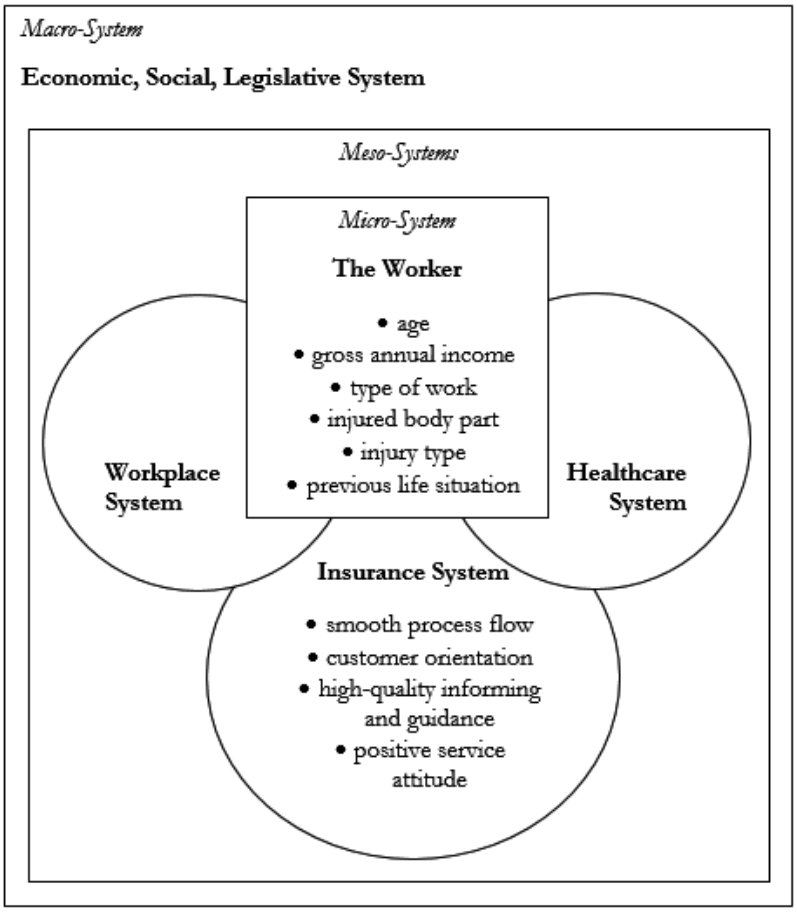
Furthermore, the qualitative analysis revealed that personal features, such as self-motivation and self-rated health, were rated as the most important factors predicting the outcomes of the RTW process. However, the insurer-related factors were also raised as the key factors explaining the results, and the insurers' role in determining the outcome of the rehabilitation was considered critical.

These results support the earlier findings and indicate that purely physical or psychological models of the RTW should be complemented with social and systemic factors, including the role of the insurance system, to gain a more comprehensive understanding and better theoretical models. Furthermore, an important finding was that the probability of the RTW is relatively high even for those with long-term disabilities, and rehabilitative activities are highly recommended also for this target group.

When it comes to the insurer-related factors promoting RTW, the results of this dissertation reveal that the claimants' perceptions of the insurers' (1) high-quality informing and guidance, (2) customer orientation, (3) smooth process flow, and (4) positive service attitude had substantial and statistically significant effects on the success of occupational rehabilitation after adjusting for all likely confounding variables. Furthermore, both the qualitative and quantitative analysis revealed that the level of the insurers' democracy, including customer orientation and participatory methods in the RTW process, was found to be the most important determinant of success.

Previous studies have highlighted similar findings on individual factors, such as the importance of high-quality information and expertise (Hubertsson et al., 2011; Beardwood et al. 2005), a customer-oriented approach (Kilgour et al., 2015; Thornthwaite & Markey, 2017; Beardwood et al., 2005), and a customer-service attitude (Hubertsson et al., 2011; Klanghead et al., 2004). However, the overall picture of the insurer-related factors was limited. Thus, the results of this dissertation are in line with the earlier research, but at the same time they enlarge our understanding of the significant insurer-related factors connected to RTW. Figure 10 summarizes the worker- and insurer-related factors connected to a successful RTW after an injury or illness, and it positions these factors in the theoretical framework of disability risk management.

Figure 10. The worker- and insurer-related factors connected to a successful RTW



The second research question was related directly to the role of social insurers in the RTW process from the viewpoint of claimants. First, as described above, the results support the biopsychosocial model of the RTW, indicating that social insurance is one of the key stakeholders in permanent disability risk management. Second, the results support the theory suggesting that more positive relationships between insurers and disabled workers promote successful RTW outcomes and vice versa (Loisel et al., 2001; MacEachen et al., 2006). Hence, this dissertation indicates that social insurance has a significant role in permanent disability risk management and that the insurers actions affect RTW outcomes.

Third, this dissertation reveals the claimants' perceptions of the different insurer roles within the RTW process. The results support role theory (Solomon et al., 1985; Broderick, 1998), suggesting that insurers, as actors, may assume multiple roles. The results show that the perception of the insurer roles is twofold; the insurer adopts

one role in relation to other rehabilitation stakeholders and a second role in relation to the claimants themselves.

According to the results, the insurer may adopt three different roles in the relation to other RTW stakeholders (a financier, a coordinator, or a leader) that all have a different degree of responsibility but also a different amount of influence on the rehabilitation outcomes. Furthermore, the insurer may adopt four different roles in relation to the claimants themselves (an ally, a facilitator, an enforcer, or an enemy) that include a different level of democracy and activity.

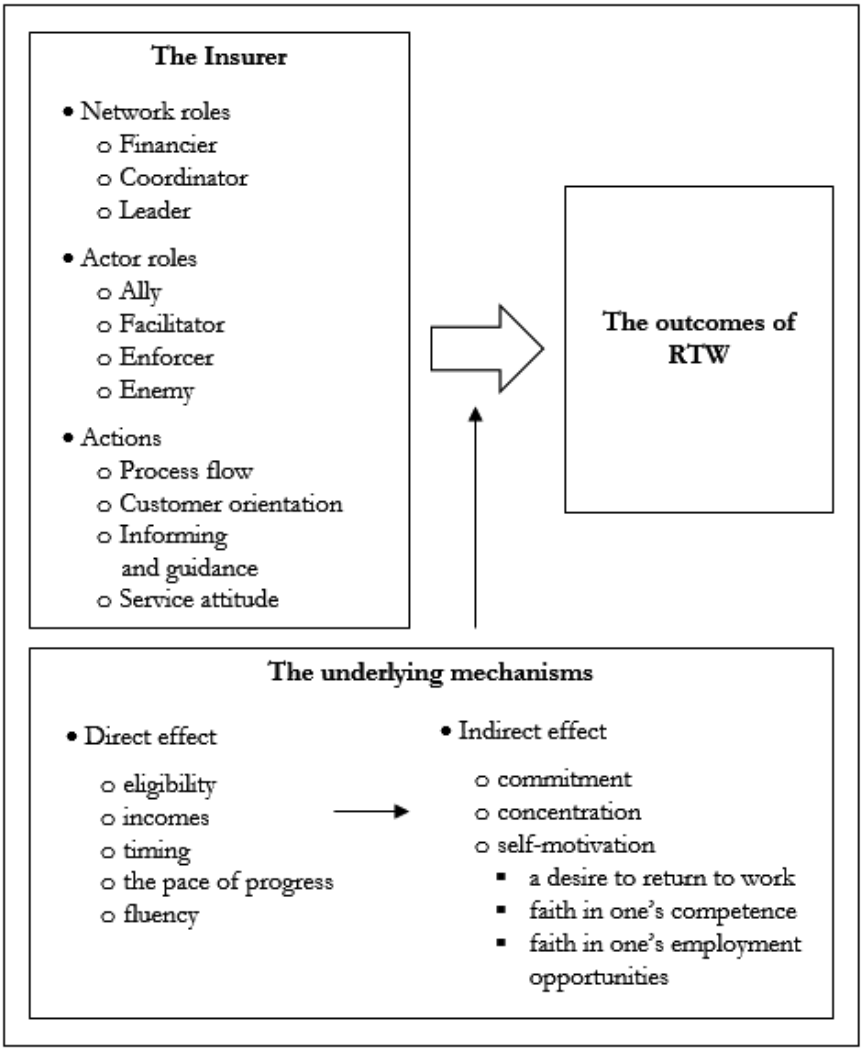
Thus, this dissertation illustrates that insurers are not identical and by adopting a certain network or actor role, they have a different amount of leverage over the RTW outcomes. The results indicate that even the insurer adopting the traditional role with a pure focus on settling claims and paying compensations may have a positive influence on the RTW outcomes (as long as it pursues democratic approaches), but the more responsibilities the insurer takes and the more actively it participates in the process, the more leverage it has on the outcomes – and thus, the more significant its role is in permanent disability management.

The third research question relates to the underlying mechanisms that explain the connection between the conduct of insurers and the RTW outcomes. The results reveal that the insurers' actions affect the RTW outcomes both directly and indirectly. For example, the insurer defines the eligibility for and the amount of compensation, as well as the timing, pace, and fluency of the rehabilitation process. All these examples directly affect the outcomes of the RTW. On the other hand, there are several indirect mechanisms that explain the connection between insurer actions and RTW outcomes. For example, a smooth process flow, including rightful and well-justified decisions and accurate compensation payments, prevents hurdles and enables concentration on the rehabilitation process itself. Similarly, a democratic and customer-oriented approach usually leads to an appropriate rehabilitation plan to which the claimant can commit, and which ultimately enables the RTW.

Furthermore, earlier studies have identified the claimants' self-motivation to be one of the most important determinants of successful rehabilitation (MacLean et al., 2000; Grahn et al., 2000), and the results of this dissertation suggest that positive encounters with insurers may increase the claimants' motivation and this way indirectly support the successful RTW. The claimants felt that insurers have a power to influence all the different areas of self-motivation (as in Berglind & Gerner, 2002): the desire to return to work, faith in one's competence, and faith in one's employment opportunities. Thus, this dissertation demonstrates that insurers can affect the RTW outcomes in several direct and indirect ways, for example, by

supporting the self-motivation of claimants. Figure 11 synthesizes the results and presents a framework integrating the role of earnings-related social insurance in the arena of permanent disability risk management.

Figure 11. The role of earnings-related social insurance in the arena of permanent disability risk management



5.2 Empirical evidence, theoretical contributions and practical implications

The knowledge creation process in scientific research can be positioned along the discovery–justification continuum. Simplified, the context of discovery refers to discovering new ideas or creatively synthesizing existing ideas, and the context of justification refers to validating these ideas by using data and analytical procedures (Schickore & Steinle, 2006). This dissertation moves along the continuum, both testing and validating the existing theories and creatively generating new constructs. This also reflects the stepwise manner of the development of scientific theories in time; we encounter both justifications preceding discoveries and discoveries preceding justification (Hoyningen-Huene, 2006).

First and foremost, this dissertation provides empirical evidence of the insurers' role in the occupational rehabilitation process and of the insurer-related factors promoting successful RTW. The first article revealed that the annual post-injury life situation predicted later working in life alongside the previously identified worker-related determinants (age, gross annual income, type of work, injured body part, injury type). However, the coefficient of determination remained modest with these traditional worker-related factors indicating that a more holistic view of RTW should be adopted to get a more comprehensive picture of the phenomenon.

The three following articles of this dissertation enlarged the picture of RTW by concentrating on the insurers' role and significance on the process. Earlier studies indicate that the role and actions of the rehabilitation stakeholders affect the outcomes (e.g., Corbière et al., 2020; Franche & Krause, 2002; Franche et al., 2005a; Müssener et al., 2015) , but the studies focusing on the insurer's role are scarce (e.g., Collie et al., 2019; Kilgour et al., 2015; Nordgren & Söderlund, 2016). Thus, the insurers' actions were first examined by conceptualizing the perceived positive interactions between insurers and disabled workers. The second article yielded four main themes of positive encounters: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude. Furthermore, the results revealed that perceived positive encounters were considered to promote RTW not only directly, but also indirectly by improving the informants' motivation, which has previously been found to be one of the most significant factors explaining the outcomes of rehabilitation (e.g., Berglind and Gerner, 2002; Grahn et al., 2000; Maclean et al., 2000).

To gain a deeper understanding of the insurers' role RTW-process, the third article explored the insurers' roles perceived by claimants. The article introduced

three perceived network roles of insurers: 1) financier, (2) coordinator and (3) leader and four perceived actor roles of insurers: (1) ally, (2) facilitator, (3) enforcer and (4) enemy. The results indicated that specially the actor role of the insurer is connected with RTW results. The roles of an ally and a facilitator perceived to contain a high level of democracy in planning and implementing occupational rehabilitation, which was found to promote the best rehabilitation outcomes. Furthermore, the results of the third article indicate that the stakeholders' roles in the occupational rehabilitation networks were either poorly established or inadequately disclosed to the claimants, which caused some conflicts between expected and perceived roles leading to lower customer satisfaction.

The fourth article enlarged the research topic by investigating the connection between insurer actions and the results of occupational rehabilitation with quantitative methods. The purpose was to examine whether and which insurer's actions are positively related to successful RTW. The results revealed that the claimants' perceptions of the insurer's (1) high-quality informing and guidance, (2) customer orientation, (3) smooth process flow and (4) positive service attitude had substantial and statistically significant effects on the success of occupational rehabilitation after adjusting for all likely confounding variables. Furthermore, the results indicated that insurer could promote the health of rehabilitees most effectively by ensuring a smooth process flow and adopting a customer-oriented approach.

Altogether, this dissertation's main contribution is empirical in nature; it shows that a successful return to work after an injury or an illness can be affected not only by worker- but also insurer-related factors. Furthermore, this research identifies and conceptualizes the insurers' actions and roles that best promote success.

This dissertation makes its main theoretical contribution by conceptualizing the role of social insurance in permanent disability risk management. A contribution to theory may occur at different levels and in different forms. Crane et al. (2016) distinguish three groups of theory work: theory testing and refinement, theory application, and theory generation. The theoretical contributions of this dissertation fall mainly into the first two categories. First, the dissertation tested the existing theories concerning the worker- and insurer-related determinants of an RTW and added refinements to the theories. Examples of these refinements include acknowledging the impact of the life trajectory on the RTW, the conceptualization of the perceived positive encounters between disabled workers and the insurer and identifying the different dimensions of insurer actions and their individual connections to the RTW.

Second, the dissertation applied extant theories to permanent disability and RTW phenomena. This kind of theory application does not make a direct contribution to existing theory but applies existing theory to a phenomenon to gain a more comprehensive understanding and better theoretical explanations (Crane et al., 2016). In this dissertation, role theory is used to systematize empirical interview data and conceptualize the insurer profiles in RTW processes. Furthermore, the dissertation applies the theoretical perspectives of social insurance to the field of disability risk management.

Besides the empirical evidence and theoretical contributions, this dissertation has implications that are important for practical applications. The dissertation seeks to be useful especially for insurers trying to manage the permanent disability risks of their clients. Furthermore, all stakeholders involved in RTW processes and rehabilitation (workers themselves, the workplace, and health care) could potentially benefit from the enhanced understanding of the factors connected to successful outcomes and the different roles of insurers.

First, the dissertation demonstrates the inadequacy of the purely worker-related biomedical approach to permanent disability risk management. It supports the earlier findings related to the importance of multi-stakeholder models, and thus, it encourages insurers and workplaces to take active measures in promoting the RTW among disabled workers. The results show that it would be beneficial to extend these measures also to those with longer-term disabilities after a severe occupational injury, since they seem to still have relatively high chances of an RTW.

Second, the dissertation reveals the best strategies for insurers to promote RTW and the underlying dynamics explaining the relationship between these strategies and successful outcomes. The results illustrate what constitutes a positive encounter and what are the most beneficial actions. Insurers have a significant role to support disabled workers both directly and indirectly. It is, for example, possible to influence the claimants' desire to return to work, faith in one's competence, and faith in employment, and hence support their rehabilitation motivation.

According to the results, the most beneficial strategies for insurers include democratic and participatory methods, and the insurer would benefit most from ensuring a smooth process flow and adopting a customer-oriented approach. The results also highlight the need for the insurer to co-consciously choose a role and disclose a mutual understanding of the role expectations and role behavior with all the stakeholders involved.

The articles along with their main empirical evidence, theoretical contributions and practical implications are summarized in Table 6.

Table 6. Summary of article-specific theoretical contributions and managerial implications

Article title	Empirical evidence	Theoretical contributions	Practical implications
I. Able or unable to work? Life trajectory after severe occupational injury	- The probability of RTW decreased with time, but one fifth of the injured succeeded in RTW after being unable to work on the previous anniversary - Age, gross annual income, type of work, injured body part, injury type and the injureds annual condition were significant determinants of RTW - The coefficient of determination remained modest with the traditional worker-related factors	- Statistically models the permanence of life situations and transitions between them after a severe occupational injury - Reveals the inadequacy of the RTW model containing only worker-related factors	- Demonstrates that the promotion of an RTW should be also targeted at those with longer-term disabilities - Encourages a more holistic view of disability and RTW
II. The nature of positive encounters between disabled workers and insurers in the return-to-work process	- Revealed the four main themes of positive encounters: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude. - Perceived positive encounters promoted RTW not only directly, but also indirectly by improving the informants' motivation	- Conceptualizes the perceived positive encounters between disabled workers and insurers - Develops a framework for understanding the connections between positive encounters and rehabilitation outcomes	- Identifies the insurer actions yielding perceptions of positive encounters that can be duplicated to other claimants to promote an RTW

Article title	Empirical evidence	Theoretical contributions	Practical implications
III. Facilitator or Enforcer, Ally or Enemy? Claimants' Perceptions of Insurers' Roles in Occupational Rehabilitation	- Discovered three perceived network roles of insurers: 1) financier, (2) coordinator and (3) leader and four perceived actor roles of insurers: (1) ally, (2) facilitator, (3) enforcer and (4) enemy. - A high level of democracy in planning and implementing occupational rehabilitation promoted the best rehabilitation outcomes - Indicated that the stakeholders' roles in the occupational rehabilitation networks were either poorly established or inadequately disclosed to the claimants	- Introduces the concept of insurer profiles to facilitate the analysis of different roles - Develops a framework for understanding the connections between insurer profiles and rehabilitation outcomes	- Reveals the need to form and disclose a mutual understanding of the role expectations and role behavior of insurers - Demonstrates how applying a certain role may influence the RTW outcomes
IV. How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study.	- The claimants' perceptions of the insurer's (1) high-quality informing and guidance, (2) customer orientation, (3) smooth process flow and (4) positive service attitude had sub-stantial and statistically significant effects on the success of occupational rehabilitation after adjusting for all likely confounding variables. - Indicated, that the insurers could promote the health of rehabilitees most effectively by ensuring a smooth process flow and adopting a customer-oriented approach.	- Confirms the connection between insurer actions and successful occupational rehabilitation after adjusting for all likely confounding variables - Reveals the critical insurer actions that best promote a successful RTW	- Identifies the insurer actions yielding perceptions of positive encounters that can be duplicated to other claimants to promote an RTW

5.3 Limitations and avenues for future research

As with every study, this dissertation also has some limitations that are mainly related to the theory, research design, and methods used. First, the research is multidisciplinary in nature, utilizing theories from business, health, and social sciences (e.g., social insurance, disability risk management, role theory), which may have caused some conceptual vagueness. The diversity of the concepts may also be demanding for readers. However, the multidisciplinarity was seen to have some unbeatable benefits, including the possibility to acquire a more holistic understanding of the phenomenon and to reach solutions for complex problems (such as permanent disability) that cross the boundaries of disciplines.

Second, the unit of analysis is disabled workers, meaning that all conclusions are drawn from the data on insured individuals. In this sense, the dissertation provides a one-sided picture of the role of earnings-related social insurance in permanent disability risk management. However, by studying disabled workers, it was possible to set the focus on explaining the outcomes of permanent disability risk management, which was considered both theoretically and practically the most intriguing question related to the phenomenon.

The register-based data of the occupational injury victims enable longitudinal observations and are very comprehensive and reliable by nature, but they still contain only certain variables and information on life situations only on the anniversaries of the accident. Thus, the exact picture of life situations is still missing, and the described transitions between them were simplified. The examination of worker-related determinants of an RTW was also limited, since a range of important social, clinical, and psychological factors was not available in the registers.

Both the survey and interview data were cross-sectional and gathered after the completion of the RTW measures. Thus, possible memory errors and opinion changes should be considered when interpreting the results. In addition, the outcomes of the RTW process may have affected the subjects' interpretations; those satisfied with the outcome might praise all involved in the process and vice versa. Efforts were made to minimize such bias by conducting the survey and the interviews in chronological order, concentrating on every phase of the rehabilitation process to ensure the respondents' right mindset. However, one should be very careful when making assumptions of causality and rather interpret the results proving an association, or correlation, between the factors and the outcome of rehabilitation.

The whole questionnaire was created as part of a larger survey concerning the functioning and results of occupational rehabilitation in Finland. The questionnaire

had not been used or tested before, but it was built based on previous literature. Thus, it utilized some sets of questions that had previously been found to work (e.g., in Gould et al., 2012), and it was reviewed by external researchers and the steering group of the rehabilitation service network. After receiving feedback, the comments were evaluated, and the questionnaire was revised. The insurer-related questions were designed by the author mainly for the purposes of this dissertation, but it is important to acknowledge that the focus of the researcher as not limited to this insurer-related instrument when designing and answering the questionnaire.

It is also important to consider the representativeness of the survey data. The number of respondents was 661, which equals a response rate of 29%. This is a typical response rate for online surveys, but one should always consider the non-response bias and representation of the population of interest when not dealing with the full sample. The available characteristics of the respondents (age, gender, and cause of disability) were compared to the whole sample and to all rehabilitees within the earnings-related pension system in Finland in 2015. The differences were minor: women and younger individuals responded to the questionnaire somewhat more often, but in the light of all the rehabilitees, men and those suffering from musculoskeletal disorders were slightly over-represented in our sample. Thus, in the light of these variables, the respondents were interpreted to represent the whole sample at a satisfactory level. However, there are innumerable other ways that respondents could vary from these populations, so the results may not fully generalize to the wider population of disabled workers.

Purposive sampling was used in the qualitative interviews to acquire a dataset as versatile as possible and to illustrate the views of claimants with different rehabilitation paths and outcomes. Also, the sample size was quite typical or even large for a qualitative analysis including 24 interviews. However, the method still results in contextual responses, and the experiences of other claimants may differ from those responding to this study. Thus, the qualitative analysis can identify causal mechanisms, but is unable to establish causal relationships or produce generalizable results. These facts should be borne in mind when interpreting the results of the dissertation and especially when making policy suggestions or changing practices in real life.

The theoretical, contextual, and methodological limitations described above provide avenues for future research. First, a longitudinal mixed-method study design with disabled workers would be fruitful to further investigate and indicate the assumed causality between the insurers' role and actions. This would remove memory errors and prevent the evaluation bias related to the outcomes of the RTW

process, which are present in cross-sectional studies conducted after completion. The longitudinal approach used in this dissertation was limited to exploring the life trajectory of the workers utilizing the register-based data, so perceptions regarding the insurance system could not be detected with it.

Second, multi-stakeholder theories of RTW would benefit from more perspectives; the role and significance of the insurance system in permanent disability management could be explored from the viewpoints of the insurers themselves, workplaces, and health care. Alternatively, one could broaden the context from earnings-related social insurance to cover the whole insurance system. These research settings would potentially generate different interpretations and form a more complete understanding of the phenomenon.

Third, it would be interesting to conduct a comparative study on the role of insurers and its effects on the RTW across countries with different insurance schemes. MacEachen et al. (2019) found that the critiqued policy issues differ from each other in countries with cause-based versus comprehensive welfare systems, and following this idea, one could examine the possible differences in the roles of the insurers and their impact on the RTW.

Finally, the role of the insurance system could be studied alongside the other systems in the arena of disability risk management to understand its significance in relation to the other contributing factors and to validate the multi-stakeholder theory of disability risk management.

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APPENDIX 1. The questionnaire

FUNCTIONALITY OF OCCUPATIONAL REHABILITATION IMPLEMENTED BY THE SERVICE NETWORK

A. BACKGROUND INFORMATION AND LIFE SITUATION BEFORE THE BEGINNING OF OCCUPATIONAL REHABILITATION

1. Gender:

1. woman
2. man

2. Year of birth: _____

3. Level of education *before occupational rehabilitation* (select the highest level of education completed)**:**

1. primary school
2. secondary school
3. general upper secondary school
4. vocational college
5. university of applied sciences
6. university, bachelor's degree
7. university, master's degree
8. university, doctoral degree

6. Occupation *before occupational rehabilitation*:

1. employee
2. lower official
3. senior official
4. leading position
5. entrepreneur
6. agricultural entrepreneur
7. other, specify: _____

7. Monthly net income *before occupational rehabilitation:*

1. below 500 euros
2. 500–999 euros
3. 1000–1499 euros
4. 1500–2499 euros
5. 2500–3999 euros
6. Over 4000 euro
7. I cannot say

9. Cause of rehabilitation:

1. musculoskeletal diseases
2. mental disorders
8. other, specify: _____

10. Self-assessed ability to work before rehabilitation on scale 4-10?

1. 4 (totally unable to work)
2. 5 (passable)
3. 6 (fair)
4. 7 (satisfactory)
5. 8 (good)
6. 9 (very good)
7. 10 (excellent)

11. How motivated were you to participate in occupational rehabilitation?

1. not at all motivated
2. not very motivated
3. neutral
4. somewhat motivated
5. extremely motivated

12. Expectations and goals related to occupational rehabilitation. How important were the following goals to you before the start of the rehabilitation?

	not at all important	not very important	neutral	somewhat important	very important
Continuing or returning to work	1	2	3	4	5
More suitable profession	1	2	3	4	5
New job in earlier workplace	1	2	3	4	5
Improvement of professional capabilities	1	2	3	4	5
Improvement of mental well-being	1	2	3	4	5
Receiving a disability pension	1	2	3	4	5

B. OCCUPATIONAL REHABILITATION PROCESS AND THE ACTORS OF THE SERVICE NETWORK (INSURERS AND SERVICE PROVIDERS)

19. The following table presents various statements regarding the activities and the role of the pension insurer. For each statement, select the option that best describes your experience.

	strongly disagree	disagree	neutral	agree	strongly agree	does not concern me
I was pleased with the insurer's compensation decision regarding rehabilitation	1	2	3	4	5	6
The timing of the insurer's rehabilitation investigation was appropriate	1	2	3	4	5	6
The insurer carried out the rehabilitation measures quickly enough	1	2	3	4	5	6
I received enough information from the insurer	1	2	3	4	5	6
The insurer's documents, instructions, and information were clear and understandable	1	2	3	4	5	6
I received expert service from the insurer	1	2	3	4	5	6
The insurer's staff were easily accessible	1	2	3	4	5	6
The insurer's customer service was friendly	1	2	3	4	5	6
The insurer considered my personal situation and individual needs	1	2	3	4	5	6
The insurer sought to highlight the positive aspects and opportunities	1	2	3	4	5	6
The various rehabilitation options were adequately discussed	1	2	3	4	5	6
The return-to-work plan reflected my own views and aspirations	1	2	3	4	5	6
The return-to-work plan was feasible	1	2	3	4	5	6
The content of the rehabilitation met my needs	1	2	3	4	5	6
The rehabilitation process proceeded on schedule	1	2	3	4	5	6
I received enough information at all stages of the rehabilitation process	1	2	3	4	5	6
I had the opportunity to influence the rehabilitation process	1	2	3	4	5	6

C. LIFE SITUATION AFTER OCCUPATIONAL REHABILITATION

29. What score would you give to your current ability to work on a scale of 4-10?

1. 4 (totally unable to work)
2. 5 (passable)
3. 6 (fair)
4. 7 (satisfactory)
5. 8 (good)
6. 9 (very good)
7. 10 (excellent)

30. Life situation after occupational rehabilitation:

1. occupational rehabilitation ongoing
2. employed with previous employer
3. employed with new employer
4. entrepreneur
5. unemployed
6. on sick leave
7. on disability pension (temporary or permanent)
8. on part-time disability pension (temporary or permanent)
9. other life situation, specify: _____

APPENDIX 2. The interview guide

THEME	SUBTHEME/QUESTION
Background information	Level of education? Career and occupation before the rehabilitation?
Before the occupational rehabilitation	The cause of disability? The rehabilitation initiative - How, when, who was involved? - The content of the initiative? - The role of the insurer? Rehabilitation motivation, expectations, and goals? Compensation decision (thoughts, pros and cons)
During the occupational rehabilitation	Rehabilitation plan - How, when, who was involved? - The content of the plan? - The role of the insurer? Rehabilitation measures - How, when, who was involved - Evaluation: pros and cons - The role of the insurer? Follow-up control - How, when, who was involved - The role of the insurer?
After the occupational rehabilitation	Life situation? Employment situation? Ability and motivation to work?
Evaluation of the occupational rehabilitation	How would you describe the role of the insurer in occupational rehabilitation as a whole, why? How would you rate the success of the occupational rehabilitation for you, why? In your opinion, what explains the outcomes, why? How would you describe the role of the insurer in terms of outcomes, why? Where did the insurer succeed/fail, why? Comments, development suggestions, questions?

PUBLICATION I

Able or unable to work? Life trajectory after severe occupational injury.

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Able or unable to work? Life Trajectory after severe occupational Injury.

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Abstract

Purpose To study the probabilities and permanence of return to work, inability to work and rehabilitation, and to explore the connection between these life situations and later working after a severe occupational injury.

Materials and Methods A historical cohort of Finnish workers with a severe occupational injury during 2008 (N=11585) were followed up annually on the outcomes of return to work over a 5-year observation period. We examined transition probabilities from one life situation to another with Markov chain analysis, and applied logistic regression with generalized estimating equations to assess the effect of register-based determinants on return to work.

Results Within the five anniversaries, 85% of the injured were working, 9% were unable to work (fully or partly) and 2% received rehabilitation. Age, gross annual income, type of work, injured body part, injury type and the injured's annual condition subsequent to the occupational injury were significant determinants of return to work.

Conclusions The probability of return to work decreased with time, but, on average, one fifth of the injured workers succeeded in return to work after being unable to work on the previous anniversary, which indicates that it is worthwhile to conduct efforts for this target group in order to promote return to work.

Keywords: Return to work, Work disability, Rehabilitation, Occupational injuries

Introduction

In 2015, Finnish wage earners experienced altogether 117 908 occupational injuries, of which about 7% were severe injuries causing over 30 days off work [1]. In Finland, all wage earners are insured according to the Occupational Accidents, Injuries and Diseases Act, which defines the content of the statutory insurance cover. As a compensation for the loss of income, the injured worker is entitled to a daily allowance for 360 days from the day following the injury, and if the disability continues after this, the injured worker is entitled to an injury pension. The injury pension is paid as long as the injured is disabled due to the occupational injury, so the compensation can be lifelong. The disability can also be partial, in which case the daily allowance or the pension reflects the diminished ability to work. The entitlement to compensation requires a minimum of 10% reduction in the ability to work.

In addition, the insurance compensations for the loss of income include a rehabilitation allowance, which is paid during occupational rehabilitation. The occupational rehabilitation includes for example guidance and counselling, work trials in the previous or new job, supplementing occupational skills and training, which leads to an occupation. It can also include support for starting or continuing a business. The rehabilitation allowance is equivalent to the disability allowance or disability pension. One major objective of the Workers' Compensation system is to restore the worker's ability to return to work after the injury. Return to work is important not only to injured workers, but also to their employers and in a broad sense to the whole society.

Medical studies related to return to work do not usually distinguish between injuries and illnesses [2]. However, it may be important to acknowledge some crucial differences between them. Injuries clearly differ from illnesses when considering the recovery process and improvement in the ability to function. The majority of chronic illnesses tend to be slowly emerging with a gradual decline of functional ability. Due to this progressive nature of most illnesses, the essential resource factors necessary for secondary prevention and rehabilitation, such as self-esteem, well-being and economic situation, often slowly deteriorate resulting in a poor ability to function in the future. In contrast to illnesses, workers experiencing a severe injury will suffer from a sudden decline in the ability to function, and the above-mentioned essential resource factors are not usually weakened before the injury. In addition, because of natural healing, medical treatment and rehabilitation, the ability to function will only improve over time.

Although the majority of the studies within the subject area focus on illness or sickness absence, a reasonable number of them have examined return to work after an injury [see 3–5]. However, work-related and non-work related injuries can differ from each other when it comes to the return to work process and outcomes. In Finland, for example, there are relevant differences concerning the benefit system and stakeholders involved when comparing work-related and

non-work-related injuries [6]. Few studies have concentrated purely on work-related injuries in the past [see 7–11, 27]. These studies have identified a substantial number of determinants of return to work outcomes, including socio-demographic, clinical, economic and psychological factors. The results indicate that younger age, higher education, higher pre-injury income, good health status, higher job satisfaction, solid social and economic support and minor injury severity promote return to work. [2–3, 7–10].

The permanence of return to work and post-injury employment patterns have also been in the interest of researchers. The results suggest that a vast majority resume working after the injury [3, 5, 8]. However, return to work should not be considered purely as a single event, but rather as an evolving nonlinear process [11] with disability recurrences that are common after both injuries and illnesses. The majority (85–94%) of injured workers had at least one return to work, but the rate of success significantly declined over a longer time span. [9, 12–13].

Since the previous research has mainly focused on employment patterns, we lack sufficient information about the probabilities and permanence of other life situations such as full disability and rehabilitation. In addition, the fairly short follow-up periods (6 to 24 months) leave open questions about the longer-term post-injury life course. Furthermore, the research has not focused on severe occupational injuries before, even though these cases are the most important if we think about secondary prevention. The vast majority of all work injuries cause only 1–3 days off work requiring no specific efforts or intervention strategies, so the research attention should rather be targeted on severe injuries, where these efforts are mostly needed.

In order to improve secondary prevention, it is important to be aware of the probabilities, permanence and predictors of return to work, full disability and rehabilitation after a severe occupational injury. Comprehension of these life situations enables an optimal use and allocation of limited resources when rehabilitation and practices of targeted return to work are offered to those who benefit from them most.

This study examines the probabilities and permanence of return to work, full disability and rehabilitation after a severe occupational injury in Finland using register-based data including all injured workers with a severe occupational injury during 2008 (N=11585). The study focuses on five anniversaries following the injury. The specific objectives are as follows: (1) to examine the probabilities of return to work, full disability and rehabilitation after a severe occupational injury; (2) to investigate the permanence of these life situations and transitions between them; and (3) to study the connection between these life situations and working at a later stage.

Materials and Methods

Data and Variables

We used combined register-based data from the Finnish Workers' Compensation Centre and the Finnish Centre of Pensions. All cases of severe occupational injury that occurred in 2008 were collected from the Finnish Workers' Compensation Centre's register, and other register-based data were combined with them. We classified an occupational injury as severe if it had caused over 30 consecutive days off work by the end of 2009. Both workplace and commuting injuries were included.

We excluded the injured who were not Finnish citizens because the national registers did not contain information about their life situations after the injury. We also excluded those who had experienced a previous occupational injury during 2006–2007 (n=443) in order to avoid the distortion of results. Finally, we excluded those who had received an old age pension by the time of the severe occupational injury (n=100) as most of them had worked part-time only and would have retired fully during the observation period. This left us with 11 585 persons in the data. The register datasets were anonymized so that it was not possible to trace individuals.

The primary data included information about severe occupational injuries classified according to the European Statistics on Accidents at Work methodology (Eurostat 2013). The additional data sets included information about (1) all insurance compensations for medical care, loss of earnings, functional limitations, rehabilitation, death and other costs for the years 2008–2013; (2) all other occupational injuries within 2008–2013; (4) all social benefits and pensions received during 2008–2013, and (5) employed periods and yearly incomes of the respondents.

The data on return to work and the gross annual income were based on the Finnish Centre of Pensions' employment register, which includes all employment contracts in Finland. The used data included all employment periods of the injured during 2007–2013, and we classified an individual as working if an employment period was continuing on the anniversary of the injury, and he or she did not receive any social benefits from the Social Insurance Institution of Finland or from pension institutions at the same time. The gross annual income was indexed to the 2013 level using the wage-level index.

The data on working inability and rehabilitation were based on the Finnish Workers' Compensation Centre's register, which includes all insurance benefits paid due to an occupational injury in Finland. We classified an individual as fully unable to work if he or she received the daily allowance or the workers' compensation pension. Hence, the category "fully unable to work" includes both the temporary and permanently disabled due to an occupational injury.

Those receiving the partial daily allowance or the partial workers' compensation pension were classified as partly unable to work. Again, this category includes both temporarily and permanently partly disabled due to an occupational injury. Further, those receiving the rehabilitation allowance on the anniversary of the occupational injury were classified as rehabilitees. In the Finnish statutory workers' compensation insurance system, the rehabilitation allowance is paid during occupational rehabilitation, and includes compensation for the loss of income during the retraining period. The rehabilitation allowance is always temporary. The data on unemployed, old-age pensioners and deceased were based on the registers of the Finnish Workers' Compensation Centre. Those receiving the basic unemployment allowance, earnings-related unemployment allowance or labor market subsidy were classified as unemployed. Similarly, those receiving the old-age pension, early old-age pension, unemployment pension or part-time pension as old-age pensioners were classified as old-age pensioners.

The data on gender, age, occupation, geographical area of the injury, injured body part and the type of injury were also collected from the Finnish Workers' Compensation Centre's register. The age at the time of the severe occupational injury was grouped into three categories: 14–34, 35–49, and 50–68 years. The occupation was classified using the Finnish Workers' Compensation Centre's earlier classification (2004), and a ten-class variable indicating the industry group was formed from the original three-digit occupation tags. The data on the injured body part and the type of injury were classified according to the European Statistics on Accidents at Work methodology [14].

Statistical Analysis

We used simple Markov chain analysis to examine the probabilities of different life situations and transitions between them during the five-year observation period. Markov chains describe transitions between different states by assuming that the probabilities of different states only depend on the previous state. In this study we examined five life situations (states): (1) working; (2) fully unable to work; (3) partly unable to work; (4) rehabilitation and (5) other situation.

The effect of the previous life situation (subsequent to injury) and other determinants of return to work were investigated with a logistic regression analysis that included the values of the dependent variable on the four latest anniversaries. However, since the values of the same individual are positively correlated, and an analysis ignoring this might result to overly significant outcomes, we applied the generalized estimation equations method in combination with the logistic link. This method enables defining various correlation structures between observations. We used the exchangeable correlation structure, which allows for between-individual variation in the mean level of the response variable. However, the estimator and its covariance matrix would be consistent, even if the correlation structure were

incorrectly specified [15]. The analysis was implemented using the library "geepack" of the R software [16–17].

Results

Table 1 summarizes the (proportional) frequencies of working, inability to work, rehabilitation, unemployment, old age pension and death on the five anniversaries of the severe occupational injury. The category "other situation" includes for example the students, those in parental leave and the disabled due to a reason other than a severe occupational injury.

Table 1. Life situations of individuals following a severe occupational injury

Life situation	1. anniversary N (%)	2. anniversary N (%)	3. anniversary N (%)	4. anniversary N (%)	5. anniversary N (%)
working	8168 (71)	7788 (67)	7526 (65)	7170 (62)	6803 (59)
fully unable to work (due to occupational injury)	677 (6)	352 (3)	279 (2)	228 (2)	203 (2)
partly unable to work (due to occupational injury)	23 (0)	33 (0)	42 (0)	49 (0)	52 (0)
rehabilitation (due to occupational injury)	38 (0)	105 (1)	109 (1)	101 (1)	71 (1)
unemployed	1098 (9,5)	1290 (11)	1106 (10)	1109 (10)	1171 (10)
old age pension	300 (3)	558 (5)	847 (7)	1134 (10)	1447 (13)
deceased	66 (1)	111 (1)	149 (1)	186 (2)	235 (2)
other situation	1215 (10)	1348 (12)	1527 (13)	1608 (14)	1603 (14)
In total	11 585 (100)	11 585 (100)	11 585 (100)	11 585 (100)	11 585 (100)

The majority of the injured were working on the anniversaries (59–71%), although the number of workers decreased steadily over time. A closer examination revealed that the decrease was mainly due to the retirement of the injured. As the table shows, the proportion of old-age pensioners grows steadily during the years, and in the fifth anniversary, 13% of the injured were old-age pensioners. Only 6% of the injured (n=677) were fully unable to work due to the occupational injury on the first anniversary. The number of those fully unable to work decreased annually so that only 2% of the injured (n=203) were disabled on the fifth anniversary.
On the contrary, the number of those who were partly unable to work due to the occupational injury slightly increased with time but remained at a low level of 23–52 individuals throughout the observation period. The number of rehabilitees varied between 38 and 109 individuals or 0.4–1.0% of the injured. The unemployment rate of the injured remained near 10 % throughout the observation

period. This rate is slightly higher than the overall unemployment rate in Finland during the same period, but without proper reference data for comparisons it is not possible to make conclusions about the relationship between severe occupational accidents and unemployment.

The permanence of different life situations and the transition probabilities between them were studied using simple Markov chain analysis. The following five categories were used for outcomes: "working", "fully unable to work (due to occupational injury)", "partly unable to work (due to occupational injury)", "injury rehabilitation" and "other situation". Here, the category "other situations" includes for example the unemployed and deceased persons, old-age pensioners, students and disabled due to a reason other than a severe occupational injury.

Table 2 consists of four components, all of which provide the transition probabilities between the life situations on two consecutive anniversaries. A successful return to work predicted continued working for the majority of injured. Over 84% of those working on any anniversary were also doing so after one year. Moreover, most transitions from state "working" occurred to state "another life situation", which in most cases indicates retirement, unemployment or disability due to reasons not related to the occupational injury. Only a small fraction of the injured transferred from state "working" to state "fully unable to work due to the occupational injury".

The inability to work was not as permanent life situation as working during the first three anniversaries. The transition probability from "fully unable to work" to "working" was 28.8% between the first and the second anniversaries. However, this probability decreased over time to be 10.1–18.6% between the subsequent anniversaries. In addition, about one tenth of those who were disabled on one of the first three anniversaries moved to rehabilitation during the next year (7.9–10.6%). All in all, the transition probabilities from disability to other life situations decreased with time, and the majority of individuals who were fully unable to work on one anniversary also remained so on the next anniversary (35.7–77.2%).
A fairly similar development of transition probabilities could be detected among those who were partly unable to work on the first anniversary of the severe occupational injury. The transition probability from partial disability to working was 43.5% between the first and the second anniversary, but significantly decreased after this. Hence, partial inability to work became a more permanent life situation with time, so that 81.6% of those who were partly unable to work on the fourth anniversary were in the same situation also after one year.

Rehabilitation appeared as a fairly permanent life situation as well; the majority (59–71%) of the rehabilitees on any anniversary were also in rehabilitation after one year. The second largest transition probability was from rehabilitation to full inability to work, varying between 13.2 and 20% on different anniversaries. Return to work after rehabilitation was low; only 4–6% of the rehabilitees were working on the following anniversary. The high stability of the "other life situation" is mainly due to the old age pensioners and dead individuals, who were

classified into this category. Thus, transition probabilities from "other life situation" to working, disability or rehabilitation are modest throughout the anniversaries and only decrease over time.

Table 2. Markov chain analysis of transition possibilities between consecutive anniversaries from one life situation to another

		2. anniversary					
1. anniversary		working	fully unable to work	partly unable to work	rehabilitation	other situation	In total
		%	%	%	%	%	%
working	%	84.1	1.1	0.0	0	14.7	100
fully unable to work	%	28.8	35.7	3.2	10.6	21.6	100
partly unable to work	%	43.5	13.0	30.4	4.3	8.7	100
rehabilitation	%	5.3	13.2	0.0	71.1	10.5	100
other situation	%	26.5	0.5	0.1	0.1	72.8	100

		3. anniversary					
2. anniversary		working	fully unable to work	partly unable to work	rehabilitation	other situation	In total
		%	%	%	%	%	%
working	%	86.1	0.8	0.0	0.1	13.0	100
fully unable to work	%	18.2	52.0	3.1	9.4	17.3	100
partly unable to work	%	15.2	6.1	51.5	15.2	12.1	100
rehabilitation	%	5.7	20.0	9.5	60.0	4.8	100
other situation	%	22.6	0.3	0.0	0.1	77.1	100

		4. anniversary					
3. anniversary		working	fully unable to work	partly unable to work	rehabilitation	other situation	In total
		%	%	%	%	%	%
working	%	86.5	0.5	0.0	0.0	13.0	100
fully unable to work	%	18.6	60.6	0.7	7.9	12.2	100
partly unable to work	%	16.7	0.0	73.8	7.1	2.4	100
rehabilitation	%	3.7	16.5	10.1	66.1	3.7	100
other situation	%	16.5	0.2	0.1	0.0	83.2	100

		5. anniversary					
4. anniversary		working	fully unable to work	partly unable to work	rehabilitation	other situation	In total
		%	%	%	%	%	%
working	%	86.6	0.1	0.0	0.0	13.3	100
fully unable to work	%	10.1	77.2	0.0	3.5	9.2	100
partly unable to work	%	2.0	2.0	81.6	4.1	10.2	100
rehabilitation	%	5.0	16.8	10.9	59.4	7.9	100
other situation	%	14.0	0.1	0.0	0.0	85.9	100

The unemployed are the largest subgroup in "other situation" who transition to working. An additional analysis showed that approximately one fourth of those unemployed on one anniversary were working on the next. However, at the same time the permanence of unemployment seemed quite high, so that over 50% of those who were unemployed on one anniversary were so also after one year. The

analysis also showed that there were no transitions from unemployment to disability or rehabilitation due to a severe occupational injury.

Associations between the explanatory variables and working were analyzed using a logistic regression model that included the working status on the four latest anniversaries as the dependent variable. The variables age, gross annual income, type of work, injured body part, injury type and life situation on the previous anniversary had a statistically significant association with working, and were therefore chosen for the final analysis. In agreement with earlier research, gender was excluded because it was not a statistically significant determinant of return to work [8, 12]. Table 3 shows the distributions of the explanatory variables and their associations with working on the four latest anniversaries.

Younger age and higher gross annual income were associated with increased working ($p<0.001$). In addition, working was more probable among non-manual employees (technical, scientific, legal, humanistic and artistic work) than among manual workers (mining, quarrying and construction work). Further, those whose injuries were in the upper and the lower extremities had the highest probabilities of working, while those with injuries in the neck or the head had the lowest probabilities. Although the differences between the injury types were small, bone fractures, wounds and superficial injuries were associated with higher probabilities of working whereas concussions and internal injuries were associated with lower probabilities.

In agreement with the Markov chain analysis, the life situation on one anniversary was a strong predictor of working in the future. The odds of working on a specific anniversary were 15.15 times greater for an individual who had worked on the previous anniversary than for an individual who had been fully unable to work. However, the odds of working were greater for those who had been fully unable to work on the previous anniversary than for those who had been partly unable to work, in rehabilitation or in another life situation.

We also investigated whether an additional occupational injury after the primary occupational injury had an effect on the later working outcomes. The GEE analysis indicated that mild occupational injuries (causing less than 30 days off work) were actually related to better chances of working in the future. This result can be explained by the general employment situation of the injured, which would affect both the working status on the anniversary and the probability of a new injury. However, when considering additional severe occupational injuries, the result was no more statistically significant. Such an injury would reflect a good employment situation, but, on the other hand, would also reduce the chances of working in the future. Hence, in the GEE analysis these effects offset one another. Because of a confounding factor, the general employment situation, we did not include the variable "additional occupational injuries" in the final GEE model.

Table 3. Logistic regression of potential determinants of working after a severe occupational accident.

	N (%)	Odds ratio	95% CI for
Age* **			
14–34	2728 (24)	3.24***	2.94 – 3.32
35–49	4064 (35)	3.12***	3.01 – 3.48
50–68	4793 (41)	1.00	
Gross annual income (€)* **			
0–10 000	926 (8)	1.00	
10 001–20 000	1204 (10)	1.18**	1.05 – 1.32
20 001–30 000	2550 (22)	1.78***	1.60 – 1.97
30 001–40 000	3428 (30)	2.16***	1.95 – 2.40
40 001–50 000	1767 (15)	2.44***	2.18 – 2.74
50 001–60 000	715 (6)	2.24***	1.95 – 2.58
60 001–	519 (5)	2.45***	2.08 – 2.88
Type of work* **			
mining, quarrying and construction work	1628 (14)	1.00	
manufacturing	3465 (30)	1.04	0.95 – 1.13
transportation and traffic work	1132 (10)	1.24***	1.11 – 1.38
agriculture, forestry and fishing	367 (3)	1.11	0.94 – 1.30
student	92 (1)	1.30	0.86 – 1.98
service sector work	1451 (13)	1.19***	1.08 – 1.32
technical, scientific, legal,	681 (6)	1.42***	1.24 – 1.62
commercial work	463 (4)	1.35***	1.15 – 1.58
administrative and office work	991 (9)	1.25***	1.11 – 1.40
health care and social work	1315 (11)	1.37***	1.23 – 1.52
Part of body injured* **			
neck	135 (1)	1.00	
whole body or multiple locations	568 (5)	1.20	0.92 – 1.58
head	205 (2)	1.00	0.74 – 1.37
back	491 (4)	1.15	0.88 – 1.51
torso and organs	465 (4)	1.29	0.98 – 1.71
upper extremities	5526 (48)	1.56***	1.22 – 1.99
lower extremities	4132 (36)	1.58***	1.24 – 2.02
other parts of body	17 (0)	0.99	0.51 – 1.93
unspecified	46 (0)		
Type of injury*			
concussion and internal injuries	1394 (12)	1.00	
traumatic amputations (Loss of body parts)	157 (1)	1.06	0.83 – 1.36
multiple injuries	137 (1)	1.10	0.84 – 1.45
dislocations, sprains and strains	4131 (36)	1.02	0.94 – 1.12
wounds and superficial injuries	1154 (10)	1.12*	1.00 – 1.25
bone fractures	4289 (37)	1.13**	1.03 – 1.23
other specified injuries	211 (2)	1.11	0.90 – 1.36
unspecified	112 (1)		
Previous situation in life* **			
fully unable to work (due work accident)	203–677 (2–6)	1.00	
working	6803–8168 (59–71)	15.15***	13.06 – 17.57
partly unable to work (due work accident)	23–52 (0)	0.52**	0.33 – 0.83
accident rehabilitation	38–109 (0–1)	0.14***	0.09 – 0.22
other situation	2702–4456 (23–39)	0.94	0.81 – 1.09
R^2		0.419	
N		10984	

*** p<0.001, ** p<0.01, * p<0.05

Discussion

In Finland, there are over 10 000 severe occupational injuries causing over 30 days off work every year. We examined the probabilities and permanence of return to work, inability to work and rehabilitation after a severe occupational injury over a follow-up period of 5 years. Overall, 85% of the injured were working during the five anniversaries of the injury, which is in line with the previous results that vary from 29% to 100%, with a median of 71% for work-related injuries [18].

However, 85% is a relatively high rate considering that the target group consisted of workers with a severe injury causing over 30 days off work. The long follow-up period partly explains the high overall working rates. In addition, the proportion of those working on any particular anniversary was clearly lower, varying from 59 to 71% of the injured. A closer look revealed that retirement explains most of the declining proportion of workers during the follow-up.

Otherwise, the permanence of working was high. Over 84% of those who were working on one anniversary were doing so also on the next anniversary. The majority of those not working on the next anniversary had either retired or become unemployed. Thus, the ability to work was usually sustained in the long term after the first return to work. On average, less than 1% of those who worked on one anniversary were fully unable to work on the next one. Altogether, only few moved from the category "working" to "fully or partly unable to work" or "rehabilitation". The female sex, blue collar occupation, higher age, afflictions involving the neck or multiple locations and poor employer accommodations have previously been reported as risk factors for the recurrence of work disability (9, 12, 19). Return to work after a severe occupational injury can be a challenge to many injured workers. Apart from being alienated from working life as a result of a long absence period, the injured may feel anxious about the return especially if the injury happened in the workplace. Possible employer accommodations such as reduced hours, modified equipment and lighter workloads have proven effective in maintaining employment in the long term (12).

In our study, only 1.7% of the injured (n=199) experienced a recurrence of disability during the five year observation period. The recurrence rate was clearly lower than in the previous studies, where it varies between 11 and 48% [9, 19]. However, these results are not fully comparable with our study, since our analysis only involved the five anniversaries of the severe injury and ignored the life situation between these time points. Therefore, the recurrence rates could not be evaluated as accurately as in the previous studies. In addition, the majority of these studies focus on occupational illnesses whereas our interest lies purely in occupational injuries. As mentioned earlier, there are some crucial differences between injuries and illnesses, so return to work patterns in these cases may also differ.

The proportion of those who were fully unable to work due to a severe occupational injury declined over the years from 6% to 2%. These numbers are

fairly low compared to the results from Australia, where in about 10% of the cases the claimant became fully unable to work for long periods of time or permanently [20]. Moreover, our study only included those who were injured in a severe occupational injury, and therefore, supposedly had a higher risk of long-term or permanent disability.

The longer the disability period, the less likely the injured worker will ever return to work [21]. This declining probability of return to work after a longer disability time was clearly seen in our results too. The return to work rate was 29% for those who were fully unable to work on the first anniversary, 18–19% for those who were fully unable to work on the second or third anniversaries and 10% for those who were fully unable to work on the fourth anniversary. However, these return to work rates indicate that the probability of recovery is relatively high even for those with long-term disabilities. This minority of injured account for the majority of workers' compensation costs [21], so our positive results of their return to work rates encourage to further develop intervention strategies and prevention measures of permanent disability.

The number of rehabilitees remained small (0–1%) throughout the observation period, but the permanence was quite high as the majority of those who were in rehabilitation on one anniversary were so also after one year. Somewhat surprisingly, return to work after rehabilitation seemed very modest. Only 4–6% of the rehabilitees were working on the following anniversary after rehabilitation. Both the permanence of rehabilitation and low return to work rates are partly explained by the length of occupational rehabilitation measures. Further, a noticeable number of injured were fully or partly unable to work on the following anniversary after rehabilitation, which might be due to more challenging individual or occupational factors of those taken into rehabilitation. There is still a need for a more thorough investigation of this matter.

The results show that age, gross annual income, type of work, injured body part, injury type and the injured's annual life situation after the occupational injury were all significant determinants of a person being at work after a severe occupational injury. Overall, these determinants are fairly similar to those in previous studies concerning return to work after illness or injury [8–9, 12]. While earlier results concerning gender as a statistically significant predictor are somewhat inconsistent [22–23], we did not find a statistically significant association between it and the working status after a severe occupational accident.
Younger age, higher incomes and non-manual work were associated with better chances of working, which is consistent with most of earlier work [3, 8–9]. On the contrary, injuries involving the neck or head decreased the probability of working, as did concussions and internal injuries as types of injury. Fairly similar results have been reported by MacKenzie et al [22] and Berecki-Gisolf et al. [9].

As distinct from previous study designs, we also used the life situation of the previous anniversary as an explanatory variable for the working status. As expected, the odds of working were clearly highest for those who had worked on

the previous anniversary. However, an interesting finding was that the odds for working were also fairly high for those who had been fully unable to work on the previous anniversary, at least when compared to those partly unable to work, in rehabilitation or in some other life situation.

Strengths and Limitations

Several studies have examined the predictors and patterns of return to work after a work-related injury, but the results are somewhat inconsistent. The inconsistencies result from the differences in target population, selection criteria, study design, data analysis, prognostic factors and observation period among others [2, 24–25]. Our data were collected from reliable register-based sources and included all wage earners' severe occupational injuries that occurred in Finland in 2008. The follow-up period was relatively long extending to 5 years from the severe occupational injury. The return to work was determined by employment contracts, not by the termination of the insurance benefit, thus taking into account other possible life situations such as unemployment, retirement, studying and parental leave.
As for limitations, the used data enabled the examination of the life situation on the anniversaries of the accident, but the exact transition dates between the anniversaries remained unknown. Therefore, the overall picture of transition between working, inability to work, rehabilitation and other life situations was simplified. Furthermore, there was no information available regarding the stakeholders' (employers, coworkers, healthcare providers and workers' compensation insurers) activities and interactions, which have also been proved to affect the return to work outcomes [7, 26].

In addition, this study relied entirely on information from the national registers, so a range of important variables, such as social, clinical and psychological factors, that have turned out to be important to return to work [3, 8] were missing. For example, psychiatric conditions such as post-traumatic stress disorder (PTSD) have been reported as a result of a severe injury [27]. In Finland, the Workers' Compensation system is responsible for the stress reactions caused by an occupational injury, and the injured can receive a daily allowance or injury pension due to these conditions. Therefore, the injured suffering from psychiatric conditions caused by the occupational injury were included in the category "disabled due a severe occupational accident". However, psychiatric conditions were not separated as types of injury in the original data. Hence, we were not able to study the effect of these conditions on return to work patterns.

Conclusions

This study confirms the results of the previous reports on factors associated with return to work after injuries and extends current knowledge about the permanence of return to work and about transitions between various life situations after a

severe occupational injury. The most important implication of this study for disability management is the acknowledgment of the high chances of return to work also for those with longer-time disability. Hence, the promotion of return to work is highly recommended also for this target group. However, additional information is needed to explain the low probability of return to work after rehabilitation.

Declaration of Interest
The authors declare that they have no conflict of interest.

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PUBLICATION II

The nature of positive encounters between disabled workers and insurers in the return to work process.

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The nature of positive encounters between disabled workers and insurers in the return to work process

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Abstract.
BACKGROUND: Previous research regarding interaction between disabled workers and insurers indicates that encounters between these parties are predominantly negative in nature and may result in psychosocial harm for workers. Further research is required to investigate positive interactions to foster return to work after illness or injury.
OBJECTIVE: To explore and conceptualize perceived positive encounters between disabled workers and insurers in order to identify the mechanisms that support successful rehabilitation outcomes.
METHODS: This qualitative study explored the experiences of twenty-four disabled workers who had undergone an occupational rehabilitation process. Data were collected with in-depth semi-structured interviews, transcribed, coded, and analyzed using inductive content analysis.
RESULTS: Four main themes arose from the 24 key concepts relating to the positive encounters: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude. The results also reveal that perceived positive encounters promote the return to work not only directly, but also indirectly by improving the informants' motivation, which has previously been found to be one of the most significant factors explaining the outcomes of rehabilitation.
CONCLUSIONS: The positive relationship between disabled workers and insurers during an occupational rehabilitation could be better understood through a conceptualization of perceived positive encounters. Underlining the importance of positive encounters and their ability to improve the rehabilitee's motivation may contribute to better support methods for the return to work.

Keywords: Disability insurance, return to work, insurer role, rehabilitation motivation

1. Literature review

In the last few decades, the scope of research on the return to work has expanded from predominantly medical approaches to a more holistic view incorporating psychological and sociocultural aspects. At the same time, the rehabilitation process itself has gained more attention, and scholars have taken greater interest in a systems approach by examining the role of stakeholders – most often employers and co-workers, insurance companies, healthcare providers, and specific compensation systems – in the return to work process [1–6]. The current evidence suggests that positive encounters between different stakeholders and disabled workers may improve rehabilitation outcomes [6–11], whereas negative interactions may result in considerable psychosocial harm to disabled workers [2, 12–13].

The majority of earlier research related to encounters between insurers and workers within the rehabilitation and return to work process is related to the workers' compensation system, since other causes of disability do not qualify for insurance compensation in countries that rely on cause-based income support systems for workers [4, 13–15]. However, several countries have a disability-based income support system with no need to show the causation of disability. Hence, there are also studies that explore the encounters between sick-listed workers and social insurance office staff within the disability-based insurance systems [12, 16–17]. According to the results of these studies, encounters and interactions between insurers and workers are similar regardless of the differences in compensation systems.

The data of this study is gathered from Finland, where there is both a cause-based workers' compensation system and a disability-based sickness and disability insurance. If there is no causation of disability, the earnings-related insurance system pays compensation for loss of earnings during the rehabilitation and disability of those who are currently working or have an extensive work history. The administration of the earnings-related disability benefits is decentralized to several authorized pension providers, which include pension insurance companies. These insurance companies are responsible for administratively managing the disability compensation claim: they assess eligibility for benefits and rehabilitation measures, manage costs, and oversee the process of returning to work. Insurers are also responsible for the coordination of occupational rehabilitative activities [18]. Thus, the role of the pension insurance company in Finland is similar to the role of workers' compensation insurers.

The workers' experiences of the entire return to work process has been studied quite extensively [1, 13–14, 19–20]. In addition, there are a few empirical studies with a narrower focus dealing with the positive and negative encounters between disabled workers and insurers within the workers' compensation system [4, 21] or between disabled workers and social insurance officers [12, 15, 22–24]. Furthermore, Kilgour et al. [2] have conducted a systematic review focusing on encounters between injured workers and insurers in workers' compensation systems. According to this systematic review, most interactions between workers and insurers are described as cumbersome, frustrating, and demeaning, whereas positive interactions involving respectful, understanding, and supportive attitudes were reported less frequently [2].

Some key concepts relating to the encounters between disabled workers and insurers can be found in the previous studies. First, there is evidence of perceived claims manipulation and hurdles to medical treatment and occupational rehabilitation by insurers [2, 4, 19, 25]. Second, the issue of poor legitimacy is raised in various studies [2, 14, 16, 19, 21]. The insurance representatives seem to have suspicious attitudes regarding the credibility of claims, so the return to work process involves stigmatization, surveillance, and disputes regarding compensation [2, 12–13, 19]. Both claims manipulation and mistrust can be explained by the conflicting objectives and incentives of the insurers and workers, since the insurer's primary motivating factor is to minimize the costs of claims [26].

Third, the studies also report a lack of professional expertise, including incorrect information and disrespectful treatment by insurance representatives [13, 16–17, 21, 25]. In addition, a majority feels lonely and unsupported in the rehabilitation process [6, 20] and the encounters with insurers are described as random; after years of silence, there might be sudden pressure to make rushed decisions [1–2]. Another deficiency concerns communication. Getting in touch with the insurance representatives is difficult, and face-to-face contact with them is often impossible. The interactions often occur in writing, but letters sent by the insurer are perceived to be impersonal and formal; they are often filled with legalistic jargon and are thus hard to understand. [1–2, 13, 16]. On the viewpoint of the insurers, the complexity of the compensation process can lead to a misunderstanding as well as disinformation and cause a negative view of the system [27].

Another major theme concerning encounters between disabled workers and insurers is the claimant's lack of control in the rehabilitation process. Disabled workers feel excluded from decision-making, while insurers unilaterally determine the timing and modes of retraining or working without consulting the claimants or introducing alternative work prospects [2, 4, 19]. A number of studies also show that disabled workers lack information about their rights in the compensation system and the processes of claims and rehabilitation, which only intensifies feelings of helplessness and being at a disadvantage [2, 9, 16, 19, 21].

On the contrary, positive encounters between insurers and disabled workers seem to be very limited.

However, a few studies report about continuous personalized services, timely payments, received referrals for medical services, and improved access to treatment because of claim status. Furthermore, some disabled workers have experienced feelings of being respected, understood, supported, and well-informed [14, 16, 21].

Overall, encounters between insurers and disabled workers are characterized by negativity, which may be explained by the partly conflicting incentives of the system. The insurer's primary incentive is to return the disabled worker to work for the least cost. Furthermore, the insurer's incentives include determining the cause of the disability in cause-based insurance systems. Thus, it may be in the insurer's interest to find a justification for rejecting a claim or putting pressure on the disabled worker to comply with the insurer's demands [28]. Another explanatory factor for the dominance of negative encounters is the selection of study groups in previous research. Most studies focus on long-term claimants who have encountered difficulties in returning to work and are therefore more challenging to rehabilitate. Presumably, the overall experience is more negative among such claimants, which is also reflected in the perceived nature of encounters with insurers.

With this negativity surrounding the encounters between disabled workers and insurers, we need more information about positive experiences and success stories in order to duplicate and generalize the beneficial strategies to other claimants. Both the theories [5, 9] and empirical evidence [10, 11, 16, 29–31] suggest that a positive relationship with insurer during RTW-process may improve the worker's chance of and vice versa. Thus, the understanding of positive encounters is vital to improve the practices and outcomes of occupational rehabilitation. This study explores the encounters between disabled workers and insurers within an earnings-related pension scheme in Finland in order to enhance our understanding of the lived experience of positive encounters during the return to work process. The research questions are as follows: (1) What kind of encounters are perceived of as positive between disabled workers and insurers during the return to work process? (2) Through what mechanisms do positive encounters lead to a successful return to work? Besides its theoretical value, this study has also practical implications, since it reveals how insurers may foster a return to work among disabled workers through positive encounters.

2. Methods

2.1. Participants and data selection

The analysis was based on 24 semi-structured interviews conducted in 2018 with people who had completed an occupational rehabilitation process in 2015. The informants were recruited among those who had responded to a questionnaire sent a year earlier and given their permission be contacted for further research. The original survey was sent to 1,428 people in 2017. This sample was obtained from an online service called KuntoutuNET, used as a communication tool between subscribers and producers of rehabilitation services belonging to the service network of occupational rehabilitation in Finland. The sample included all the closed cases in the online service during the year 2015, i.e. were in the state of "final summary", "final summary approved" or "archived". The sample size was 2,264 individuals and may be considered representative. The response rate of the survey was 30% ($n = 668$), and 447 respondents gave permission to be contacted for future research. The subjects and their contact details were obtained from the KuntoutuNET online service maintained by a service network for occupational rehabilitation in Finland.

This study exploited criterion-based purposive sampling, where informants were chosen because of their particular characteristics (socio-demographic, experience-related, or outcome-related), since it was essential that a sufficient number of people with different characteristics and experiences were selected from among the respondents. The following factors were used in purposive sampling: employment situation and self-reported work ability after rehabilitation, life situation before rehabilitation, age, sex, and diagnosis.

The purpose of occupational rehabilitation is to improve chances for disabled individuals to earn an income in the future and prevent permanent disability. Thus, the employment status after rehabilitation is most often used as a measure of success. However, the self-rated health or ability to work after rehabilitation can been seen as an equally important measure of success, since it predicts the employability in the future. In this article, we used both of these success measures. The final sample included eight respondents whose self-reported work ability improved and who were employed after rehabilitation (= "rehabilitation succeeded"), eight respondents whose self-reported work ability improved but who were unemployed

Table 1
Description of the participants of the study

= "rehabilitation succeeded"			= "rehabilitation succeeded and failed"			= "rehabilitation failed"		
Informant number	Age	Gender	Informant number	Age	Gender	Informant number	Age	Gender
1	30	Female	9	28	Male	17	38	Female
2	34	Male	10	33	Female	18	46	Male
3	37	Male	11	47	Female	19	47	Female
4	45	Male	12	52	Female	20	56	Female
5	46	Female	13	53	Male	21	57	Male
6	52	Female	14	53	Female	22	58	Female
7	53	Female	15	53	Female	23	60	Male
8	56	Male	16	61	Female	24	61	Female

after rehabilitation (= "rehabilitation both succeeded and failed"), and eight respondents whose self-reported work ability did not improve and who were unemployed after rehabilitation (= "rehabilitation failed"). The division of the respondents into these three groups can be seen in Table 1.

The informants consisted of 15 women and 9 men. The age range of the informants was 28–61 years old and the median age was 52 years (see Table 1). The majority of informants suffered from musculoskeletal disorders (54%) and one-third suffered from mental disorders. The remainder of the diagnoses included, for example, cardiovascular diseases and cancer. Before the rehabilitation, the informants' life situations varied from working ($n = 4$) to unemployed ($n = 4$) and from sick leave ($n = 13$) to disability pension ($n = 3$). Consequently, the sample includes informants with different background factors, rehabilitation experiences, and outcomes in order to ensure the diversity of experienced encounters with insurers.

2.2. Data collection

The method of data collection was in-depth semi-structured interviews with open-ended questions. The interviews were relatively free-form discussions guided by the researcher, and the informants were able to expand on issues they considered important. This method enabled a thematic focus and the comparability of the interviews. The interview guide covered the informants' experiences before, during, and after rehabilitation. At the end of an interview, the informants were given the chance to evaluate the successes and failures of the whole process, the activities of those involved, and the determining factors of the outcomes. For this study, the following interview themes were the most relevant: the nature of encounters and interactions with the insurer, the successes and failures of the insurer within the rehabilitation process, and the connections between positive encounters and a successful return to work.

The interviews were conducted in July 2018. They lasted from 19 minutes to 63 minutes, and they were all conducted by the author. Three pilot interviews were organized to test the relevance of the interview guide, but only minor changes were made. Hence, the pilot interviews were also included in the final analysis. All interviews were digitally recorded and transcribed verbatim. However, some minor corrections have been made to citations to improve readability. The informants were contacted about one week before the actual interview. They were informed about the research goals, methods, and the use of data. Their anonymity was guaranteed, as their names will not be published in any research-related context. At the same time, all the informants gave permission to use their gender and age as identification in the studies.

2.3. Data analysis

Processing the transcribed interview material involved three stages: classification, analysis, and interpretation. In practice, these steps overlapped. As is typical for qualitative analysis, the data and the research problems were in close dialogue with each other, and analytical questions were formed and refined as the material was explored. In the classification phase, the material was systematically reviewed based on the research problem and the starting points of the key concepts utilizing inductive content analysis (see [32]). Content analysis is "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" [33].

In this context, inductivity refers to the fact that the different categories of the phenomenon being studied were created as far as possible based on data, not on a pre-formed theory. This study used an inductive approach in order to avoid wasting a large amount of new information that might have occurred if the material had been heavily examined under the guidance of previous studies and theories. Inductive content analysis was chosen as knowledge of positive encounters between rehabilitees and insurers is fragmented and somewhat limited [32]. However, qualitative analysis is always guided by research questions, and the researcher cannot lose his previous knowledge, thoughts, and theoretical observations in the process.

The inductive content analysis was performed in several steps. Initially, the author listened to the recordings and read the interview transcripts repeatedly to gain a comprehensive view of the whole data. The next phase was data organization, which included open coding, category creation, and abstraction. The grouping of the data started by constructing sub-categories based on open coding. Gradually the number of categories was reduced as the themes were grouped under higher order headings, and quotations were added in order to illustrate each category. The data were read repeatedly by testing and refining the parses generated at different stages during the analysis. All analyzed interviews were also compared with each other in order to validate the categorization.

3. Results

Nearly all respondents described some positive encounters with insurers during their occupational rehabilitation. However, the overall experience of encounters was much more positive among those who had successfully returned to work, the encounters perceived of as positive were similar in every group and eventually, four main themes arose from the key concepts relating to the positive encounters: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude.

3.1. Process flow

A high-quality compensation process with a good flow was considered the main task of insurers and a source of positive encounters. The process flow consisted of high-quality decisions, the smooth progress of the rehabilitation, and accurate compensation. The detailed construction of the first theme is shown in Fig. 1.

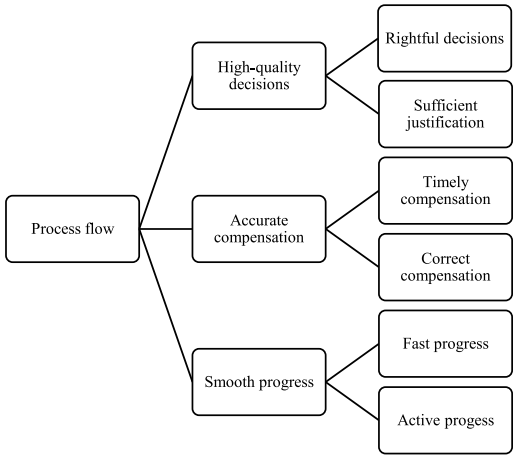

Fig. 1. Perceived positive encounters related to process flow.

The decisions made by the insurance companies were reported in almost all interviews, be they for positive or negative reasons. For many informants, the most positive encounter with the insurer was a positive claim settlement decision. When the decision lived up to their expectations, the informants were satisfied with the insurer and the decision felt rightful: “a positive decision, you got what you were entitled to” (informant 5). However, also negative decisions could be appreciated and felt to be rightful, if they included adequate, rational, and understandable arguments: “It was always justified and I understood why something was compensated for or not” (informant 3). After a positive claim settlement decision, the most important task of the insurer was considered to be accurate compensation. If the compensation was both timely and correct, the overall satisfaction with the insurer was high. As a few informants put it: “The money always came as it should” (informants 5 and 13) and “There was never any problems with paying, so that went well” (informant 14).

Several informants also perceived the smooth progress of the rehabilitation process as source of positive encounters. Insurers were seen as responsible for the progress of the rehabilitation, since all the decisions and the majority of the guidance came from them. Many informants described how the insurer contacted them immediately after the application was filed, all the decisions came quickly, and the rehabilitation process progressed rapidly from the initial rehabilitation plan to implementation. One informant summed it up: “Everything worked splendidly in the process. Whatever it was, everything

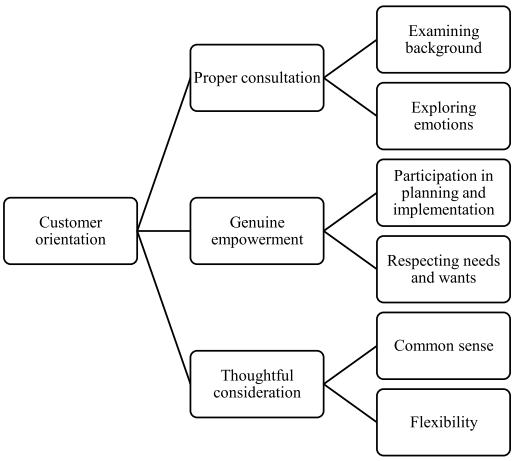

Fig. 2. Perceived positive encounters related to customer orientation.

happened in a few days, with no delay whatsoever." (Informant 6)

Besides the speed of the progress, the informants also valued the active participation and continuous contact of the insurer. The checks and reminders during the rehabilitation in particular were considered process enhancing. Furthermore, the active management of everyday matters appeared to be important: "They (the insurer) always sent a notice in advance if I had to do or deliver something. They also used reassurances of received applications and text messages about the timing of the payment." (Informant 16)

3.2. Customer orientation

Some of the most positive encounters between disabled workers and insurers were related to the second main theme, customer orientation. Customer orientation consisted of proper consultation, genuine empowerment, and thoughtful consideration. The detailed construction of the second theme is shown in Fig. 2.

Customer orientation (or the lack of it) was evident from the very beginning of the rehabilitation process. Positive encounters included a proper consultation where the background, wishes, and emotions of the disabled worker were carefully reviewed. Here, the listening skills of the insurer's representative were appreciated. A comprehensive background check was described to include the mapping of disabled worker's study, work, and medical history and the current life situation. In addition, both psychological and aptitude tests conducted by the service provider were found to be useful. As part of the background check, informants described how their wishes and dreams were also heard: "Then there comes a man who is... is just for me. Listened to what I wanted and . . . and then we wondered together what is it that I needed and wanted." (Informant 16) In addition, some informants brought up the significance of their feelings and emotions. They may have experienced feelings of depression, fear, and insecurity, and discussing these concerns with the insurer was important.

The second category of customer orientation is genuine empowerment. If proper consultation focuses on gaining a hearing, genuine empowerment focuses on the inclusion of disabled workers in the planning and implementation of occupational rehabilitation. A few informants described how they had made a significant contribution to the rehabilitation plan, which empowered them and added a sense of equal partnership with the insurer. If the wishes and needs of the disabled workers were genuinely pursued, the encounter was rated as highly positive. "How could he look at my situation so personally? He did not give any general answers, but answers to my situation. We were able to make a rehabilitation plan that was completely suitable just for me." (Informant 4) Participation in the rehabilitation measures, such as work trials or training leading to an occupation, was usually taken for granted, but a continuous dialogical connection with the insurer and participation in the evaluation debates concerning the progress of the rehabilitation and validity of the rehabilitation plans were highly valued.

Customer orientation was also evident in the insurer's decisions and debates that included thoughtful and personal consideration of the disabled worker's situation. This perceived customer orientation in decisions appeared in several ways among the informants. For example, the decision about compensation for loss of earnings could be made for as long as reasonable at once, additional compensation could be granted for a sudden demand, and the timing of the rehabilitation measures could be altered according to the disabled worker's needs. The use of "common sense" (informant 6) by the insurer was reflected in these experiences of fairness, and it was praised by the informants. The insurer's flexibility formed the other subcategory of thoughtful consideration. A remarkable number of informants acknowledged the ability of the insurer to easily

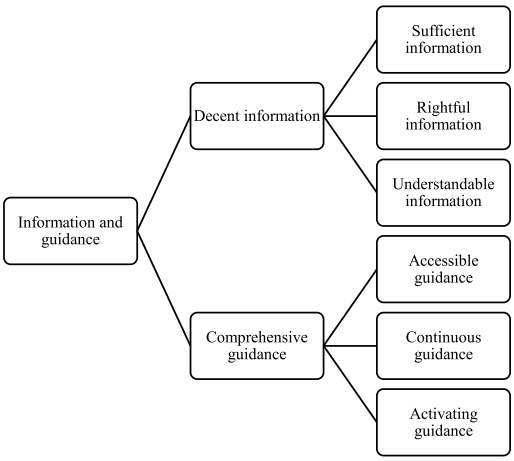

Fig. 3. Perceived positive encounters related to information and guidance.

modify the decisions and processes to respond to the altered circumstances. In addition, earlier decisions could, for example, be reversed in the light of new information. "But the insurer was actually doing very well in the sense ... that even though they once promised it and then reversed it, they were still able to reverse that negative decision again. So I thought it was a pretty great job." (Informant 11)

3.3. Information and guidance

The third main theme related to the positive encounters between disabled workers and insurers was information and guidance. Several informants described having received flawless information and comprehensive guidance from the insurer. The detailed construction of the third theme is shown in Fig. 3.

According to the informants, a high-quality information flow consists of sufficiency, rightfulness, and understandability. Generally, the insurers seemed to answer all the questions asked well, but even more valuable was the spontaneous information about the different possibilities for rehabilitation and compensation. An open approach and generous knowledge sharing led to the insurer being seen as an ally rather than an opponent. "I was very well informed about what rehabilitation services are available. They (insurer) were always so open and told me everything. There was no situation, like ... in which I would have realized afterwards that I could have received some compensation." (Informant 4)

Both the quantity and quality of the information were considered important. First, informants expected to receive *rightful* information from the insurer. Expectations of rightfulness were mostly fulfilled and several informants acknowledged the expertise of the insurer. The second indicator of information quality, understandability, was clearly harder to achieve. However, a few informants felt that all the information (including written decisions) was easy to understand.

According to the informants, insurers were specifically successful in offering guidance. Most of all, accessibility to guidance was praised. The insurers were well within reach, the informants "always got help when needed" (informants 1, 5, 17, and 21), and their "call requests were answered promptly" (informants 7 and 10). Moreover, most informants had their own contact person at the insurer, and this practice was valued (informants 3, 10, 18, and 21) and desired by those who did not have such a contact (informants 1, 13, and 20).

The continuity of guidance was also highly valued; continuous contact with the disabled worker from the initial steps throughout the rehabilitation process to post-control was perceived as highly positive. If the rehabilitation outcome was positive, a farewell card or wishes were considered positive: "The insurer said that it was the end of our collaboration, but if there was anything else that I needed, they could still help. In my opinion, it worked out well. And then that little thing, when the Christmas card from the service provider came the next Christmas, it was such a nice thing." (Informant 15)

The informants also brought up the nature of the guidance, and above all, the activating touch of the insurers. Many felt that their insurer gave them the needed push to achieve their goals. Especially when the informants had to make choices about rehabilitation measures and apply for a job or study right, the active guidance from the insurer promoted the process. Some described this as feeling they were "forced to action," and some used a more subtle expression, such as saying it felt they were "helped to move forward." One informant stated, "Yeah, it kind of provoked me when the insurer contacted ... When you are in pain at the beginning, and then somebody like kicks your ass ... tells you that you have to do something now. So it really showed the direction and got me moving." (Informant 8) This activating guidance was seen as purely positive and process-enhancing by the informants.

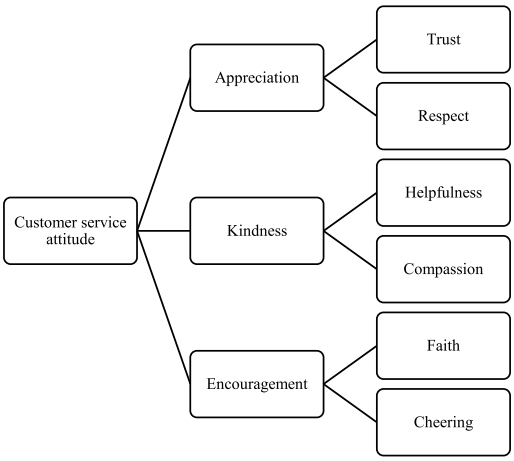

Fig. 4. Perceived positive encounters related to the customer service attitude.

3.4. Service attitude

The fourth main theme related to the positive encounters between the disabled workers and the insurers was the customer service attitude of the insurer's representatives. Experiences of the service attitude varied greatly among the informants. However, the kindness of customer service staff was the single most frequently mentioned positive encounter with the insurers during the rehabilitation process. Several informants mentioned a particular employee by name and sent personal thanks to them. The insurer's representatives were considered to be kind, encouraging, and appreciative. The detailed construction of the fourth theme is shown in Fig. 4.

The basis for a good customer service experience is built on appreciation. Both respect and trust were noted in examples of positive encounters between insurers and the disabled workers. The informants were mainly treated with courtesy, and they felt respected and treated as an equal: "When you usually deal with government agencies, it's a bit like being a customer *only*. But now I think they took me very nicely and equally and I didn't feel like they were making a value judgment of me somehow." (Informant 7) "As such a small citizen, I felt that I was still really important for them. And it felt pretty great." (Informant 5)

The kindness of the customer service staff was also praised on many occasions. First, informants mentioned that the staff was willing to help them with various matters related to the rehabilitation. "He took care of my situation, and when I couldn't handle something, he did it for me" (informant 16); "I got help and support and they guided me through the applications and everything. It was a very positive experience." (Informant 24) Moreover, the informants were thankful for the friendliness, approachability, and kind atmosphere created by the insurer's representatives. Some employees also showed compassion for their customers: "it was really empathetic, and he was so worried about my coping and well-being" (informant 24). Informants truly valued this kind of compassion in times of distress.

Some of the informants had very low self-esteem; they were insecure about their knowledge, skills, and ability to learn, and a few mentioned that they were actually afraid of the whole rehabilitation process. Thus, many clearly needed encouragement, and they received it from the insurer. Furthermore, the insurers' representatives showed faith: "It was so positive in every way, the way they believed in me and believed that I was still able to perform some duties and find employment. That was so wonderful." (Informant 3) On the other hand, the insurer's representatives were described as reassuring, uplifting, cheering, and pushing when they tried to get the client motivated and the rehabilitation process moving forward. "It was kind of pushing forward, knowing I am not a miserable loser who just lies there at home, but can still rise. So I just wish that everyone had the same kind of cheering, someone to tell you that you can find something . . . that you are able to do something for a living." (Informant 14)

3.5. The underlying mechanisms between positive encounters and a successful return to work

Towards the end of the interview, the informants were also asked to define the key factors to the success or failure of the rehabilitation. This question was used to analyze the nature of positive encounters more thoroughly, since it revealed whether the insurer's actions were considered to have affected the outcomes of rehabilitation. In addition, the answer would also indicate the magnitude of the possible impact. First, the analysis showed that the factors promoting and hindering the return to work are interlinked, since the same factors may act as a promoter of the return to work when considered positive and as a preventer of the return to work when considered negative. Second, the results suggest that positive encounters between insurers and disabled workers may act as key factors in the success of the rehabilitation.

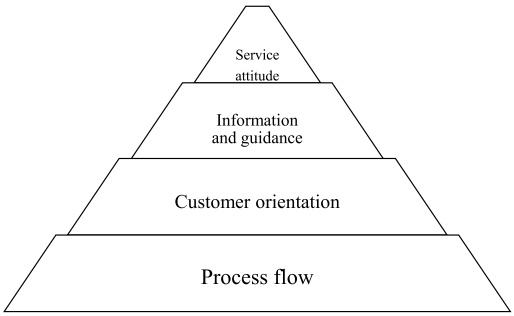

Fig. 5. The hierarchy of main themes related to the positive encounters.

The most frequently mentioned key factors for the both success and failure of the rehabilitation were personal features; self-motivation was seen to be the most important determining factor for a successful return to work, whereas poor perceived health was held responsible for failures. However, immediately after these personal features came the process flow and customer orientation. Thus, the insurer's role in determining the outcome of the rehabilitation was considered critical. When considering the four main themes of the positive encounters, there was a clear hierarchy between them. Based on the interviews, Fig. 5 shows the elements of positive encounters in order of perceived importance.

The insurer was considered to have the greatest influence on the process flow of the rehabilitation, and the smooth functioning of the process was seen as the key issue in promoting the return to work. The basis of a successful return to work lies in the insurer's decision on the claim; if the decision feels acceptable, the process starts and usually progresses without hurdles. The second part of smooth process flow is the accurate payment of compensation, which again prevents hurdles and enables concentration on the rehabilitation process itself. On the other hand, if the decisions and compensation do not work flawlessly, the rehabilitation may turn into a fight between the disabled worker and the insurer, and this may finally lead to poor outcomes, as described by a few informants.

The customer-oriented approach of the insurer was also considered to be one of the key factors for a successful return to work. Informants described how taking part in a proper consultation that involved being listened to, being engaged in the planning and implementation of the rehabilitation, and receiving respect regarding their needs and wishes usually resulted in a realizable rehabilitation plan that enabled their commitment and eventually led to a successful return to work. Conversely, if the informants were not genuinely included in the planning of the rehabilitation and they felt forced to take part in unnecessary or useless rehabilitation measures, the results were usually poor.

The third theme, information and guidance, was not usually considered a decisive factor in a successful return to work. However, sufficient, rightful, and understandable information was considered a prerequisite for the rehabilitation process to start and progress. Similarly, the customer service attitude was not named as the key factor for a return to work, but especially for those with low self-esteem and insecurities, the service attitude became a significant underlying factor contributing to the success of the rehabilitation.

As illustrated above, the encounters between insurers and disabled workers may directly affect the progress and outcome of the rehabilitation. However, the underlying mechanisms between the encounters and the return to work went beyond the direct effect. The majority of informants illustrated how the insurer's actions significantly influenced their motivation, which was also considered to be the single most determining factor of the successful return to work. Berglind and Gerner [34] have analyzed the motivation for returning to work among those on long-term sick leave using action theory. Their analysis shows that the willingness to return to work is only one part of motivation. Will or desire is linked to perceived competence and experienced opportunities. Thus, besides the will or desire, a strong motivation requires a sense of competence (i.e., ability to manage) and faith in employment opportunities. These three areas of motivation were clearly visible in the informants' stories.

The informants characterized a strong will or desire as persistence and determination: "where there is a will, there is a way" (informants 14 and 16). Furthermore, it was not believed that rehabilitation would succeed without determination. The second area of motivation, a sense of competence, seemed to be more rarely possessed and harder to gain than a strong desire to return to work. As mentioned before, many informants expressed anxieties in the early stages of the rehabilitation, and it became clear that without self-confidence, the return to work would be very difficult. The third area of motivation, faith in employment opportunities, also proved to be relevant for a successful return to work. There was no faith when new work duties or an occupation did not feel

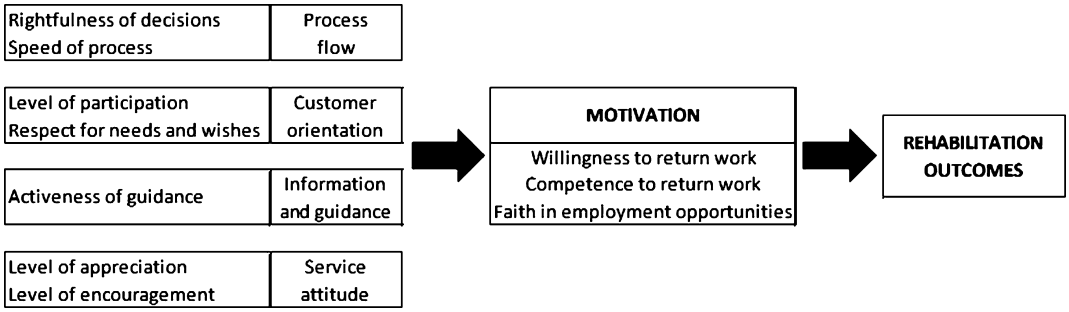

Fig. 6. The indirect effect of positive encounters on rehabilitation outcomes.

suitable, the employment situation in the sector was poor, or the informant was merely returned to a previous job without retraining. If there was no faith in employment opportunities, rehabilitation was usually interrupted.

Finally, the results suggest that encounters between the insurers and the disabled workers may either increase or decrease the motivation of the rehabilitee. As shown in Fig. 6, all key concepts relating to the positive encounters may also affect the rehabilitation outcomes indirectly by influencing the motivation of the rehabilitee.

The analysis reveals that a willingness to return to work could be strengthened by all the main themes related to the positive encounters; a smooth process flow, a customer-oriented approach, active information and guidance, and a good service attitude. On the other hand, the willingness to return to work can be diminished during the rehabilitation process especially when disabled workers feel that their needs and wishes are not materializing. The results also suggest that positive encounters may increase the disabled workers' faith in their competence. According to the informants, self-confidence was best supported by active guidance, positive feedback, and encouragement. Conversely, it was weakened by a rude, malicious, and suspicious service attitude. Improved self-confidence also increased faith in employment opportunities.

In addition, active inclusion of the informant in the planning and implementation of the rehabilitation, the fulfillment of the informants' needs and wishes, and an encouraging service attitude strengthened the faith in employment opportunities. If the informants were familiar with the new job or occupation and it was in line with their wishes, they better understood its physical and mental requirements and could evaluate them in relation to their own competence. Furthermore, they usually had some idea of the employment situation in the sector and their faith in employment opportunities was greater than among those who were not familiar or satisfied with the new job or occupation. Thus, the insurer has a significant role to play in supporting this area, as through rehabilitee inclusion and working life knowledge distribution, it is possible to significantly influence the disabled workers' faith in employment, and hence support their rehabilitation motivation.

4. Discussion

Earlier studies indicate that most encounters between insurers and disabled workers are negative in nature and may even generate secondary psychosocial harm to the workers and hinder possibilities for recovery [see e.g. 2, 4]. Positive encounters are reported less frequently, and knowledge about their nature and effects remains limited. Thus, this qualitative study focused on the positive experiences of claimants in order to enhance understanding of the success factors and well-functioning strategies. The first objective of this study was to find out what kind of encounters are perceived to be positive during the return to work process. Altogether, analysis yielded 24 positive encounters that finally formed four main themes relating to the positive encounters between disabled workers and insurers: (1) process flow, (2) customer orientation, (3) information and guidance, and (4) service attitude.

Positive encounters including rightful and well-justified decisions, timely and correct compensation, fast progress, and continuous contact with the insurer formed the first main theme, process flow. Positive experiences related to the compensation process have rarely been reported in the academic literature.

However, informants of Strunin and Boden [20] described relations with insurer that resulted in timely outcomes and informants of Hubertsson et al. [16] had experienced a continuous contact with the insurer during the process of rehabilitation. Thus, the results of this study support the earlier observations and broaden our understanding of the components of a smooth process flow during occupational rehabilitation.

The second main theme of positive encounters, customer orientation, appeared for example in proper consultation, respect for the informants' life situation, needs and wishes, and the inclusion of the informants in planning and implementing the rehabilitation. The inclusion of the informants also emerged in the study by Hubertsson et al. [16], where participation in an ongoing rehabilitation was mentioned as a positive encounter. Furthermore, the feeling of being heard and understood in the middle of a complex situations have been previously reported by women in the sick-leave process [35]. This study contributes to the existing literature by revealing also the importance of the common sense and operational flexibility by insurer, which were highly appreciated as part of customer-oriented service.

The third main theme of positive encounters between disabled workers and insurers was information and guidance. Guidance is also mentioned as a source of positive encounters by Hubertsson [16], whose informants were thankful for being guided in the efforts to return to work. Similarly, informants in the study of Andersson and Mårtensson [35] were grateful of being guided in decision-making when their own capacity was lacking. This study found out that experiences of comprehensive guidance includes continuity, easy access and activating touch. The information provided by insurer is usually perceived negative, being for example incorrect, too formal or hard to understand [1–2, 13, 16]. However, several the respondents of this study had received sufficient, rightful, and understandable information, which were all creating perceptions of positive encounters.

The fourth main theme, customer service attitude, included positive encounters with helpful and compassionate representatives that elicited feelings of being trusted, respected, and cheered on. The customer service attitude has also emerged as a source of positive encounters between insurers and disabled workers in previous studies. In fact, most of the previously reported positive encounters were somehow related to the service attitude of the insurer's representatives. The informants of these studies have noted feelings of confidence and trust [16, 22] caring and supportive relationships with the insurers [21, 24], and being recognized as a person [16].

Altogether, the informants of this study had mixed experiences of encounters with insurers, and the majority described both positives and negatives. However, the overall perception of the insurer's activities seemed to be more positive than in previous studies and positive experiences extended beyond the customer service attitude and included several aspects related to the process flow, customer orientation, and information and guidance. Thus, the study revealed several previously unidentified insurer practices yielding to perceptions of positive encounters. The large amount of positive experiences might be explained by the criterion-based purposive sampling, which included informants with a successful return to work, whereas most of the previous studies focused purely on long-term claimants with difficulties in returning to work. Another explanation is related to the differences between cause-based and disability-based insurance systems. In the disability-based system, there is no need to prove the causation of the disability to justify interventions, so the justifications for rejecting a claim are more limited and rejections are altogether less common, resulting in fewer experiences of claims manipulation (compare e.g., [2]).

The second objective of the study was to identify the underlying mechanisms leading from positive encounters to a successful return to work. It was noticeable that the experiences were much more positive among those who had a successful rehabilitation. On the one hand, a positive outcome may sweeten the experiences of the rehabilitation process and actors, as demonstrated by one informant: "Well, in retrospect, it seems like everything went as well as possible, and nothing could have been done better. I suppose that at some point during the process ... Maybe I could have thought of something negative then, but the outcome was so great that now there is nothing negative to say." (Informant 4) On the other hand, positive encounters with insurers also foster positive outcomes, and several informants described the encounters with the insurance company as crucial to their success. This correlation has also been shown in previous studies [6–9].

The results suggest that positive encounters affect rehabilitation outcomes both directly and indirectly. The informants described how rightful and well-justified decisions enabled occupational rehabilitation and thereby their return to work. Similarly,

they illustrated how a customer-oriented approach led to a realizable and suitable plan through which the return to work was possible. Furthermore, smooth process flow and customer-oriented approach were found to be the most important insurer-related promoters of RTW. However, the majority of informants also noted an indirect effect of the positive encounters on the return to work. This indirect effect was most visible when the positively perceived actions of the insurer improved the informants' motivation.

Motivation has been found to be one of the most significant factors explaining the outcomes of rehabilitation (e.g., [36–37]). This study shows that positive encounters related to the process flow, customer orientation, information, guidance and customer service attitude might increase the customer's motivation and indirectly support the successful return to work. Therefore, supporting the motivation of rehabilitees is also of paramount importance to the insurer. This study emphasizes the division of motivation into different areas, as in the study by Berglind and Gerner [34]: a strong will or desire to return to work, faith in one's competence, and faith in one's employment opportunities. Thus, efforts can and should be made to support all these aspects of motivation throughout the rehabilitation process to promote the successful return to work.

4.1. Research limitations

This qualitative study used an explorative approach to identify and analyze positive encounters between disabled workers and insurers during the return to work process. It should be noted that the data is based on a relatively small sample (24 interviewees) and the results might not be generalized as such to other groups. However, since this was a qualitative study, the richness of the information held by respondents was seen more important than the sample size [38]. Furthermore, the purposive sampling aimed to produce the richest possible data including respondents with different backgrounds and rehabilitation outcomes. Another limitation of the study is the timing, since both the survey- and the interview data were gathered after the occupational rehabilitation process. Thus, one must consider the possible memory errors and changes of opinions after time when interpreting the results.

To improve the validity of the results, the interview guide was developed together with the steering group of the service network of occupational rehabilitation in Finland. Furthermore, it was tested in a pilot interviews to confirm the comprehensibility and practicality of the questions. As described earlier, the perceived positive encounters were fairly similar among all respondents and became more consistent across larger number of interviews. This kind of clear saturation also promotes validity of the findings. Furthermore, the results regarding the nature of positive encounters and rehabilitee's motivation were in line with the previous studies. However, the validity of the results could've been increased by adding a discussion concerning the preliminary results with the participants and a double coding performed by another researcher.

Further research is required to investigate the dependencies between different types of positive encounters and the successful return to work. This qualitative study cannot prove the causal relations between positive encounters and the return to work, so the analysis of the underlying mechanisms of positive encounters and the return to work remains preliminary. The significance of positive encounters in relation to other explanatory factors of successful rehabilitation should also be studied with quantitative methods. Moreover, it would be beneficial to explore the encounters between insurers and disabled workers from the insurers' perspective in order to complement the understanding of this phenomenon.

5. Conclusion

This study enhances the knowledge of positive encounters between insurers and disabled workers by identifying 24 good practices and conceptualizing them into four main themes. It demonstrates the diversity of positive encounters and shows that they occur at many stages of the rehabilitation process. Above all, the smooth process flow and customer-oriented approach were considered as the key issues in promoting the return to work. Furthermore, the results indicate that positive encounters promote the successful return to work not only directly, but also indirectly through strengthening the motivation of disabled workers. Finally, the actors in occupational rehabilitation may benefit from exploiting the results of this study to foster the return to work of disabled workers.

Conflict of interest

None to report.

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PUBLICATION III

Facilitator or enforcer, ally or enemy? Claimants' perceptions of insurers' roles in occupational rehabilitation.

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PUBLICATION IV

How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study

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How can social insurers promote return to work in occupational rehabilitation? A quantitative, cross-sectional study

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Abstract

Background: Earlier studies indicate a correlation between disability claims experience and return to work outcomes. Thus, the insurer's role and actions may affect the self-rated health of the disabled worker and the outcomes of occupational rehabilitation. This study diversifies the existing empirical evidence on the role of the insurer in the rehabilitation process and reveals the critical actions that best promote success.

Materials and methods: Explorative factor analysis (EFA) and confirmatory factor analysis (CFA), followed by binary regression, were used to analyse survey data of disabled workers ($n = 661$) who had undergone an occupational rehabilitation within an earnings-related pension insurance system in Finland.

Results: The claimant's perceptions of the insurer's (1) high-quality informing and guidance, (2) customer orientation, (3) smooth process flow and (4) positive service attitude had substantial and statistically significant effects on the success of occupational rehabilitation after adjusting for all likely confounding variables.

Conclusions: The insurer's actions are significant predictors of the outcome of occupational rehabilitation. The insurer can promote the health of rehabilitees most effectively by ensuring a smooth process flow and adopting a customer-oriented approach.

Keywords: Occupational rehabilitation, Return to work, Insurers, Disability insurance

Background

In most developed countries, public compensation systems providing support for those unable to work because of illness or injury are usually governed by public institutions or private insurance providers. Many disability insurance systems only cover injuries or illnesses if they are due to a specific cause, including workers' compensation, automobile insurance and crime victim's insurance. These systems are referred to as cause-based systems. However, there are also disability-based systems that provide sickness and disability insurance for all forms of work disability, regardless of the cause [1].

While there are huge disparities between and within nations when it comes to public disability insurance systems, they still have common features regarding the compensation process and the role of the administrative body (whether it is a public social insurance agency or private insurance company). This organisation is usually responsible for the compensations and it interacts with all the stakeholders involved in the rehabilitation and return to work process [1–3].

Today, the return to work (RTW) process after an illness or injury is understood as a biopsychosocial phenomenon [4]. This means that biological, psychological and social factors related to the personal, work, healthcare and insurance domains influence the course and outcome of rehabilitation [5]. Thus, the role and

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actions of rehabilitation stakeholders are seen vital to the outcomes of the process. Occupational rehabilitation stakeholders are usually categorized from system theory perspective into three main groups: employers (work system), healthcare providers (health system) and insurance (insurance system). Previous studies suggest that these stakeholders' actions may affect the outcomes of the rehabilitation [6–8]. Our study focuses on the insurer's actions (more specifically guidance, customer-orientation, process flow and service attitude among the insurer's representatives) and their connection to successful rehabilitation.

Current theories suggest that more positive relationships between the insurer and claimants may improve the worker's chance of recovery [9, 10] and vice versa. Qualitative studies focusing on relationships between disabled workers and healthcare or insurance officials highlight the importance of mutual trust, respect, and credibility [11, 12]. Furthermore, high-quality informing, professional expertise, a supportive and individual approach, a personal relationship with officials, participation in decision-making and individually chosen rehabilitation measures and goals are mentioned as promoters of RTW [12–15]. Quantitative studies [16–21] support the hypothesis of a causal relationship between insurer actions and the outcomes of occupational rehabilitation. Within a worker's compensation system, the high stress levels from encounters with insurers were positively correlated with poor long-term recovery of injured workers [18] whereas a positive claims experience was strongly associated with having returned to work [3].

The results are similar between sick-listed individuals and social insurance officials in disability-based insurance schemes. Negative encounters with social insurance officers are negatively correlated with self-rated health, self-rated ability to work and mood, whereas positive encounters with social insurers facilitate RTW [17, 19–21].

As shown above, there is some evidence indicating a connection between insurer actions and the probability of RTW. However, there is a need for further evidence and a more comprehensive understanding of the insurer's role and the specific actions that best support the health of disabled workers and promote RTW. While the earlier quantitative studies have concentrated on sick-listed patients or work injury victims, this article focuses on occupational rehabilitees, thus enlarging the scope and providing useful information to all rehabilitation stakeholders. Here, we do not collapse groups of stakeholders together (as e.g. in [16, 22]), but only examine the role of the insurer in order to eliminate the confounding factors related to other stakeholders. Our survey data enable a definition of dimensions related to the insurer's role and their comparison with respect to RTW outcomes. The aims of this study are (1) to investigate the connection between insurer actions and the results of occupational rehabilitation, and (2) to explore which insurer actions best promote occupational rehabilitation success. Our research hypotheses, from the weakest (or least specific) to the strongest (most specific), are as follows:

H1: Claimant's perceptions of insurer actions during occupational rehabilitation are related to the outcome of rehabilitation.
H2: Claimant's perceptions of positive insurer actions, including high-quality informing, supportive service attitude and individual approach, are positively related to successful occupational rehabilitation.
H3: The positive relationship between the claimant's perceptions of positive insurer actions and successful occupational rehabilitation remains even if an adjustment is made for all likely confounding variables.

Methods

This section presents the key elements of the study design, describes the research setting and participants, defines the used variables, their handling and measurement and presents the statistical methods. Here, we follow the STROBE statement [23].

Study design

We used a cross-sectional survey design to investigate the connection between the claimant's perceptions of insurer actions and the outcome of occupational rehabilitation. The study population included all private sector wage earners[1] whose occupational rehabilitation process involved a service provider and whose rehabilitation case was closed in 2015. The rehabilitee's case is closed in the online system when there is no further need for a service provider in the rehabilitation process. The main reason for this is that the rehabilitation assessments, plans for rehabilitation measures and all preparations needed to start the rehabilitation (e.g. finding an internship or student place) have been made. However, the rehabilitation measures themselves (such as retraining for an occupation) and the contact with the insurer often continue after this stage. Another reason for a closed case is the cancellation of occupational rehabilitation due to any reason, such as significant deterioration of the disability or other change in rehabilitation conditions.

The cross-sectional data were collected in 2017, about 2 years after the claimant's rehabilitation case had been closed in the web service. This point of time was chosen because the occupational

[1]Private sector wage earners are insured according to the Employees Pensions Act (TyEL) and constitute almost 70% of all wage earners in Finland [24].

rehabilitation would probably be over by then for most claimants, and its outcome would be known. On the other hand, not too much time would have passed after the rehabilitation so that the claimants could still remember the insurer's actions during the process.

Setting and participants

The study sample was obtained from KuntoutuNET, a Finnish online service for the processing and maintenance of customer data about occupational rehabilitation. This service is used as a communication tool between the subscribers (all private sector pension institutions) and producers of rehabilitation services (e.g. institutions, companies, communities, and healthcare units providing vocational rehabilitation services). The insurers may choose to use service providers to assist in the planning and execution of occupational rehabilitation within an earnings-related pension scheme in Finland. According to the Service Network of Occupational Rehabilitation (2016), service providers are used to assist in the settling and planning of occupational rehabilitation when the application for rehabilitation compensation lacks a rehabilitation plan, employment or work trials in a former or current workplace are not possible or when the rehabilitee needs close guidance. The service providers are also used to assess the rehabilitee's abilities and opportunities for employment or studying [25].

The sample consisted of 2264 individuals and included all rehabilitees whose cases were closed in the KuntoutuNET online service in 2015. The data acquired from KuntoutuNET included the rehabilitee's identification number, age, gender, and contact details (phone number and/or email-address). An online questionnaire was sent to the respondents on June 6, 2017, and reminder messages were delivered on June 13 and June 20, 2017. The data were collected using a text message and an e-mail survey. The survey was sent by e-mail to a total of 836 people whose e-mail addresses were stored in the KuntoutuNET online service. In addition, the survey was sent by text message to 1428 people, for whom only a telephone number was available.

Variables and measurement

We took into account earlier empirical findings and considered potential effects of insurer actions on RTW outcomes when designing the questionnaire. In addition to questions related to sociodemographic variables and the process and outcomes of occupational rehabilitation, the questionnaire included altogether 26 propositions concerning the actions of the insurers and rehabilitation service providers. These propositions were formed on the basis of earlier studies [3, 7, 12–22], and the key terms were translated from English to Finnish by the authors. The questions were answered on a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The sixth alternative, "doesn't concern me" was coded as a missing value. Since our focus was on the actions of the insurer, we excluded from the analysis the questions purely related to the actions of rehabilitation service providers and ended up with 17 insurer-related propositions (listed as part of Table 4 in the Results section).

To isolate the effect of insurer actions, we included several potential confounding factors in our regression models, for example age, employment situation before rehabilitation, level of education, occupation, monthly net income and cause of rehabilitation. Age was included as a continuous variable and employment situation before rehabilitation as a dichotomic variable. The level of education was grouped into six categories: primary school, secondary school, vocational college, general upper secondary school, and university. The occupation had also six categories: employee, lower official, senior officer, leading position, entrepreneur, and agricultural entrepreneur. The cause of rehabilitation had three categories: musculoskeletal diseases, mental disorders and other causes; and monthly net income had six categories: below 500 euros, 500–999 euros, 1000–1499 euros, 1500–2499 euros, 2500–3999 euros, over 4000 euros.

Furthermore, we included the respondent's motivation and the objectives of rehabilitation as possible confounding factors in our regression models. Motivation was measured on a 5-point Likert scale, the response alternatives ranging from 1 (not at all motivated) to 5 (extremely motivated). In addition, the questionnaire included six preformulated objectives for occupational rehabilitation: (1) return to work, (2) more suitable profession, (3) new job in earlier workplace, (4) improvement of professional capabilities, (5) improvement of mental well-being and (6) receiving a disability pension. The respondents were once more asked to use a 5-point Likert scale ranging from 1 (not at all important) to 5 (extremely important) to rate how important these objectives were to them before starting the process. Similar classifications regarding the motivation and objectives of rehabilitation have been used, for example, by Gould et al. [26].

The most frequently used measures of rehabilitation outcomes are self-rated health or self-rated ability to return to work (e.g. [17, 19, 20]) and employment status after rehabilitation (return to work) (e.g. [27, 28]). Here, we were able to use both measures. The respondents self-assessed their ability to work at the time of answering on a scale of 4 (totally unable to work) to 10 (excellent), which corresponds to the Finnish school rating scale and was therefore considered to be easily

understood.[2] In addition, the respondents were asked whether they had returned to work after the rehabilitation or not.

The employment status after rehabilitation was not an ideal measure of rehabilitation success in our study, since the RTW rate was only 30% and a significant amount of respondents were still in rehabilitation (for example, education leading to a degree may take several years to complete) or unemployed. Therefore, we formed a binary indicator of rehabilitation success by combining the self-rated ability to work and return to work variables. The rehabilitation was regarded as successful if the respondent had fully returned to work successfully or if the self-rated ability to work was 7 (satisfactory) or higher. We considered the objective of occupational rehabilitation (to improve the chances of a disabled individual to earn income in the future and to prevent permanent disability) to have been achieved in these situations.

Statistical methods

Since our aim was to explore the connections between insurer actions and successful rehabilitation, we decided to use factor analysis to determine the dimensions of the insurer's role, and binary regression to explain the result of rehabilitation by factor scores. There were 661 observations which had responses in the relevant variables, and in 108 cases some of the variables had missing values. To include these partially missing observations, we used the full information maximum likelihood (FIML) method.

The factor analysis was conducted in two steps: First, exploratory factor analysis (EFA) was used to determine the constructs or factors which best explain the observed correlations structure of the indicator variables, and, second, confirmatory factor analysis (CFA) was used to check the adequacy of the adopted factor model.

In the explorative analysis we used principal-axis factoring (PAF) since the data were not normally distributed. According to Fabrigar, Wegener, MacCallum and Strahan [29], the principal factor methods are the best choice if the assumption of multivariate normality is "severely violated" [30]. In our case, the responses were measured with the Likert scale, and had high means leading to negative skewness. However, the skewness went beyond the recommended limits of − 1.00 or 1.00 [30] only for two variables (PF1 and SA1; see Table 3), and even for them it was not very high (> 3).

Further, since the sample size was fairly large (549 observations after listwise deletion of missing data) and the results of EFA were almost identical to those obtained by the maximum likelihood estimation (MLE) method, we are confident that the results of CFA, which are based on the assumption of multivariate normality, are sufficiently accurate. Further, since the factors were obviously correlated, we used the promax rotation, which allows for such correlation. For EFA, we provide the factor loadings, means, standard deviations, Cronbach's alphas, and average variance extracted (AVE) and construct reliability (CR) statistics for each measured item in Table 3.

In CFA, we first fitted a model corresponding to that from EFA. The resulting factor scores were used as independent variables in a logistic regression model explaining the success of rehabilitation. However, since the factor effects were ambiguous due to high factor correlation, we fitted another confirmatory factor model with independent factors (labeled as from F_1 to F_4) in order to separate the effects of the factors and to have a parsimonious correlation structure.

This model was not very well-fitting, so we added one further factor (labeled as G) to account for the correlations between the variable groups representing the independent factors. Factor G would represent the individual effect of the respondents, that is, their tendency to answer in a similar way to all questions. The factor loadings of G on all indicators were set to be equal. Further, since factor F_4 had only two indicators, its loadings were also set equal to each other to make the model identifiable.

In the next step, factor scores were computed using the regression method. It turned out that the distribution of the scores of factor G had a long-left tail (Fig. 1). However, this should not pose a problem since the regression method is based on the correlation structure of the variables and does not require the indicators or the factors to be normally distributed. Finally, logistic

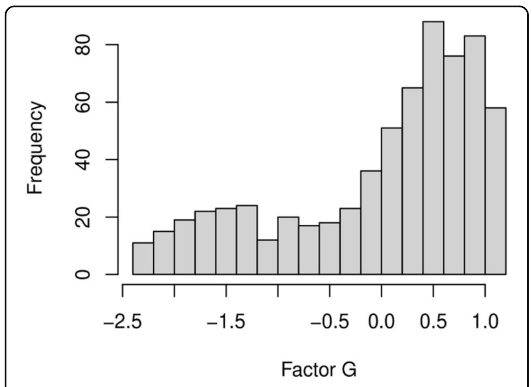

Fig. 1 Histogram of the scores of factor G

[2]Historically, the Finnish school grading system had a scale of 0 to 10, but all grades lower than 4 were consolidated into one failing grade of 4 in 1952.

regression was used to regress the response variable on the factor scores. Probit regression yielded comparable results, but the fit of the logistic model was slightly better.

We also studied whether the connection between the insurer's actions and the outcome of occupational rehabilitation could be explained by confounding variables. We added several likely confounding factors in our logistic regression model, including gender, age, level of education, employment situation, occupation, monthly net income, cause of rehabilitation, motivation and rehabilitation objectives. The demographics were computed and the explorative factor analyses conducted using the SPSS Version 26.0 for Windows; the CFA was run using the package lavaan (Rosseel, 2012) of the R software (R Core Team, 2020), and the logistic regression using the R function glm.

Results

The response rate of the survey was 29% (n = 661). Table 1 shows that the proportion of respondents was higher in women than in men and slightly higher in younger people than in elderly.

Table 2 displays the basic characteristics of the respondents. The age range was 25–63 years, with a median age of 48. Most respondents were male (52%), had a vocational qualification (68%) and suffered from musculoskeletal diseases (66%). With the binary indicator of rehabilitation success (combining the self-rated ability to work and return to work variables), occupational rehabilitation proved successful for 60% (n = 395) of the respondents.

We conducted an explorative factor analysis (EFA) with four common factors for the 17 insurer related propositions. All these items exhibited sufficient factor loadings and communalities (> .50) and were retained for further analysis. The four factors accounted for 93.37% of the total variance, and each factor explained at least 4.34% of the total variance, fulfilling the minimal requirements presented by Netemeyer et al. [31]. Table 3 shows the estimated factor loadings, means and standard deviations of each measured item. Further, Cronbach's alphas, and average variance extracted (AVE) and construct reliability (CR) statistics are provided for each factor. The four dimensions of the insurer's role, their measures in the questionnaire and item codes are shown in Table 4. The propositions in Table 4 were translated from Finnish by the authors; these survey questions can be found in the original language in the appendix.

The first factor is theorized to represent informing and guidance during the rehabilitation process (variables IG1–IG6), the second factor is related to customer oriented approach (variables CO1–CO5), the third factor describes the process flow (variables PF1– PF4), and the fourth factor indicates the service attitude of the insurance personnel (variables SA1–SA2). Altogether, the sizes of the factor loadings (all above .8), AVE measurements (all above .8), and CR scores (all above .9) lend support to the convergent validity of each scale.

Next, we conducted a confirmatory factor analysis (CFA) based on the results above. We first fitted a model with a free factor correlation structure and zero restrictions on factor loadings as indicated by EFA. The model fit was good (CFI = 0.990, SRMR = 0.014, RMSEA = 0.046) although the hypothesis of perfect fit was rejected (χ^2 = 310.8, df = 130, p = .000). When the resulting factor scores were used as independent variables in a logistic regression model explaining the success of rehabilitation, we could find support for hypothesis H_1, which states that the claimant's perceptions of insurer actions during occupational rehabilitation are related to the outcome of rehabilitation.

However, since it was not possible to separate the effects of the factors due to high factor correlations (ranging from 0.548 to 0.746), we fitted another model with uncorrelated factors. The model had an inferior and inadequate fit (χ^2 = 1823.5, df = 137, p = .000; CFI = 0.906, SRMR = 0.496, RMSEA = 0.136). Finally, we fitted a factor model, with four independent factors as indicated by EFA, and one further independent factor accounting for the individual effect and correlation between the variable groups. The fit was almost as good as in the first case

Table 1 Descriptives of the respondents in relation to the intended sample

	Respondents (n)	Intended sample (n)	Response rate by gender and age (%)
Gender			
female	314	898	35%
male	347	1366	25%
Age			
25–34	62	201	31%
35–44	177	538	33%
45–54	257	881	29%
55–63	165	644	26%

Table 2 Basic characteristics of the respondents

	%
Gender	
female	48,0
male	52,0
Age	
25–34	9,3
35–44	27,0
45–54	39,0
55–63	24,7
Level of education	
primary school	2,4
secondary school	13,4
vocational college	68,4
general upper secondary school	6,8
university of applied sciences	3,8
university	5,2
Monthly net income (€)	
0–499	1,2
500–999	13,4
1000–1499	23,7
1500–2499	44,5
2500–3999	14,5
4000-	2,6
Cause of rehabilitation	
Musculoskeletal diseases	66,4
Mental disorders	13,4
Other cause	20,2
Life situation at the time of the survey	
Rehabilitation ongoing	15,2
Successful RTW	30,1
Unemployed	20,9
Unable to work	27,1
Other situation	6,7
Self-rated ability to work at the time of the survey	
Poor (grade 4)	18,9
Tolerable (grades 5 to 6)	23,7
Good (grades 7 to 8)	41,4
Very good (grades 9 to 10)	16,0
Rehabilitation outcome (binary variable)	
Success	59,6
Failure	40,4

(χ^2 = 390.2, df = 136, p = .000; CFI = 0.986; SRMR = 0.060; RMSEA = 0.053). The items' squared multiple correlations (SMCs) ranged from 0.853 to 0.945.

Then, factor scores were computed using the regression method. These scores, excluding the individual effect score, were used as independent variables in a logistic regression model explaining the success of rehabilitation. Figure 2 shows the path coefficients for all the relationships in our two-stage model. All coefficients are statistically significant at the 0.001 level. The coefficients of the factor measurement model are standardized. The results suggest that the insurer's customer oriented approach (β = 3.84) and smooth process flow (β = 3.27) have the highest impact on the success of occupational rehabilitation, but also proper informing and guidance (β = 2.32) and positive service attitude (β = 0.89) are associated with positive rehabilitation outcomes. The pseudo-R^2 values (McFadden = 0.503, Cox and Snell = 0.490, Nagelkerke = 0.664) all indicate excellent model fit. Obviously, this result supports our research hypothesis H_2, which states that the claimant's perceptions of positive insurer actions are positively related to successful occupational rehabilitation.

We also studied whether these results could be explained by confounding variables (gender, age, level of education, employment situation, occupation, monthly net income, cause of rehabilitation, motivation and rehabilitation objectives), which are background variables affecting both the independent variables and the outcome variable. We found that age, self-rated ability to work before rehabilitation, motivation, and the objectives of either professional development or receiving disability pension, along with the insurer factors, were statistically significant predictors of the rehabilitation outcome. Table 5 shows that the inclusion of these explanatory variables slightly decreased the effect estimates of the insurer factors but did not render them statistically insignificant. The pseudo-R^2 values improved (McFadden = 0.579, Cox and Snell = 0.538, Nagelkerke = 0.730). The number of included observations was 608. Thus, we find support for the research hypothesis H_3, according to which the positive relationship between the claimant's perceptions of positive insurer actions and successful occupational rehabilitation remains even if an adjustment is made for all likely confounding variables.

Discussion

Our purpose was to explore the connection between the insurer's actions and the outcome of occupational rehabilitation. Factor scores measuring the dimensions of the insurer's role were used as independent variables in a binary regression model explaining the success of rehabilitation. According to earlier studies, positive encounters with insurers improve the worker's chance of recovery after an illness or injury and vice versa [9, 10]. Our results confirm these earlier perceptions and enlarge evidence-based understanding of the effects of

Table 3 Results of EFA

Item	Mean	Standard deviation	Crohn-bach's alpha	Factor 1	Factor 2	Factor 3	Factor 4	CR	AVE
IG1	3.54	1.38	0.983	0.912				[.969]	[.842]
IG2	3.46	1.36		0.974					
IG3	3.71	1.35		0.910					
IG4	3.70	1.33		0.876					
IG5	3.64	1.33		0.914					
IG6	3.50	1.35		0.917					
CO1	3.39	1.44	0.984		0.892			[.972]	[.878]
CO2	3.72	1.31			0.926				
CO3	3.66	1.37			0.969				
CO4	3.59	1.35			0.967				
CO5	3.70	1.35			0.929				
PF1	4.01	1.27	0.972			0.894		[.943]	[.807]
PF2	3.85	1.23				0.933			
PF3	3.81	1.35				0.927			
PF4	3.78	1.26				0.835			
SA1	4.04	1.20	0.953				0.973	[.907]	[.832]
SA2	3.49	1.32					0.847		

insurer actions on the outcomes of occupational rehabilitation. This study contributes to the literature by identifying the different dimensions of the insurer's role, confirming the connection between insurer actions and successful occupational rehabilitation and by revealing which actions best promote success.

Our results illustrate the multidimensional nature of the insurer's role. Exploratory factor analysis suggested four dimensions for insurer actions. This was tested using confirmatory factor analysis, and factor scores from our final confirmatory model were used as input in a binary regression model. The first objective of the study was to examine the possible connection between insurer actions and the outcome of occupational rehabilitation. According to the research hypotheses, this type of connection would exist (H_1), the claimant's

Table 4 Dimensions of the insurer role and their measures in the questionnaire

Insurer role -dimensions	Measure	Item code
Informing and guidance	I received sufficient information from the insurer	IG1
	The insurer's instructions, announcements and information were clear and understandable	IG2
	I received expert service from the insurer	IG3
	The insurer's staff were easily accessible	IG4
	The different rehabilitation options were adequately discussed	IG5
	I received sufficient information at all stages of the rehabilitation process	IG6
Customer orientation	The insurer considered my personal situation and individual needs	CO1
	The return to work plan reflected my own views and aspirations	CO2
	The return to work plan was feasible	CO3
	The content of the rehabilitation met my needs	CO4
	I had the opportunity to influence the rehabilitation process	CO5
Process flow	I was satisfied with the insurer's compensation decision regarding rehabilitation	PF1
	The insurer started the settlement of rehabilitation at an appropriate time.	PF2
	The insurer carried out the rehabilitation measures quickly enough	PF3
	The rehabilitation process proceeded on schedule	PF4
Service attitude	The insurer's customer service was friendly	SA1
	The insurer sought to highlight the positive aspects and opportunities	SA2

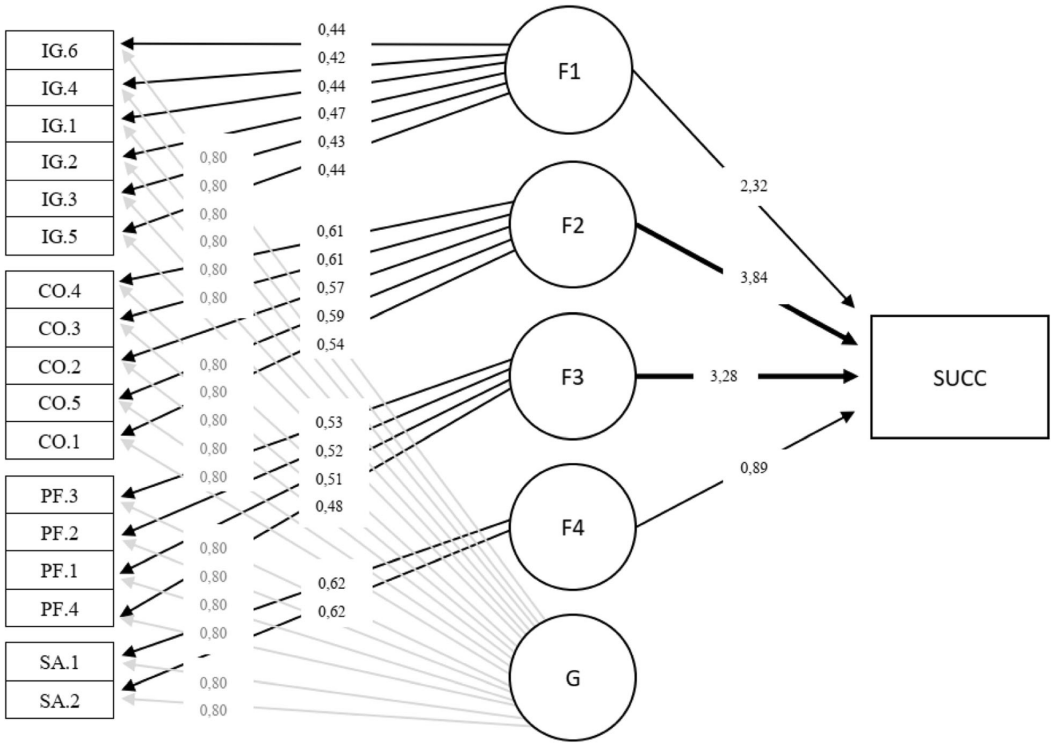

Fig. 2 Results of CFA and logistic regression combined

perceptions of positive insurer actions would be positively related to the success (H_2) and the positive relationship would remain even if an adjustment was made for all likely confounding variables (H_3). All these hypotheses were supported. The second objective of the study was to explore which insurer actions best promote success.

Table 5 Logistic regression model for the successful rehabilitation outcome

Explanatory variable or factor	Coefficient	z-value
F1 - Informing and guidance	1.96***	6.03
F2 - Customer orientation	3.46***	9.85
F3 - Process flow	3.10***	8.87
F4 - Service attitude	0.654*	2.36
Age	−0.042*	−2.34
SRH before rehabilitation	0.258*	2.41
Motivation	0.405*	2.19
Objective: professional development	0.399**	2.93
Objective: receiving disability pension	−0.355***	−3.60

Signif. Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

To test these hypotheses, we first used factor analysis to determine the dimensions of the insurer's role. We came to four dimensions: (1) informing and guidance, (2) customer orientation, (3) process flow and (4) service attitude. Second, we used binary regression to explain the result of rehabilitation by factor scores. The results showed that sufficient, adequate, accessible, understandable, and professional informing and guidance is one significant factor promoting a positive outcome of rehabilitation. The importance of high-quality information and professional expertise has been brought up by various scholars [13, 32], and our results support and validate these previous findings.

The insurer's customer-oriented approach, which includes paying attention to customer needs and involving customers in the planning and decision-making processes, had a significant positive effect on the outcome of rehabilitation. While the importance of customer-oriented approach has been highlighted in previous studies [7, 27, 32], our study suggests that changing the claimant's role from a passive object to an active player is the most effective way for the insurer to promote success. Thus, customer-orientation should be highlighted

in policy design, and new ways of making the claimants participate in the design and implementation of the rehabilitation process should be developed.

Several authors report friction between injured workers and insurers caused by delays in claims handling or claims manipulation [10, 33, 34], which can be expected to have a negative impact on the return-to-work process. Besides discrepancies in the compensation process, the wrong timing of rehabilitation has also proven to be harmful to a successful return to work [28, 35, 36] and vice versa. In accordance with these earlier results, the present study showed that a smooth process flow, including effective claims handling, justified decisions and timely actions, had a significant positive effect on the success of rehabilitation. This effect was considerably large, and alongside the customer-oriented approach, the smooth process flow seems to be one of the most important ways for insurers to contribute to successful rehabilitation. Thus, insurers would benefit from developing the compensation and rehabilitation processes as efficient and consistent as possible. Designated case managers within an insurance company could also improve the process flow.

Earlier studies have reported both negative [32, 33] and positive [14, 16, 37] experiences related to the insurer's customer service. Olsson et al. [21] showed that supportive, encouraging and kind service was significantly associated with promoting the ability to RTW. We found that the service attitude factor had a small, but positive and statistically significant effect on the success of rehabilitation. However, it is noteworthy that the original variable relating to the kindness of service was highly skewed (− 1.163), indicating that the majority of the respondents received friendly service.

We also tested whether confounding variables could explain the connection between insurer actions and the rehabilitation outcome. The results showed that besides insurer actions, also age, self-rated ability to work before rehabilitation, motivation and rehabilitation objectives were statistically significant predictors of the rehabilitation outcome. When adjusting for potential confounding variables, all insurer factors remained statistically significant and the changes in the regression coefficients were minor.

Research limitations and reliability

The questionnaire was created purely for this study. It was built and the hypotheses were formulated on the basis of previous literature. However, there were limitations concerning the development and testing of models. First, the questionnaire was part of a larger survey related to the functioning of occupational rehabilitation. Thus, the focus of the researchers or respondents was not limited to this instrument. Second, the questionnaire had not been used or tested before. However, it was reviewed by external researchers and the steering group of the rehabilitation service network. After receiving feedback, the comments were evaluated, and the questionnaire was revised.

The empirical testing was based on cross-sectional data gathered after occupational rehabilitation. Thus, memory errors and opinion changes are possible, which should be considered when interpreting the results. Furthermore, the Likert scale-based answer options of the survey questions might have been interpreted differently by the respondents. This tendency of giving systematically better or worse assessments on every question was taken into account in our final model by adding an individual effect factor (G). All criteria set for the validity of the factor model were met and all the hypotheses were supported by the data. In addition, the developed model helped verify the results of the earlier studies.

The other factors undermining the reliability of the research are related to the representativeness and suitability of the research data and the reliability of the used methods. The final data set included 661 respondents and the response rate was 29%, which is quite typical of an online survey. In surveys, non-response always occurs, and it is difficult to set unambiguous criteria for acceptable loss. Yet, non-response bias and representation of the population of interest should be evaluated. Table 1 shows the differences between the whole sample and the respondents. Although the proportion of respondents was higher in women than in men and higher in younger people than in elderly, the differences in gender and age between the respondents and those in the intended sample were minor. Thus, in the light of these variables, we consider that the respondents represent the whole sample at a satisfactory level.

Regarding the representation of the population of interest, we compared our actual sample to the population of all rehabilitees within an earnings-related pension in Finland in 2015 [38]. The distributions of the basic characteristics (age, gender, cause of disability) were quite similar, the main differences being that men and those suffering from musculoskeletal disorders were slightly over-represented in our sample, and those suffering from mental disorders were slightly under-represented.

However, the respondents could vary from these populations on an innumerable number of other factors that have not been tested. One major consideration is that our study sample only included rehabilitees who had a contact with a rehabilitation service provider. This choice is not random: a service provider is not usually involved in cases which are straightforward or easy to carry through. Therefore, our results may not fully generalize to a wider population of disabled workers.

Regarding the actual sample size, it can be considered sufficient for the methods used. Musil et al. [39] suggested that a structural equation model (SEM) analysis should have at least five observations for each variable. This condition was well fulfilled. However, it is a limitation that EFA and CFA were performed using the same data. Ideally, the factor model suggested by EFA would be tested with a new data set. In any case, there is a need to continue developing the model and to test its validity with different data.

Finally, the path coefficients in our two-stage model (in Fig. 2) should be interpreted with caution. Although the model is presented as a path diagram, and it is highly probable that there are causal links between insurer actions and the outcome of the rehabilitation, we do not consider the coefficients to be unbiased estimates of the actual causal effects. The reason is that the rehabilitee evaluated the performance of the insurer and the outcome of the rehabilitation at the same time, so that that feedback effects are likely to bias the estimates. Rather, the coefficients indicate the strength of association, or correlation, between the factors and the outcome of rehabilitation.

Conclusions

Our results suggest that the insurer's actions are substantially associated with the outcome of occupational rehabilitation. These findings support and confirm previous research results and help assess the relative importance of different actions by providing effect estimates for them. As for practical implications, the study reveals that the insurer would benefit most from ensuring a smooth process flow and adopting a customer-oriented approach, since they are the most important insurer-related determinants of successful occupational rehabilitation.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-021-11758-w.

Additional file 1.

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Authors' contributions

JP designed and conducted the survey and performed the initial data analyses. Furthermore, JP was the principal contributor in writing the manuscript. AL contributed to data analysis, interpretation of results and writing the manuscript. Both authors read and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

According to the Finnish national board on research integrity (TENK) ethical approval for such study is not required. Informed consent was obtained from all participants. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

Consent for publication

Consent for publication was obtained from all patients for being included in the study.

Competing interests

The authors declare that they have no competing interests.

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