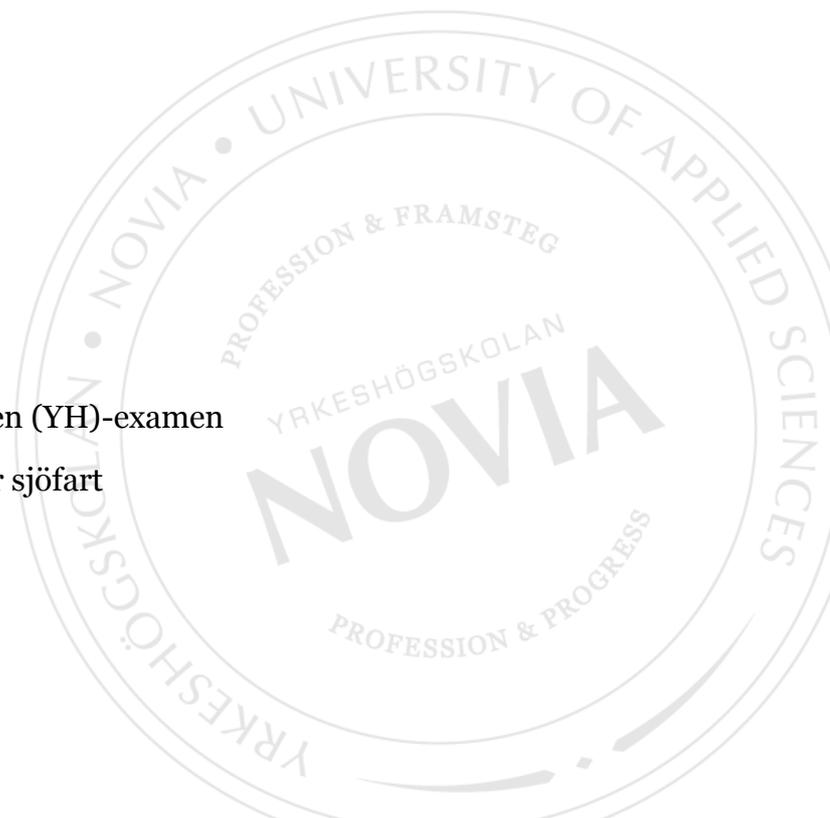


# **Promoting Physical Exercise Among Seafarers**

**A study on the exercise habits, experienced health and attitudes towards exercise interventions among Godby Shipping seagoing personnel**

Voitto Happonen

Examensarbete för sjökaptens (YH)-examen  
Utbildningsprogrammet för sjöfart  
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## **BACHELOR'S THESIS**

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Title: Promoting Physical Exercise among Seafarers. A study on the exercise habits, experienced health and attitudes towards exercise interventions among Godby Shipping seagoing personnel.

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### **Summary**

An employee's life at sea is governed 24/7 by the environment of the vessel. Therefore the employer has great importance in supporting a healthy lifestyle among their employees. There is also an economical incentive for the employer to do this, since the occupational health and job satisfaction can be seen as part of a success strategy for any business. The employees however are free to use the opportunities offered as they will, and therefore the success of any intervention by the employer to promote physical exercise among their employees is dependent on the attitudes of the employees. This bachelor's thesis is a case study concentrating on the personnel's exercise habits, experienced health and attitudes towards exercise interventions by the employer. A survey among the employees, as well as expert opinion and theoretical literature is used in determining which the employer's possibilities of promoting exercise among the employees are, and how accurately the cost effectiveness of these measures can be estimated.

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Language: English      Key words: Occupational capacity, exercise interventions, workplace health promotion, workplace exercise, musculoskeletal disorders, cost effectiveness

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The bachelor's thesis is available at the electronic library Theseus.fi.

## EXAMENSARBETE

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### Abstrakt

Fartygsmiljön reglerar sjöfararens liv till sjöss dygnet runt och 7 dagar i veckan. Därför är arbetsgivarens roll mycket betydande i stöddet av en hälsosam livsstil bland arbetstagarna. Det finns också ekonomiska orsaker för detta stödande för att bra arbetshälsa och trivsel på jobb kan ses som en del av företagets strategi för succé. Varje personalmedlem är fri att använda det medlen som arbetsgivaren bjuder enligt sin vilja, vilket medger att det är helt beroende av personalens attityd mot denna intervention hur framgångsrik den skall bli. Detta lärdomsprov är en fallstudie som fokuserar sig på Godby Shipping sjöpersonalens motionsvanor, arbetshälsa och attityder mot arbetsgivarens motionsinterventioner. Med hjälp av en enkät bland personalen, expertåsikter och teoretisk litteratur forskas hurdana möjligheter arbetsgivaren har för stödande av motion, samt hur noggrant det är möjligt att uppskatta de nämnda åtgärdernas kostnadseffektivitet.

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Språk: Engelska      Nyckelord: Arbetsförmåga, motionsinterventioner, arbetshälsovård, arbetsplatsmotion, belastningsbesvär, kostnadseffektivitet

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Examensarbetet finns tillgängligt i webbiblioteket Theseus.fi

## OPINNÄYTETYÖ

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### Tiivistelmä

Alusympäristö säätelee merenkulkijan elämää merellä ympäri vuorokauden ja viikon jokaisen päivänä. Siksi työnantajan rooli on tärkeä terveellisten elämäntapojen tukijana työntekijöiden keskuudessa. Työnantajalla on myös taloudellisia syitä terveellisten elämäntapojen tukemiseen sillä hyvä työterveys ja -tyytyväisyys voidaan nähdä yhtenä yrityksen menestystekijänä. Työntekijällä on vapaus käyttää hänelle tarjottuja mahdollisuuksia halunsa mukaan, joten työnantajan liikuntainterventioiden menestyksekkäys on riippuvainen työntekijöiden asenteista työpaikkaliikuntaa kohtaan. Tämä opinnäytetyö on tapaustutkimus joka kohdistuu Godby Shipping Oy:n merihenkilöstön liikuntatottumuksiin, koettuun terveydentilaan ja asenteisiin liikuntainterventioita kohtaan. Tutkimuksessa on käytetty henkilöstön kyselytutkimusta, asiantuntijan mielipiteitä sekä lähdekirjallisuutta apuna selvittäessä mitkä ovat työnantajan mahdollisuudet lisätä liikuntaa työntekijöiden keskuudessa, sekä kuinka tarkasti näiden toimenpiteiden kustannustehokkuutta voidaan arvioida.

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Kieli: Englanti

Avainsanat: Työkyky, liikuntainterventiot, työterveyshuolto, työpaikkaliikunta, tuki- ja liikuntaelinsairaudet, kustannus-hyöty

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Opinnäytetyö on saatavilla ammattikorkeakoulujen verkkokirjastossa Theseus.fi.

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## **List of abbreviations**

BMI – Body mass index

DWT – Deadweight tonnage

EU-OSHA – European Agency for Safety and Health at Work

FIOH – Finnish Institute of Occupational Health

FSS – Finnish Seamen's Service

MSD – Musculoskeletal disorder

OS – Ordinary seaman

RCT – Randomized controlled trial

Ro-Ro – Roll on-Roll off

SPF – Seafarers' Pension Fund

## 1 Introduction

This bachelor's thesis is a case study on workplace health promotion in the shipping company Godby Shipping Ab. The focus of the study is on the promotion of exercise among Godby Shipping seagoing personnel for the improvement of occupational health, especially for preventing or mitigating MSDs (musculoskeletal disorders). The idea is to find out how company actions and projects can give possibilities for the physically active to continue this activity onboard and how, if at all, it would be possible to promote physical activity among those who are less physically active. Attention is also given to incentives to increase physical activity on leave as well. These actions as a whole are referred to as exercise interventions, a term adopted from the theoretical literature used for this study.

The spaciousness of accommodation and other factors limit the possibilities for physical training in a different way on different ships, and therefore the study is done on all the vessels of the Godby Shipping fleet. Because of the limited space on the smaller vessels, the possibilities of functional training requiring less space and equipment are explored. Consideration is also given to the cost-effectiveness of company exercise interventions and investments in comparison with the cost of sick leaves to the employers and the shipping branch as a whole. The approach is qualitative, practical and problem-based.

In recent times the possibilities for promoting occupational well-being and health among seafarers has been an important topic of discussion in the Finnish maritime community. Shipping companies and other organizations have started co-operating for this goal. The focus of occupational healthcare has shifted towards preventive measures. Examples of this have been the FIOHs Turku sub-department's Trimmare project in 2003-2006 with its follow-up "Body Age" pilot project and the Good Working Life at Sea –seminar organized by the Seafarers' Pension Fund in 2013. (Seafarers' Pension Fund 2013)

I have been working for Godby Shipping as a deck rating and a deck officer since 2008 first as a temporary and later as a permanent employee. I have not been a seaman all my working life. Before starting as a fulltime deck officer I worked ashore building events in a conference center. This line of work was quite physical and included plenty of lifting and carrying in different positions. During that time I never had any back problems. I continued this work while on shore leave from my position as an ordinary seaman.

When I started working as a fulltime deck officer I quit my shore job and instead spent most of the shore leaves studying instead. After this I started having back, shoulder and neck problems. My work as a deck officer was less physically active compared to my work ashore or as an OS. Large part of the work is done sitting down. Only occasionally physical work is required when for example dragging chains and hawsers or tightening belts. This is usually done without any warm-up, thus further increasing the risk of injury for untrained muscles and joints.

During this time I also noticed that these problems could be mitigated by working out, often simulating the kind of motions I used to do in my work building events. Working on a fairly large vessel with a gym I had better opportunities for this than I had earlier had on smaller vessels. However, I have always been physically active, and continuing this habit onboard has created an interest in studying how being physically active and healthy can be combined with the quite special circumstances of working onboard a ship. For a physically active person this may come more naturally than for those less physically active.

Stemming from my personal experience above, the basic assumption when setting out to write this thesis is that musculoskeletal disorders (MSDs) can be prevented with physical exercise. There is also a large consensus amongst occupational health professionals (e.g. Fogelholm et al. 2007, 5-11) that healthy physical exercise increases occupational well-being and the lack of it is the foremost risk factor influencing the amount of sickness absences. If and how this activity could be promoted amongst employees is in the core of this study.

The hypothesis in this work is that a large part of the employees are not getting enough exercise, and that those who already are physically active would increase their activity if the employee would provide better possibilities for this. On the other hand the study seeks to find out is whether those more physically passive would need stronger incentives in order to have long term results. The fourth hypothesis is that economical benefits from increased physical activity, such as fewer sick leaves, would make the costs justifiable.

## **1.1 Objective**

The study is made from a practical viewpoint, with the employer's possibilities for encouraging physical activity in mind. The idea is to consider the practical application of these possibilities. Since the employees are not robots who go along with whatever the company suggests, the opinions and attitudes among them have to be taken into consideration as well. This is to consider whether it is at all feasible for the employer to have an influence in this matter.

## **1.2 Problem formulation**

In this chapter the problem formulation of this study is explained or, in plain words, the questions for which we are trying to find the answers to are explained. The key questions are as follows: What are the health problems experienced by the crews, and are they related to work, sport or other root causes? Can the aforementioned problems be mitigated through exercise? This is question mainly addressed through theoretical literature. Are the employees getting enough exercise and how much is enough? How could the amount of exercise be increased and could it? This is the core issue of this thesis. How the cost effectiveness of the measures taken be evaluated? And finally, the study tries to find out what could be a practical solution supporting the employees' exercising, given the limited space and resources in the shipping context. Next the problematic behind each of these questions is considered in detail.

### **1.2.1 Health issues**

According to research (for example Fogelholm et al. 2007), health issues in the musculoskeletal system can be related to either lack of exercise, or too strenuous exercise, as well as strenuous work, or poor ergonomics.

In this study the aim is to see if any health problems are related to lack of exercise or exercising too much. In the survey the respondents were asked about their experienced health issues, and the possible reasons of those issues. This was to see if the problems were

more related to lack of exercise or if they were actually sports injuries caused by exercise or, more probably, wrong kind of exercise or lack of proper warm up or muscle maintenance, which could include functional exercises that improve coordination, mobility and stability.

### **1.2.2 Help through exercise?**

As stated earlier, exercise has been found to have a positive correlation to reduction of sick leaves and pensions. The latter two induce costs both to the employer and society, and therefore there is reason for trying to find ways to increase exercise. In addition to nutrition exercise is also important in preventing obesity, which is a common problem among seafarers. Godby shipping has earlier made efforts to increase physical activity of the employees through different campaigns. The results have not always been satisfactory, and therefore this study is trying to find new ways to succeed in this as well as outline the opinions of the employees in relation to exercise.

### **1.2.3 Are the employees getting enough exercise?**

Before considering if there are viable ways of increasing exercise levels among the employees to improve their health or job satisfaction, it should be made clear what is the goal we are aiming for, i.e. how much exercise is enough to have a positive effect on health. In addition to that it is useful to find out how much the employees are exercising now to see how far we are from the goal and what kind of exercise is especially failing to meet the recommended amounts. This question is evaluated with the help of the survey and recommendation called the physical activity pie by the UKK institute, which is addressed in detail in the theoretical background chapter of this thesis

### **1.2.4 How could the amount of exercise be increased, or could it?**

When the employee wants to promote physical activity among its employees it is natural to consider the effectiveness as well as the cost effectiveness of the measures to be taken. With limited resources there is no point in wasting them.

When considering the effectiveness these measures there are many questions to be taken into account: How are the measures met among the target group, i.e. the crews, are they possible on the ship in question, are there any risks involved, how much they cost, should the measures be limited to the workplace or should they reach to shore leave as well and how much they improve the situation on one hand on the physical level, and on the other hand on the cognitive-behavioral level.

The improvements on the physical level can be seen in physical fitness, work ability and the amount of sick leaves, whereas the improvements on the cognitive-behavioral level can be seen in attitudes towards physical activity as well as exercise behavior, or in plain words: how much the persons work out. (Nurminen 2000, p. 11-17)

### **1.2.5 Costs**

A major incentive for a company trying to improve the working ability of its employees is, aside from caring for their well-being, reducing the costs of sickness absences and health care costs, as well as keeping the work force fit for work and lengthening their careers, thus reducing the need for recruitment and loss of tacit knowledge. Therefore an economical gain for different investments in occupational health could possibly be estimated and thus the cost-effectiveness for these measures may be evaluated.

### **1.2.6 Practical application**

As can be seen from the figures 1 and 2 below, the possibilities for installing gym equipment differ significantly between the vessels. Therefore it is difficult to give universal recommendations for what should be available on each vessel. If, for example the company would introduce a system of working out during paid hours, the possibilities for doing this in a meaningful way would not be the same on all vessels.

This is why the possibility of developing an adapted training system which has been developed especially for the onboard environment has been explored in this study. Such a

system should not be dependent on training equipment, but instead would use a functional exercise approach.

The crews on the ships have been inventive in finding suitable places for training equipment, but especially in a tropical or a very cold climate large parts of the ship, such as the storage in figure 1, may not be very suitable for working out.



Figure 1. The “gym” in the storage room under the forecabin of MV Midas (picture taken 2009)



Figure 2. The gym on MV Misida (picture taken 2011)

### 1.3 Delimitation

Occupational health is a many-faceted problem field, which apart from physical activity concerns among other things nutrition, rest, physical and psychological stress and exposure to hazards such as noise or nanoparticles. (EU-OSHA, 2013) This is especially true for work at sea, where the employees' lives are governed 24/7 by the environment of the vessel. Even though the above mentioned factors are largely intertwined, in this study the approach to the issue at hand is done through the aspect of physical exercise, and the promotion of it. This is done partly to limit the scope of the research to match the requirements for a bachelor's thesis, but mainly because according to for example Fogelholm (et al. 2007) physical inactivity increases the risk for absences more than any other of the main risk factors among the working population. Second on the list comes BMI above 25 or below 18.5 (i.e. over- or underweight), which (in addition to nutrition) is closely linked to physical activity.

Promoting physical exercise is one of the easiest ways for employers to invest in the well-being of their employees; however the effectiveness of these measures may vary depending

on the individual at hand. Therefore I find it interesting to study how and if more people could become active in improving their health and work ability through exercise. Nutrition is another key issue in being healthy, and similar in the sense that in the maritime profession the whole diet during work periods is mostly defined by the workplace. Nutrition is however limited outside of this study, because probably almost all employees would probably want to eat good and healthy food with plenty of variation, and providing this is greatly dependant on the individual cooks on the vessels. On the other hand, nutrition and the ways to systemize it inside the company to set a standard for good nutrition without increasing the cost of provision would be an interesting research topic in itself.

Even though obesity in itself is a significant health issue among seafarers, it has been left outside this study, partly because it has been a focus in an earlier thesis and partly because this study is more focused on the short-term health effects of physical activity, and obesity can be seen more as a long term one and one very closely linked to nutrition. Naturally the measures intended for promoting physical activity among employees will very likely have an effect on overweight as well, and therefore their effectiveness can be valued in that sense as well, but for the aforementioned reasons body weight has been left out of the survey. Nevertheless the measures to promote exercise are also seen from the viewpoint of preventing or reducing obesity, since everything in physical health is intertwined and cannot be considered completely separately.

## **2 Theoretical background**

In this chapter the some key concepts in the field of the study are explained and a look is taken at some earlier studies regarding exercise interventions, occupational health and physical fitness. In addition the recommendations for exercising are explained and some examples of promoting physical exercise are given. Also the cost evaluation context is explained.

## 2.1 Subject-company profile

Godby Shipping Ab is a family-owned shipping company with its head office in Mariehamn. It operates seven ro-ro cargo vessels with tonnages ranging from the 4,453 DWT Link Star, built in 1989, to the 11,407 DWT sisters Misida and Misana, built in 2007. The vessels are owned by two companies, Minicarriers Ab and Trailer-Link Ab with Godby Shipping acting as an umbrella organization for the three companies forming the Godby Shipping group. All of the vessels are registered under the Finnish flag. (Sjöström 2013)

The company employs about 160 persons, with less than 10 of them in the land organization. The majority of the seafarers are from Åland and mainland Finland, some from other EU-countries such as Estonia and Sweden and a few from the Philippines.

## 2.2 Workplace health promotion

European Agency for Health and Safety at Work (EU-OSHA 2013) defines workplace health promotion in the following way:

“Workplace health promotion (WHP) is the combined efforts of employers, employees and society to improve the health and wellbeing of people at work. This is achieved through a combination of: improving the work organisation and working environment; promoting the participation of workers in the whole process of WHP; enabling healthy choices, and encouraging personal development.” (EU-OSHA 2013)

Further, EU-OSHA states that WHP means more than merely meeting the legal requirements for health and safety. It means helping the employees actively improve their health and well-being at work and in life in general (the cognitive-behavioral level mentioned earlier in chapter 2.2). In order to succeed in this, the needs of the staff have to be taken into account and the employees must be involved in making their workplace better, instead of being passive targets of WHP projects (EU-OSHA 2013). This is why it is essential to hear the employees' opinions on the subject of promoting physical exercise on the vessels or at home, in this case with the help of a survey.

All this may sound quite idealistic, but it has been proven in several studies that WHP has positive consequences (EU-OSHA 2013) some of which can be measured in economic terms as well. These include fewer absences, better motivation and productivity and improved image for the employer as one that cares for its employees' well-being.

### **2.3 Earlier studies concerning work health and its connection to physical exercise.**

Earlier systematical studies on improving the health of seafarers through the promotion of physical activity do not exist or at least they are very difficult to find. The workplace health promotion among other profession has been done, also in Finland. There have been projects to increase occupational wellbeing among seafarers in Finland (e.g. Trimmare) but the effects of these have not been widely studied. In the Trimmare project there were surveys beforehand to find the problems related to occupational wellbeing, but there was no systematical follow-up study to evaluate the effects before the Body Age project by the SPF, the results of which are yet to emerge. Therefore research in other fields of work has to be used as a basis for this study.

The main theoretical motivation for this study and also for the motivation for considering interventions such as those proposed in this study is the doctoral thesis by Eija Nurminen: *Työpaikkaliikunnan vaikuttavuus liikunnanharrastukseen, fyysiseen toimintakykyyn, tuki- ja liikuntaelinoireisiin, koettuun työkykyyn sekä kustannus-hyötyyn ruumiillisesti keskiraskasta työtä tekevillä naisilla. Systemoitu kirjallisuuskatsaus ja satunnaistettu vertailututkimus.* (2000)

The thesis studies the effects of workplace physical training on employees' training habits, physical ability, musculoskeletal symptoms, experienced work ability as well as cost-effectiveness of said measures on females in manual labour. It comprises both a systematic literature review and an evaluation study done as a randomized controlled trial (RCT) (Nurminen 2000). Although the evaluation is done on groups of female textile workers, in my opinion the results can be universalised to a male dominated profession like seafaring. In any case, the jobs onboard a vessel differ so much from one another, that any reference to studies done in other professions must of course be carefully evaluated.

In my experience most jobs in modern shipping are not extremely physically strenuous, at least not all the time (apart from some lashing, overhauling and removing ice perhaps), compared to those in which I have worked before (event building and factory anodizing line for example). Therefore the type of manual labour in the study is comparable to the “average” job onboard. On the other hand, much of the work onboard is done in ergonomically very difficult postures for example in the confined spaces of the engine room or when removing rust from places close to the deck or high in a mast or a crane. In this sense improvements in physical ability and mobility may be even more important in this line of work. The positive effects of physical training on employees’ in sitting-down jobs have been shown elsewhere (e.g. Fogelholm et al. 2007, 5-11)

The systematic literature review done in the thesis makes a very precise analysis of the reliability of a number of research projects on workplace health promotion intervention, and only those fulfilling the set standards are chosen for the research. This gives a fairly wide perspective on the subject of evaluating the effectiveness of different measures to improve the exercise habits and physical fitness of the employees (Nurminen 2000, p 6-36).

This review is able to comprise the results of a large variety of research in a reliable way. Although there is a limited amount of wide scope research with several result variables, the following findings have been made in Nurminen’s (2000) review.

According to randomized evaluations there is not enough evidence that the testing of physical ability and personal exercise recommendations has an effect on short- or long term physical activity. There is a need for personal support and possibly combined intervention, such as incentives supporting the behavioural change (Nurminen 2000, p-35).

Of the different interventions tested in the evaluations, the most effective proved to be the support of exercise behaviour through rewards and incentives. Quite effective was also the combination of personal support, and moderate regular workplace exercise combined with home exercises. The interventions most widely used in this case were tailor-made training programs for each employee, with follow-ups to support them.

The evidence to support the effectiveness of mere cognitive-behavioural interventions, such as group discussions, was not found to be very solid. Many of the studies reviewed were American or Canadian and one should be cautious in applying their findings in Europe, because of the differences in culture and healthcare systems (Nurminen 2000).

According to the evaluations that fulfilled the criteria to be accepted in Nurminen's review there was no significant evidence that workplace exercise had an effect on sick leaves. The same was found in four earlier Norwegian studies (Alvestad et al. 1998). However, the later source by Fogelholm et al. (2007) seems to prove otherwise. One can say that on the basis of these studies the evaluation of the cost-effectiveness of exercise interventions is somewhat speculative, since the studies somewhat contradict.

In Nurminen's (2000) doctoral thesis was also included a randomized evaluation of an exercise intervention on female laundry workers. The goal of the study was to find out how an 8-month program of one-hour-per-week exercise instructed by a physical therapist affected the employees' exercise habits, physical ability, the frequency of musculoskeletal symptoms, subjective work ability as well as the cost-effectiveness of the program in relation to sick leaves. The comparison was made between two groups of workers. Both groups received physical checks and tests as well as personal feedback, but only one group received one hour of instructed exercise every week for 8 months, while the other group was the control group. The results were then followed for a period of 15 months.

In the exercise group both the amount of exercise in addition to the group exercise and physical strength and endurance improved statistically significantly compared to the control group. Also the amount of musculoskeletal symptoms diminished in some categories, especially in neck and shoulder pain in both short and long term examinations. (Nurminen 2000, p. 46-47)

In regard to cost effectiveness there was no significant difference in sick leaves, which means the cost-effectiveness of the program was negative. In other studies however it has been pointed out that the long term indirect positive economical effects of physical exercise can be hard to measure (Nurminen 2000, p. 65-66).

In regard of the exercise interventions' effect on work ability of workers in office jobs, such as a deck officer especially on longer voyages, there is also contradiction in the

sources. According to Fogelholm et al. (2007) the effectiveness of workplace exercise has been proven, but on the other hand one more recent study (Sjögren et al. 2010) on office workers shows only a slight, although statistically significant improvement in experienced work ability after an intervention.

Based on the source literature the researcher is left with a certain ambivalence: On one hand physical inactivity is the most important risk factor for sickness absences (e.g. Fogelholm et al. 2007) when looking at employees' exercise habits and sick leaves, but on the other hand interventions to increase physical activity do not necessarily result in decreasing of sick leaves (Nurminen 2000 and Sjögren et al. 2010). The most probable cause for this is that the long term results of physical activity intervention need more research. To mix things up there is the observation by Fogelholm et al. (2000) that working out excessively may actually increase the amount of sick leaves, which makes sense to all active sportsmen and women; as the Finnish saying goes: "An athlete never sees a healthy day."

### **2.3.1 Physical fitness from a safety management viewpoint**

The focus on this study is on exercise for improving the health, work ability and sick leaves of the employees, and from this viewpoint the motivation of workplace exercise promotion is keeping the employees healthy. However physical fitness can also be seen from a safety management viewpoint. Especially in accident situations, such as heavy lifting, abandoning vessel or fire, physical ability and fitness can be of crucial importance. Especially smoke diving and the ability of seafarers to handle a prolonged smoke diving mission in a real situation has been under recent scrutiny, among other things in the Seafit project by the Finnish Institute of Occupational Health and a bachelor's thesis in Novia UAS (e.g. Heinonen 2013). According to the same thesis by Heinonen a significant percentage of maritime students are overweight judging by their BMI. Measuring overweight with BMI has been criticized as being outdated (the index was created in the 1800s) but it is still used as a valid indicator for the probability of health problems. (Fogelholm et al. 2007, Gorman 2013)

There are no BMI or similar absolute limits for obesity in the regulations for the biannual medical examinations of seafarers in Finland (Act on Seafarer's Medical Examination

2010) even though obesity can be seen both as a health and a safety risk. The view of at least one doctor (personal discussion 2.4.2014) is that the health problems related to obesity, such as diabetes, are often themselves reason enough to deny the seafarer's medical certificate.

## 2.4 The recommended amount of physical activity

The question of how much is enough can be pondered with the help of national recommendations for adult population. One such recommendation is the physical activity pie (see figure 3) by the UKK Institute which gives recommendations on how much endurance or cardio exercise on one hand and muscle and balance exercise on the other a person should do per week to have a positive impact on health. (UKK Institute 2010)

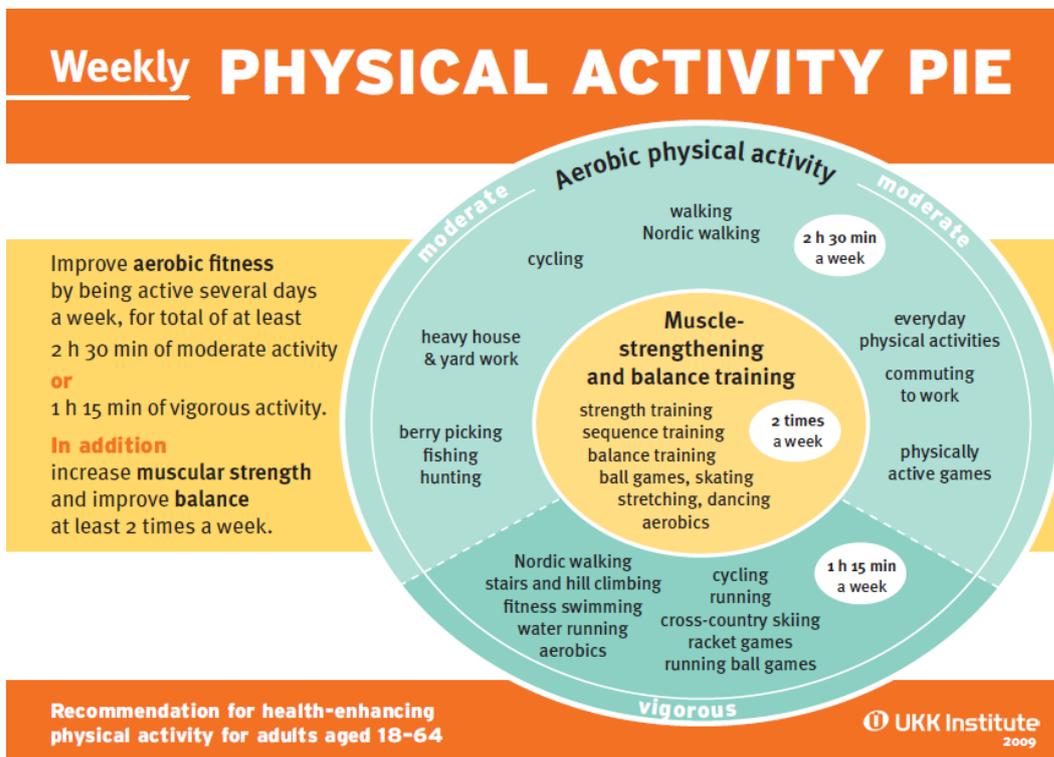


Figure 3 Physical activity pie (UKK Institute 2010)

As can be seen from the diagram the amount of weekly recommended hours is not very high, and the recommendation must be seen as a bare minimum to have a positive effect. In onboard work for engineers and deck hands the demand of 2h 30min of moderate activity which could be quite easily met if the job assignments for that week happen to include especially physical activities such as hold washing etc, which is the opinion of many respondents in the survey. However the two times per week demand of strength and

balance training requires specific exercise in addition to normal work. The recommendation by the UKK institute is used in this study to evaluate whether the amount of physical activity the respondents are receiving is enough to have positive health effects.

## 2.5 Costs of sick leaves to employers

Sick leaves are a major cost in any business as can be seen from table 1. On average in Finland the cost of sick leaves is about 5 % of the salary costs. In many companies cutting sick leaves to half could double the profits (FIOH 2014).

Table 1 Average direct and indirect cost of sick leaves to employers in Finland

Size of the organization in man-years	Direct losses from sick leaves in salary costs (215€/workday)	Total cost of sick leaves to the employer (351€/workday)
100	208 090 €	340 470 €
250	520 224 €	851 175 €

(State Treasury 2012)

Shipping is not as workforce intensive a business as most others, but still the cost of one sick leave day is high. The costs of a sick pension are of course even more significant both to the company, the branch and the employees, as the pensions paid out are gathered in part from the pensions fund fees. In shipping minor sicknesses don't result in a sick leave as easily as onshore, as the culture onboard is that a minor flu doesn't stop one from working. On the other hand because of the high amount of working hours per day and the fact that a substitute always has to be hired for the employees on sick leave, the cost of one sick leave day is very high for a shipping company and the insurer.

## 2.6 Evaluating cost-effectiveness

The cost effectiveness of a measure taken to promote workplace health can be evaluated in several ways. One example is an online calculator developed by the Finnish Institute of Occupational Health (FIOH) for evaluating the profitability of projects aimed at enhancing occupational well-being (Finnish Institute of Occupational Health 2013)

Linear optimizing could be used for evaluating a combination of different costs and projected benefits. An example of costs to be taken into account would include: training on paid hours, training vouchers or a personal trainer's expenses for a visit onboard.

In Nurminen's thesis (2000) as well as in other research such as Sjögren's (2010) randomized trial the researchers have concluded that it is difficult to evaluate the cost effectiveness of WHP interventions because the short or long term results in reduced sick leaves and work ability need more research to be proven.

## **2.7 Examples of how the occupational health of employees can be targeted**

Below there are a few examples found in the literature review on how workplace health promotion can be tackled in practice. These examples are mainly focused on exercise promotion, but in the Trimmare sub-chapter also the ideology behind the pre-emptive approach is briefly addressed.

### **2.7.1 FIOH**

The Finnish Institute of Occupational Health (FIOH) gives suggestions about different ways for employers to promote exercise amongst their employees (FIOH 2012):

- 1) Giving out exercise and recreational vouchers (liikuntaseteli). The employer can acquire exercise vouchers for their employees which he/she can then use as a method of payment in many sports facilities around the country, for example gyms, sports centers, swimming halls etc. (FIOH 2012). The economical incentive given from the government's side with the voucher system is that under Finnish law (Income Tax Act 69 § 5 mom.) these vouchers are considered an income tax-exempt benefit under certain conditions, such as a maximum value of 400€ per calendar year. The fact that the employer fees and income taxes in shipping are subsidized anyway undermines this benefit.

- 2) Exercise led by an instructor or in a gym. Employers can offer instructed training sessions for their employees or organize the building of a gym at the workplace. Especially in larger organizations these activities are managed by a workplace sports club. The employer can also provide season passes to a gym for the employees. These benefits are tax-exempt as well. (FIOH 2012).
- 3) Physical exercise during breaks or themed sports days. On themed sports days all employees on shore leaves could try out different sports activities and thus find a new hobby. The employees could be given the opportunity to use work time for physical exercise, for example one hour per week. (FIOH 2012).
- 4) FIOH (2012) also suggests providing the employees with bicycles for commuting, and equipment for safe cycling. In a maritime context this could mean bicycles on ships for going ashore. Providing the employees with bicycles for use while on leave is also one option. Incentives for using a bicycle in everyday traffic can also be created with smaller investments, such as bicycle helmets, high visibility vests, rainproof clothing etc. (FIOH 2012)

### **2.7.2 Trimmare project**

The Trimmare project in 2003-2006 was aimed at improving the work ability and occupational wellbeing of seafarers. The goal was that occupational wellbeing would be seen as part of the employees' health and thus a factor in the economical success of the shipping companies.

A prerequisite for the vessels to participate in the project was that they were sailing under the Finnish flag, meaning that one of the economical beneficiaries of the increased work ability would be the Seamen's' Pension Fund in the form of reduced sick pension allowances. The idea was to create new, permanent ways of operation in the vessel communities.

The project was divided in four sections:

- Improving the work environment
- Developing the workplace community

- **Changing the focus of occupational healthcare towards a pre-emptive approach**
- **Activating the individuals to take part in the improvement of their own wellbeing**

The two latter ones are the approach chosen in this thesis as well, even though improving the chances for exercise onboard can also be seen as improving the work environment. Developing the workplace community could in the sense of exercise promotion mean giving the power to the crews to consider the best ways to increase physical activity after a set budget has been given by the employer.

To get information on the starting situation the prevailing state of occupational well-being and the needs for improvement were mapped with interviews and surveys. An important part of the project was assessment of the health risks on each vessel.

In the operative stage so-called trimmers were recruited to activate people into action and they were also educated for this mission. Activation of individuals to improve their wellbeing both onboard and on leave was a key issue. This project has spawned continuation for example in the SPFs “Body Age” project. (SPF 2013)

### **3 Method**

The employer can only provide means for a healthy lifestyle, but every employee has great responsibility in improving their own health, since the employer cannot force anyone to working-out on their spare time (Fogelholm et al. 2007), and therefore it is useful to find out about the attitude towards physical exercise among the employees. This can be achieved through a survey. The results of the survey are analyzed in the conclusions chapter for example by comparing them to the present recommendations for physical activity. To get an expert opinion on the challenges that promoting exercise in an onboard environment a consultation with an occupational therapist and sports instructor was included in the study.

### **3.1 Survey**

The survey (appendix 2) was an anonymous web survey made with the help of Google docs. This is an online application where you can develop (among other things) surveys and get the responses in both a graphical summary and spreadsheet with all the individual responses for in depth analysis.

The link to the survey was emailed to all the employees in the seagoing personnel registry of Godby Shipping. It was accompanied by a covering letter (appendix 1) explaining the goal of the survey as well as the research ethical statements such as anonymity.

In the survey there were 16 questions. Most of the questions were multiple-choice, with a free text field in many of the questions to get more precise answers and to record things that were not anticipated as possibilities by the researcher. This is in line with qualitative nature of the study.

#### **3.1.1 Population of the survey**

The survey is aimed at the personnel working on Godby Shipping's vessels. Different ranks onboard have very different work load regarding physical demands and ergonomics. Also different vessels have different opportunities for exercise. The trades differ between the vessels, and therefore there may be less or more time for working out depending on the trade. In recent years, due to the diminishing demand for transport in the Nordic forest industry, the company has been forced to look for other markets, and therefore also the climates in which the vessels operate range from tropical to sub-arctic, further increasing the differences in the environment for promoting physical activity. For example, depending on the time of year on some vessels it may be too cold and slippery on deck to exercise safely outside, while on another it may too hot for an overweight, not-too-fit person to do so.

### **3.2 Expert consultation**

To get ideas from an expert an occupational therapist and physical trainer was consulted for the study on 7.4.2014. B.Sc. Miia Riihimäki is an occupational therapist and has further expanded her expertise in sports and leisure instruction on the UAS level. She has experience in physical training on the national league level both in women's football and women's floor ball. She has introduced functional training to those teams with the aim of reducing injuries and increasing muscle control. The consultation was made in a non-structured way and some key notes from the conversation are summarized in the conclusions chapter of this study.

### **3.3 Calculating costs**

A rough estimation of costs can be made for different measures made for promoting physical activities at the workplace or at home. This was made by adding together the costs of work hours, equipment etc. used for a certain intervention. These can then be compared to the potential benefits resulting from the respective measure. One way of comparison is the cost-effectiveness calculator by FIOH (2013), which is based on average costs induced by absences and rotation of the workforce.

The potential benefits are highly speculative, because they cannot be measured beforehand. The only way of doing so would be comparing for example the sick leaves by persons who work out a lot and person who don't. There is of course always the risk of outside factors not taken into account in such non randomized evaluations.

## **4 Results**

The key results of the survey are presented here with some analysis as well as some notes from the expert interview. The entire results of the survey are presented as a graphical summary on all the questions can be found as appendix 3 of this study. Further conclusions on the basis of the survey are made in the conclusions chapter.

## **4.1 Reliability of the survey**

Making statistical conclusions would require a sufficient response percentage. This is a precondition of making proper quantitative research. This study however is using a more qualitative approach to using a survey, trying to interpret the results with the help of the free text fields in the survey and therefore a low response rate doesn't prevent making conclusions on the basis of the survey. In any case, the response rate remained relatively low, with 38 of the 145 recipients of the survey responding to it. This gives a response percentage of 26%. With 38 responses from a base group of 145 the survey gets a margin of error that is over 10%. The positive thing is that responses came from all of the vessels, so the views of employees in all different environments were received.

The low response rate gives rise to the concern that the respondents are biased towards the more physically active type, because they are probably more interested in responding this kind of survey. On the other hand some of those strongly opposing to taking part in the company's exercise interventions have responded as well, as can be seen in the results. In any case these points must be taken into account when interpreting the results.

## **4.2 Background information**

In the first part of the survey some background information on the recipients was collected. This was to see how they looked in terms of age, rank and vessel they were working on, which would be helpful in determining how representative the results were. Here the background of the response group will be presented concisely.

### **Question 1: How old are you?**

In the first question the respondents were asked to choose an age group they belonged to. This was done to see how representative the responses were in respect to the respondents' age. The different age groups respective sizes are presented in figure 4.

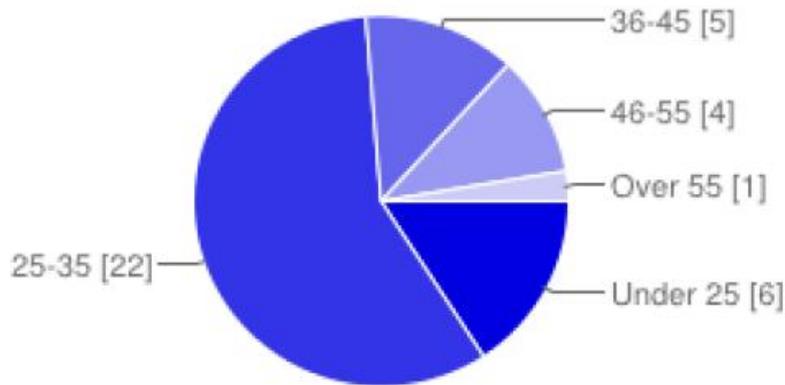


Figure 4 Division of respondents in different age groups

In the regard of age, the vast majority of the recipients were under the age of 35. On some vessels, the median age is quite low, but still the results were biased in this way. The median age of the recipients was about 30 years, judging from the number of people in different age groups. The exact age of the recipients was not asked to better mask their identity due to the relatively small focus group.

**Question 2: In which position do you work now/worked the last time you were onboard?**

The respondents' respective ranks were asked in the survey especially to compare this data with the data on exercise habits, as well as for judging the representativeness of the survey. The data is presented in figure 5.

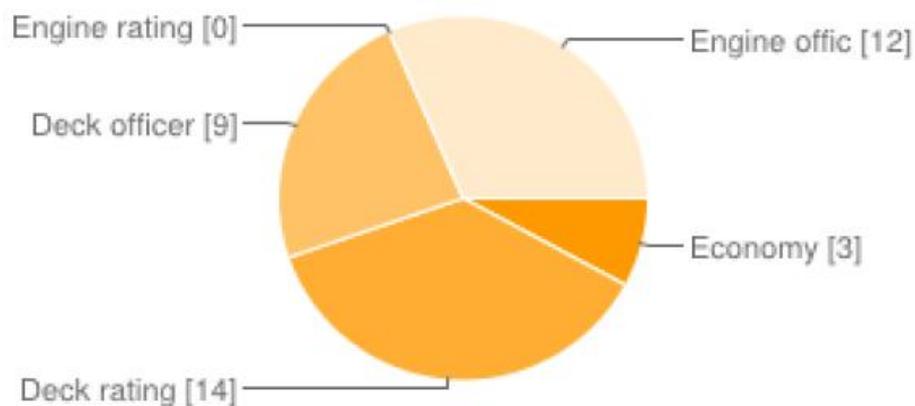


Figure 5 Rank of the respondents

The rank of the respondents onboard was chosen as a question in the survey also because of the variable physical demands of different jobs. Firstly there was the interest of seeing

which ranks had been most interested in taking the survey. Secondly the results were cross-referenced with the results of the questions regarding opinions on exercise, and exercise habits, to see if the people in different jobs would exercise less or more depending on how physically strenuous their job was.

For comparison in the table 2 the percentages of each rank can be seen. In the second column is the percentage of the respective rank in the responses to the survey, and in the third column the percentage of the rank in the ordinary manning of the fleet as a whole.

Table 2 Percentages of different ranks in the responses and fleet

<b>Rank</b>	<b>Percentage of responses</b>	<b>Percentage in the fleet</b>
<b>Economy</b>	8 %	9 %
<b>Deck rating</b>	37 %	28 %
<b>Deck officer</b>	24 %	33 %
<b>Engine rating</b>	0 %	5 %
<b>Engine officer</b>	32 %	24 %

This shows that both deck ratings and engine officers were in proportion more eager to take part in the survey than other ranks. In the scope of this thesis there was no possibility for interviews of the employees, and therefore only guesses can be made on what this depends on. Whether it depends on age, email usage, workload, interest in developing the possibilities for exercise or the opposite, it can be seen from the results that engine officers and deck hands showed more interest in the research. An interesting point is that the two groups probably have the most physically demanding jobs onboard, and thus need to be more physically fit for their line of work, and on the other hand need less cardio exercise from the incidental exercise viewpoint.

### **Question 3: On which vessel do you work now/worked the last time you were onboard?**

In the third question (figure 6) the persons were asked to fill in which vessel they worked on. This was done to cross reference the data with the data acquired later in the survey about training habits and attitudes, as well as to see whether all vessels were represented in the study.

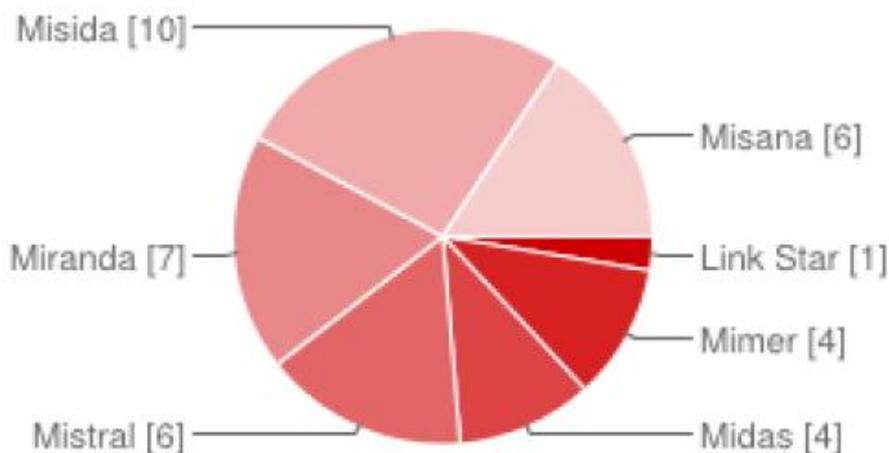


Figure 6 Amount of responses from the different vessels

In the responses to this part of the questionnaire one can see that there were more responses from the vessels with better possibilities for (indoor) exercise. This is true even in proportion to the size of the crews. This could suggest that people on the vessels with worse possibilities do not see that there would be benefits from taking the survey, because there is no room for improvement. Another reason could be that the people on those vessels are not as interested in exercise, but whether this is due to the lack of exercise equipment or something else is hard to say.

### 4.3 Comparing training habits of the employees while on leave and onboard

The training habits of the employees were mapped with a question in two sections, the first one handling training habits on leave and the second while onboard. The sections were divided in 16 different sport/frequency combinations, with the frequency varying from “never” to “more than 3 times/week”. The amount of different categories of training was high, because it was needed to precisely state which kind of exercise was in question since different people see different things as exercising. With the help of these answers the frequencies in the vigorous and moderate categories of the exercise pie could be measured. This analysis is done in the conclusions chapter of this study.

As can be seen from figure 7, the frequency of weight training is far higher onboard than on leave. Therefore a shift towards strength training can be seen in the training habits of the employees. Onboard 32% of the respondent did this kind of training at least once a

week with some of them training more than 3 times per week, but on leave this percentage fell to 25%. Many of the ships have weight training equipment onboard, and on the other hand gym cards are quite expensive if the employee doesn't live in a town where there is a FSS (Mepa) sponsored gym. The employees from more rural areas may not have a gym anywhere near their home. Even though weight training doesn't necessarily require a gym, this can be seen as a promoting factor to the lesser amount of weight training on leave.

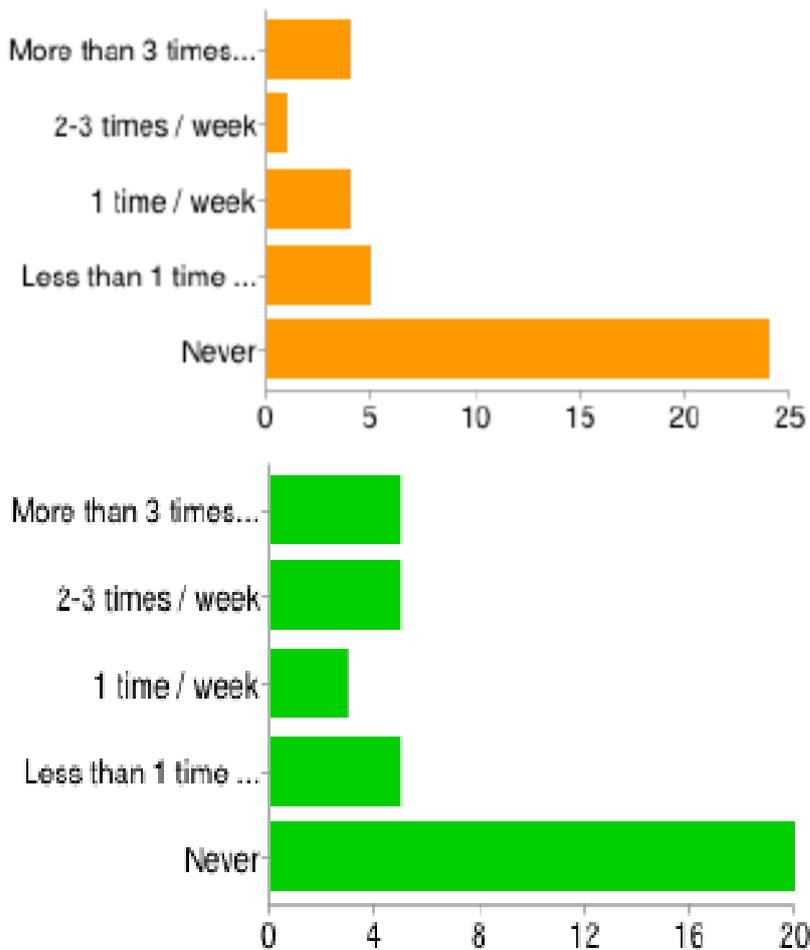


Figure 7 Weight training on leave (above) and onboard (below)

Most of the endurance training forms were done more infrequently onboard than on leave. The most popular form of cardio exercise both onboard and on leave was incidental exercise, i.e. working in the garden etc. on leave and normal work onboard. In the question on how often the respondent did some other type of exercise than those listed in the earlier questions, 24% answered at least once a week, and almost all of those specified the “other exercise” as work, usually cargo operations such as walking or lashing. As an anecdote, one recipient told that he/she walks 120 km during the work shift of 6 weeks, which with

an average pace of 6km/h would give 3hrs 20min/week, which exceeds the amount recommended for moderate endurance training by the UKK Institute.

#### **4.4 Crews' opinions on exercising**

The opinions among employees on the promotion of exercise were mapped with 7 statements, in which the recipients were asked to choose between 5 options from "I fully disagree" to "I fully agree". This was to see whether there was any fertile ground for the employer's efforts to increase physical activity.

In all the statements the recipients views were quite divided except in "I would use 1 hour of paid work time per week for physical exercise, if this would be made possible". In the aforementioned statement 74% of the respondents agreed fully or partially with the statement and only 12 % disagreed. Naturally money talks in this matter.

In the third statement the respondents were asked to give their view on the need for more sports equipment for the vessel. On this statement the views were most polarized. 29% were against the statement "we need more sports equipment on our vessel" while 27% agreed with it. Almost half (45%) were indifferent on the matter, while 24% of the respondents fully agreed. After this statement the respondents were asked to state which equipment would be most needed if they agreed with the aforementioned statement. In many of the free text fields the problem of space was brought out. There would be need for a gym if there only was enough space for it. From actual training equipment a cross-trainer was the most popular on the wish list.

37% of the respondents were of the opinion that their job is so physical that they do not need physical exercise in addition to that. In addition to that half of them (50%) thought that the amount of work they have prevents them from exercising. This is either because of fatigue or lack of time, with the former being the most probable cause, since most employees don't work anywhere close 16hrs per day, so in theory there should be time for working out, but the fatigue of especially watch workers and but also others on busy trades would require a strong motivation to work out while tired and probably increase the risk of injury as well.

In the statements 1, 6 and 7 regarding attitudes towards increasing exercise if better possibilities, rewards for training and a fitness program including tests and rewards for improved results would be introduced a clear majority of the respondents responded positively.

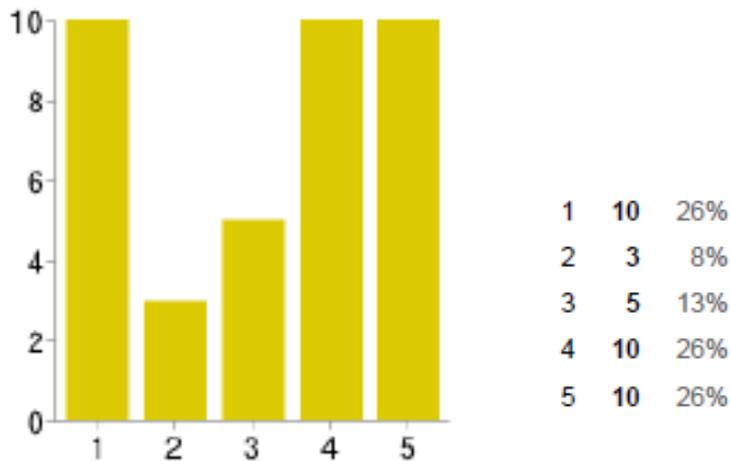


Figure 8 Attitudes towards taking part in a training program with rewards (1="I disagree completely" 5="I agree completely")

It needs to be noted however, that while 52% percent expressed their willingness to take part in a program where the physical fitness of the employee is tested and the company rewards the progress, 34% were against it as can be seen in figure 8.

#### 4.5 Physical health

In order to find out which were the most common symptoms of MSDs among the employees the respondents were asked where in their body and when they had experienced pain or similar symptoms. By far the most common areas of problems were neck and shoulders (37% had symptoms in the last 12 months) and the back (42% had symptoms in the last 12 months, figure 8). This would according to a physical training expert (personal communication on 7.4.2014) suggest the need of core strengthening training and functional exercises to improve mobility and posture. Back problems are also often related to poor ergonomics and excessive sitting.

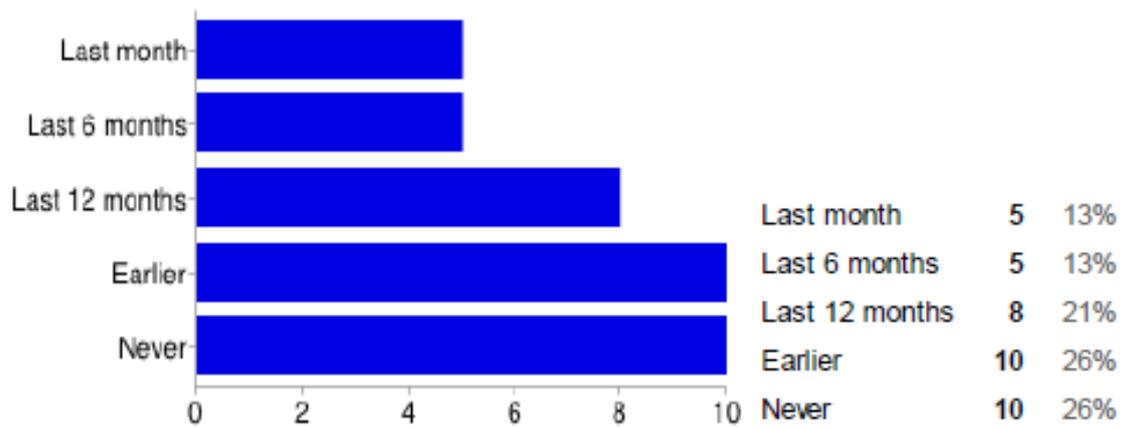


Figure 8 Experienced MSD symptoms in the back area within given time periods

Physical exercise itself carries a risk of injury, even though it is often seen to decrease health risks. Increasing physical activity is contra-productive in decreasing sick leaves if sports injuries offset the improvements in health otherwise. Therefore the cause of sick leaves was asked in the survey. 16% of the respondents have had a work-related injury within the last 2-3 years that resulted in a sick leave. 11% had experienced one within the last 12 months, which indicates that sick leaves are a significant problem among the staff, and savings could be made in this sector. A sick leave for other reasons than work-related had been experienced by 27% of the respondents in the last 12 months, while a sports injury had resulted in a sick leave for only 6% in the same time. This shows that occupational hazards are a cause for sick leave twice as often as sports injuries and other reasons are four times as frequent a cause as sport injuries. At the moment sports injuries are not as significant as other causes of sick leave, especially keeping in mind the possibility of the bias of the respondents towards the more physically active. 89% of the respondents had never been on sick leave due to a sports injury.

#### 4.6 Suggestions for improvements

Since the employees are the best experts on their work environment the possibility to give suggestions for improvement in a free text field was included in the survey. Since resources are limited and everything can't be done, the employees were also asked to choose one of all the proposed ways of improving the possibilities for working out. The most popular were exercise vouchers, which were chosen by half of the employees, second was the chance to exercise on work time and the third most popular was the opinion that there is no need for improvement, which represented 18% of the responses.

In the optional free text field where employees were asked for their own suggestions some of the respondents pointed out that working out during working hours is a good idea, but this would require cooperation of the crews and on the smaller vessel there is the problem of unequal opportunities for this. Risk assessment for each type of job and matching training instructions as well as test program with rewards such as a gym card for progress were also suggested. These could be combined with working out on work time 1-2 times per week. Other suggestions included taking part in sports tournaments organized by the Finnish Seamen's' Service and a fixed budget for each ship to be used for improving training possibilities with a person in charge of the budget. All the suggestions can be seen in the summary of the results (appendix 3).

## **5 Conclusion**

After going through the results of the survey and cross-referencing the answers to different questions, as well as consulting an expert opinion and considering the costs some conclusions are drawn here on how the research questions set in chapter 2 could be answered. In addition a practical solution for supporting the increase of exercise is also presented. Because everything in workplace health promotion is interconnected, this study perhaps creates more questions than it answers and therefore some points for future research are proposed as well.

### **5.1 Answer to the research problems**

Here some conclusions are drawn from the results of the survey combined with the theoretical knowledge and expert opinion. The response percentage to the survey was quite low, which in itself can be seen as a result: a large part of the employees are not especially interested in the workplace exercise policy. On the other hand, the large number of improvement suggestions seems to hint that the situation is polarized in the sense that some of the employees are indeed fairly interested in improving the exercise situation.

In any case in comparison to other such internet surveys it can be questioned whether a higher percentage could be reached with just one emailing of the survey without any

specific rewards for the responding other than possibly having an influence on the policy of promoting exercise. On a positive note least some of the research questions laid out in chapter 2 could be solved.

### 5.1.1 Are the employees getting a sufficient amount of exercise?

The amount of sufficient exercise can be viewed from two angles. One is the health angle, i.e. how much exercise is necessary to have a positive effect on physical wellbeing. This point of view can be seen in the UKK Institute's physical activity pie and in this study. The other angle is the safety viewpoint, which is taken into account in the Seafit research program (FIOH) and in Heinonen's bachelor thesis (2013). From this viewpoint it is necessary to consider if there are enough persons onboard to effectively perform the duties in the muster list. The crew has to act as firemen in case there is a fire onboard, and firemen do physical training during work hours, so why don't sailors, one might ask. Because this survey did not include questions about the employees' physical ability (the results of which could be doubted anyway since only physically active persons tend to know how much they squat or how many kilometers they run in the Cooper's test) and the employees were not tested, the focus of the interpretation of sufficient exercise is on the former angle.

To analyze whether the respondents get enough exercise, the results were converted into an Excel spreadsheet where their weekly physical activity amounts were individually added together and they were then compared to the recommendations of the UKK Institute (see chapter 2.2.1). This was done both for moderate and vigorous endurance training or incidental exercise i.e. cardio training as well as strength and balance training. Since part of the recommendation is given in amount of exercise in time and part in times per week, the activities by the respondents were estimated to 1 time corresponding to 1 hour. The recipients were color coded according to their habits for comparison between the situation onboard and on leave.

Table 3 Percentages reaching the recommended exercise level in cardio and muscle training

<b>Both forms of training</b>	<b>On leave</b>	<b>Onboard</b>
<b>Enough exercise</b>	21%	26%
<b>Not enough exercise</b>	79%	74%

63% of the respondents received the recommended amount of cardio work out during their leave, while only 26% received the recommended amount of strength and balance training to have a positive influence on health. This clearly shows that the employees are not receiving enough exercise especially for balance and strength. This could be tackled with the help of exercise programs as well as training vouchers for gyms, keeping in mind the problems with access to gyms in rural areas.

As can be seen from table 3, only 21% of respondents received the recommended amount in both cardio and muscle training with 32% not being active enough in either way. The rest, almost half of the group, were somewhere in between, most having enough cardio exercise as stated above.

When studying the results of the survey for the physical activity while onboard the situation is more polarized. Most of the employees were much less physically active during their time onboard. On the other hand there were slightly more employees who received enough both cardio and muscle training than there were on leave (26% fulfilled this criteria).

Table 4 Lack of training separated by type of exercise

	<b>On leave</b>	<b>Onboard</b>
<b>Enough cardio exercise</b>	63%	32%
<b>Enough muscle/balance exercise</b>	26%	29%

More remarkable is the amount of employees who were not exercising at all or not according to recommendations in either of the types of exercise, which was 63% of respondents. When the incidental exercise that some of the employees brought out this figure dropped to 55%, but still one can see that the lack of cardio exercise is a bigger problem while onboard than on leave for most people. On the other hand almost all that exercised enough on leave were able to keep this up while onboard, some on bigger ships and some on smaller. Of those respondents who were least active in both cardio and muscle exercise 79% worked on the bigger vessels. This seems to prove that getting enough exercise doesn't necessarily depend on the size of the vessel, although getting the muscle and balance training recommended may require more effort on the smaller vessel.

One should keep in mind that ball sports are also categorized as muscle and balance exercise in the UKK Institute's recommendations.

In regard to different jobs onboard and their relation to working out it can be noted by cross-referencing the amount of exercise the respondents are doing with their job, that there seems to be a relation between the exercise habits and the department where the person works on. While on leave there was no significant difference in working out between the departments, onboard there was a slight overrepresentation of engineers and deck ratings in the group who were getting enough exercise. These are actually the groups with the most physical job onboard. On the other hand some of the most physically active persons were deck officers. Due to the small size of the response group one should be careful when drawing conclusions, but it may be that the fatigue of a watch job has an influence. This should however be taken into account when thinking of the health risks of a deck officers job, because they are the ones most at risk due to lack of physical activity in their work. This naturally depends on the trade as well, as one of the recipients pointed out. As a summary it can be concluded that lack of cardio exercise is a bigger problem while onboard than on leave. The drop in cardio exercise is seen clearly in table 4. The reasons behind this are complex; apparently a large part can be explained with fatigue and lack of possibility for outdoor exercise such as walking or cycling. On the whole the vast majority of employees are receiving too little exercise.

On the other hand, when it comes to preventing MSDs muscle and balance training plays a vital role according to experts. Especially while on leave the employees are getting much less of this kind of exercise than the cardio kind. Exercise vouchers accompanied with a training program could be used to solve this problem.

### **5.1.2 Lack of exercise or excess of sitting down?**

In many of the responses to the survey it was pointed out that working hard or walking around the ship during cargo operations is all one needs in term of physical activity. However, it has been pointed out in many studies (e.g. Fogelholm et al. 2007) that people in physically strenuous professions actually tend to be less physically fit than office workers on the average. This is of course related to a number of cultural causes and the benefits of the incidental exercise while working onboard cannot be neglected. In any case,

one can surely be better prepared for physically demanding work through training. And functional strength exercise which increases the mobility and stability of the body is needed in addition to the quite monotonous exercise of walking around and dragging belts and chains or tightening bolts.

The strains that sitting down (for example during bridge watch) causes to the human body can be alleviated with activating exercises. A low-cost solution to this would be training instruction for short on-the-worksites exercises that could be done while keeping watch (maintaining a safe lookout) for example. The modern bridge with integrated bridge systems and cockpit style instrument consoles added with comfortable chair are worse in this sense than the traditional bridge where the officer were standing or walking between radar and autopilot etc. The safety problems related with fatigue i.e. lack of concentration and falling asleep on the watch could also be tackled with such exercises.

### **5.1.3 Chances of increasing physical activity**

Majority of the employees who responded in the survey were positive towards the interventions by the employer to increase physical activity onboard. On the other hand a significant portion was also negative towards it. For example in the question regarding a program of tests and rewards for progress a significant minority were against this even though a slight majority was supporting it. If such a program would be introduced, the rewards should probably be related to training, such as training vouchers to prevent discontent due to perceived unfairness of the approach. An extreme example in health rewards would be the crane and lift operator company Pekkaniska, where the employees are been rewarded with money if they, for example, beat the CEO in the amount of chin-ups per set (170€) or go jogging (1€/km) (Pekkaniska 2014)

When asked about suggestions for improvement exercise vouchers were the most popular choice, with exercise during work time coming in second, these two covering 71% of the responses. These would naturally induce significant costs to the employer. 18% were of the opinion that there is no need for improvement. To summarize the crews' attitudes there seems to be a good possibility to increase physical activity through company interventions, but these interventions need the cooperation of the employees because the different environments on the vessels. One of the major issues is limited space in the

accommodation, which of course cannot be changed. One possible solution to the problem with space is addressed later in this chapter.

When comparing the amount of physical activity individuals were exposed to between time on leave and onboard the following could be noted: From the employees who exercised at least the recommended amount on leave 75% maintained this habit onboard, while 25% did not work out practically at all while onboard. It is to be noted all those 25% worked on the bigger vessels with better exercise opportunities.

In those respondents who were least active on leave only 17% improved their exercise level onboard, with only 8% receiving the recommended amount of both cardio and muscle training. This casts a shadow of doubt on the idea that better opportunities for exercise would result in increased activity. Probably stronger incentives are needed.

To summarize it can be said that the majority of the employees who responded to the survey were positive towards interventions by the employer to promote exercise. Especially exercise during work time and exercise vouchers would be well received. A slight majority would also be willing to participate in a program where the participants were tested, they would receive a training program and their progress would be rewarded in some way. As a whole it can be said that the ground is fertile for such interventions.

#### **5.1.4 Cause of health problems**

As can be seen from the survey results, back problems were the most commonly experienced symptoms among the respondents. According to expert opinion (personal communication 7.4.2014) a common cause for this is poor stability in the core muscles (lower back and abdomen) area and poor ergonomics. The former can be improved with physical exercise, but mere moderate cardio physical activity, such as that happening during strenuous work, does not tackle this problem, and therefore “hard work” is not enough exercise.

When considering the cause of sick leaves it was found that other reasons than sports injuries are the most common ones. Many of the accidents that result in sick leave can be prevented with traditional occupational safety measures, but such risks as falling down on

a slippery deck or injuring the back while lifting can be reduced with the right kind of exercise. This again calls for proper instruction. In sports the prevention of injuries with functional training and activating warm-ups has been recognized as effective (personal communication with a sports instructor 7.4.2014) but it is still to be widely introduced to the world of occupational health. In the construction sector however activating warm-up training prior to beginning work has been taken in to use by at least two companies (Pennanen 2007). Introducing such practices to cargo vessels may prove difficult due to cultural reasons.

While sports injuries are behind some sick leaves, they could also be prevented with proper instruction for activating warm-ups and safe ways of exercising. The most common reason for sick leaves in the survey was “other reasons”. It would require a study in itself to go deep into these reasons and find countermeasures for them. It is unclear based on the source literature whether these could be prevented in the short term through company interventions. Long term influences seem to have a positive effect on reducing sick leaves in general.

### **5.1.5 Costs**

Probably the most cost-intensive intervention proposed would be paid training, i.e. using one hour of work time/overtime per week for training. The respondents were most unanimously behind this one, but on the other hand, when asked to choose only one of the proposed measures, only 21% chose this one, with 50% preferring exercise vouchers. This is most probably due to the exercise vouchers being totally voluntary.

Since one hour of exercise per week is not enough to have positive health effects (UKK Institute 2010 and Nurminen 2000) it is questionable if this alone would result in positive results for those employees who do not work out otherwise. This depends on the effect this has on the cognitive-behavioral side, i.e. whether the employees increase their physical activity more than the said 1 hour/week, which would require a more positive attitude towards exercise - stemming from the 1 hour of paid training. However this could be seen as a good way to start off people who do not work out otherwise.

If the cost of one work hour would be 25€ and all the 150 employees of a company would use this benefit every week the total cost would be 94250€ per year. The calculation is done without taking into account side expenses, because under the Finnish flag the gross manning expenditure is subsidized to the level of the net wages to the crew (HE 146/2013). In comparison, enough training vouchers for the entire staff of 150 to get a gym card for those months on leave would cost the company 36000€ per year. If this would result in the employees increasing their physical activity by one time per week while on leave (on average, some training more and some not using the possibility at all), the result would be the same as with the paid training, but with smaller costs.

Calculated with the FIOH (2010) cost-effectiveness calculator the work time training interventions would have a net benefit of -18000€ if the amount of sick leaves would decrease by 2 days/person/year and a net benefit of 20000€ if they would decrease by 3 days/person/year with staff turnover and productivity staying the same (calculation done with a 3500€ average salary). Small changes in the variables result in large savings or – alternatively - losses. The same calculation with the cost of the training voucher gives slight benefits (+2000€) even with the reduction of one sick leave day per year per person on average. If the benefits almost rule out the costs one could argue that the investments in the employees' wellbeing are justifiable, given for example the improvement of the company image that comes on the deal.

#### **5.1.6 Recommendations for practical solutions to increasing exercise with limited space**

In many of the responses it was pointed out that the problem on the smaller vessels is the lack of space that is suitable for exercise. For example, in a hot climate it is very unpleasant to work out in non-air-conditioned spaces or even outside, at least daytime. In this case it might be seen unfair that employees are paid for working out on work time, when the possibilities aren't the same as on other vessels. When asked which training equipment would be the most needed on their vessel many respondents from the smaller vessels stated that first of all there is no room for training equipment on their vessel. A shipping company can't order cargo ships designed to have a perfect work out environment, and therefore a different solution must be created.

As mentioned before on smaller vessels the lack of a gym seemed to be the problem. According to Riihimäki's expert opinion (personal communication 7.4.2014) this shows that many of the respondents have a very traditional view on training in which you need to have specialized equipment for it. The answer to this problem could be functional training programs tailor-made for each vessel. They could be adapted to the possibilities on each vessel and there could be for example three different programs for beginner, advanced or high fitness levels. These programs could be developed by a sports/fitness professional after familiarizing him/herself with the circumstances of the vessel. The programs and exercises could be made understandable with the help of posters or booklets and in the case of personal instructions the programs could be written on paper or emailed to the participants.

If resources allow, these programs could be further personalized, with follow up testing or telephone/email consultation on progress, which as mentioned before has proved more effective in maintaining training habits than mere start-up testing and personal recommendations. (Nurminen 2000, p. 11-16 and 35-36)

According to Nurminen (2000), programs such as proposed above are more efficient when enforced with rewards for training. In regard to training while on leave, one respondent proposed that as a reward for improved results in physical tests (which would of course have to be voluntary) the employee would receive for example a gym card. This would help in the discontinuity of strength training between the time onboard and time on leave.

Another way to reward employees is being able to train on paid work time, but instead of being just a wage increase to those who already work out it should be accompanied with other measures, such as personal support and work out instructions specified by individual ability, ship environment and occupational health risks as was actually proposed by one of the recipients. To extend this benefit to time on leave exercise vouchers could be used. In both these measures the question of equality arises. On some vessels it is easier to find ways of working out (this can be helped with proper instructions as mentioned before) and some of the employees don't necessarily have opportunity to use the vouchers (such as those not living in Finland).

Whichever path is considered to be taken, it may be wise to consider the cost-effectiveness or at least the costs of said measure. Such an evaluation could be made beforehand with the

help of the workplace wellbeing cost-effectiveness calculator (FIOH 2013) or afterwards if the effects of the measures taken can be isolated. To again summarize: the evaluation of cost effectiveness is difficult on the basis of present scientific knowledge, and relies mostly on the good faith of the employer as many of the benefits of WHP are difficult to measure accurately in economic terms.

## **5.2 Further possibilities for research**

Nutrition can often be a more effective way than exercise to tackle at least obesity, but these should most optimally be used in coordination. The ways for the employer to promote healthy food onboard should be explored to catch both sides of the equation. Since food is a sensitive issue, this would be both a demanding and an interesting topic.

Another possibility for future research is a follow-up study of a chosen intervention: if something is done, how does this affect the training habits or the health of the employees? A mathematical cost analysis could be made on the measures taken and their cost-effectiveness in relation to absences. This would probably create interest in the industry as a whole, because in a tight economy finding new ways for savings are always valued greatly. Different combinations of measures could be evaluated also beforehand with for example mathematical linear optimizing. Many previous attempts at this have proved indecisive, so this is a challenging but important subject.

Risk assessment is a standard phrase in the maritime world. Occupational health could be approached from a risk assessment point of view, where the employees would be activated in group discussions on specific health risks of different jobs, much in the same way as in the Trimmare project. The assessment could also be done by an outside observer, but in any case the focus would be on the long term health risks, instead of just sudden injury.

If the focus would be on the safety management side of fitness as in the ongoing Seafit project, experience from other professions such as fire departments and the military could be used to study the best ways to increase the ability of seafarers to perform in an emergency situation such as a fire.

### 5.3 Critical assessment

Finally, having completed the study one has to reflect upon it. How well have the questions we sought out to answer been addressed? Can the results be considered reliable, can they be used to benefit the shipping industry and has the researcher learned something in the process?

Defining the problematic or question formulation of the research proved to be a challenge because of the wide and somewhat unclear nature of the subject of promoting exercise for the improvement of occupational health. On the one hand, the amount of questions had to be limited to be able to tackle them and on the other one would not want to leave out something that is essential. The questions to be answered were perhaps too many, but I think the study has succeeded in finding a practical approach to the situation.

With the reliability there was the issue of relatively low response percentage to the survey. As stated before this can be seen as a result in itself, and it was one reason why one had to be cautious with statistical conclusions. However, with the qualitative nature of the study in mind, meaningful views from the crews were brought out, and ways to take these views and the problems pointed out in them into account could be developed with expert help. Therefore, practical recommendations for the promotion of exercise in the shipping industry could be given.

I personally have been able to develop my language skills, and seen the way a researcher is dependent on his/her data and the quality of it. My own views of the situation when it comes to my colleagues habits of exercising have changed somewhat, as has my view on the relation between occupational health and exercise and my own attitude towards training onboard. For some parts the picture is clearer, and for some parts more vague after concluding this study, but I have indeed learned something.

*“The larger the island of knowledge, the longer the shoreline of wonder”* (Ralph W. Sockman)

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## **Appendix 1: Covering letter**

Survey to Godby Shipping's seagoing personnel

Hello,

I am doing research on physical exercise and training among Godby Shipping's personnel. The goal of the study is to gather information on the present exercise habits, occupational health problems and how these two are interacting among our personnel as well as finding ways for the employer to support occupational health with the help of physical exercise. The study is made for Godby Shipping. I am studying at the Yrkeshögskolan Novia in Turku, and this study is my thesis for the master mariners degree.

In order to gather information for the study, I ask you to fill out this online survey (link below) focusing on exercise and occupational health. All responses are confidential, they will be processed anonymously and the results will be presented in such a manner that individuals cannot be identified from them. The responses will be used only for this study and destroyed after use. The survey consists of 17 (mostly multiple choice) questions. The survey is in English, but you can write also in Swedish or Finnish in the free text fields. Answering should take approximately 5-10 minutes. Thanks for your time.

To fill out the survey, visit:

<https://docs.google.com/forms/d/1muObaZPt-cXPDI442xqK5JUOHP6uXcGWORurWbxZ9S0/viewform>

Best regards,

Voitto Happonen

## Appendix 2: Survey questions

3/29/2014

Health and exercise among Godby Shipping personnel

### Health and exercise among Godby Shipping personnel

[Edit this form](#)

The aim of this survey is to find out the personal experiences, habits and opinions of crew members regarding training and physical well-being onboard, and how the company could support it's employees in keeping fit. All responses are confidential, they will be processed anonymously and results will be presented in such a manner that individuals cannot be identified from them. The responses will be used only for this study and destroyed after use. The survey consists of 17 questions. Answering should take approximately 5-10 minutes. In the free text fields you can write your answer in English, Swedish or Finnish. Thanks for your time.

\* Required

#### Background information

**1 Age \***  
How old are you?

Under 25

25-35

36-45

46-55

Over 55

**2 Rank \***  
In which position do you work now / worked the last time you were onboard?

Economy

Deck rating

Deck officer

Engine rating

Engine officer

**3 Vessel \***  
On which vessel do you work now / worked the last time you were onboard?

Link Star

Mimer

Midas

Mistral

Miranda

Misida

Misana

#### Exercise habits

<https://docs.google.com/forms/d/1muObaZPt-cXPD1442qK5JUOHP6uXcGWORurWbxZ9S0/viewform>

1/6

3/29/2014

Health and exercise among GodbyShipping personnel

This section includes questions on how often you work out.

**4 On average, how often do you do the following types of physical exercise during your leave? \***

Choose the option that best corresponds to your habits during the last 6 months

	More than 3 times / week	2-3 times / week	1 time / week	Less than 1 time / week	Never
Jogging / Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ball sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group exercises (aerobics, zumba, pilates etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aerobic indoor training (Indoor cycling / rowing / crosstraining etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross-country skiing / roll skiing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking (for exercise)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidental exercise, ie. Gardening, forestry work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (state below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Other regular exercise, which?**

**5 On average, how often do you do the following types of physical exercise during your time onboard the ship? \***

Choose the option that best corresponds to your habits during the last 6 months

	More than 3 times / week	2-3 times / week	1 time / week	Less than 1 time / week	Never
Jogging / Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ball sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2020204

Health and wellbeing among Gully/Cripping personnel

Weight training	<input type="radio"/>				
Cycling	<input type="radio"/>				
Walking (for exercise)	<input type="radio"/>				
Another indoor training (ie: indoor cycling, rowing, cross-training etc.)	<input type="radio"/>				
Other (state below)	<input type="radio"/>				

Other regular exercise, which?

## Opinions on exercising

Below there are 7 statements. Indicate how much you agree or disagree with each statement by choosing a number on a scale from 1 to 5, number 1 meaning that you completely disagree, number 5 that you completely agree and number 3 that you are indifferent or don't know.

6 I would increase the amount of physical exercise, if the employer would provide more opportunities for this.<sup>3</sup>

1 2 3 4 5

I disagree completely      I agree completely

7 I would use 1 hour of paid work time per week for physical exercise, if this would be made possible.<sup>4</sup>

1 2 3 4 5

I disagree completely      I agree completely

8 We need more sports equipment on our vessel.<sup>4</sup>

1 2 3 4 5

I disagree completely      I agree completely

9 If you agree with the above, which equipment do you think would be most needed?

10 My work is so physical that I don't need physical exercise in addition to that.<sup>5</sup>

120004

Health and exercise among Postal Shipping personnel

1 2 3 4 5

I disagree completely      I agree completely**11 I have so much work and/or I am so tired that I cannot work out on my spare time onboard. \***

1 2 3 4 5

I disagree completely      I agree completely**12 The company should reward the employees for improving their physical fitness. \***

1 2 3 4 5

I disagree completely      I agree completely**13 I would like to participate in a program, where my physical fitness is tested and the company rewards my progress. \***

1 2 3 4 5

I disagree completely      I agree completely

## Physical health

This section has questions on your health and possible injuries and sick leave that you may have had during your time in your present profession.

**14 Health problems of the musculoskeletal system in your present profession. \***

Have you had significant pain or injuries in the following body parts during your time in the present job and when this has happened? Choose the part of your body by clicking on the corresponding row. Indicate also when you have had this problem by choosing the corresponding column.

	Last month	Last 6 months	Last 12 months	Earlier	Never
Head	<input type="radio"/>				
Neck and shoulders	<input type="radio"/>				
Back	<input type="radio"/>				
Lower extremities (legs or feet)	<input type="radio"/>				
Upper extremities (arms or hands)	<input type="radio"/>				
Other	<input type="radio"/>				

3/29/2014

Health and exercise among Godby Shipping personnel

**15 Cause of possible sick leave in the present profession. \***

Choose if and when you have had injuries or illnesses during your present job that have resulted in sick leave. Indicate also when you have had this problem by choosing the corresponding column.

	Last 6 months	Last 12 months	Last 2-3 years	Earlier	Never
Work-related injury resulting in sick leave	<input type="radio"/>				
Sports injury resulting in sick leave	<input type="radio"/>				
Other health issue resulting in sick leave	<input type="radio"/>				

**Suggestions for improvement**

Below there are different suggestions for improving the possibilities for physical exercise among Godby Shippings personnel. In the last part you can also make your own suggestion(s) for improvement in the free text field.

**16 If you could choose one of the following ways for improving the possibilities for working out, which would it be? \***

Choose the one you feel is most important. If you choose "other", please write your wish in the space given.

- Exercise vouchers that can be used for payment at gyms, swimming halls etc. in Finland
- Opportunity to use paid work time for physical exercise.
- Personal training instruction onboard the vessel.
- Personal training program including follow-up testing
- Rewards from the company for improving physical condition
- Personal sports equipment for use at home.
- There is no need for improvement
- Other:

**17 Own suggestion(s) for improvement (optional)**

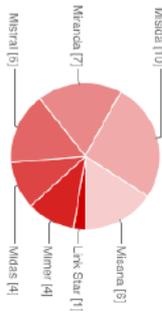
Here you can write down your own additional ideas for the company to provide better training possibilities for the personnel, or for otherwise improving the present situation. (Du kan även svara på svenska, voit vastata myös suomeksi)

## Appendix 3: Survey results

3/20/2014

Health and exercise among Godby Shipping personnel - Google Drive

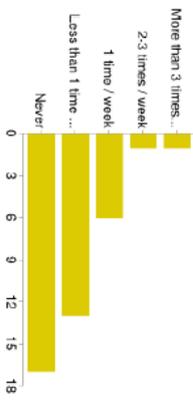
### 3 Vessel



Vessel	Count	Percentage
Link Star	1	3%
Mimer	4	13%
Midas	4	13%
Mistral	6	19%
Miranda	7	22%
Misda	10	31%
Misana	6	19%

### Exercise habits

Jogging / Running [4 On average, how often do you do the following types of physical exercise during your leave?]



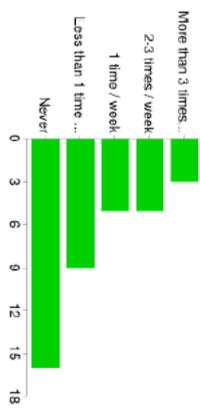
Frequency	Count	Percentage
More than 3 times / week	1	3%
2-3 times / week	1	3%
1 time / week	6	19%
Less than 1 time / week	13	41%
Never	17	54%

<https://docs.google.com/forms/d/1mG2aZP7-cXFDU44QzKt5LUOQHfAKGcVdORuWdz2S0vewwvmlfca>

3/20/2014

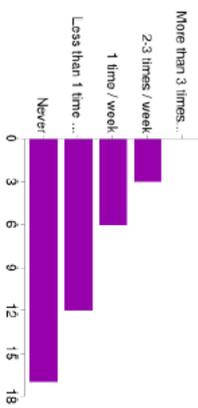
Health and exercise among Godby Shipping personnel - Google Drive

### Cycling [4 On average, how often do you do the following types of physical exercise during your leave?]



Frequency	Count	Percentage
More than 3 times / week	3	8%
2-3 times / week	5	13%
1 time / week	5	13%
Less than 1 time / week	9	24%
Never	16	42%

Ball sports [4 On average, how often do you do the following types of physical exercise during your leave?]



Frequency	Count	Percentage
More than 3 times / week	0	0%
2-3 times / week	3	8%
1 time / week	6	16%
Less than 1 time / week	12	32%
Never	17	45%

Swimming [4 On average, how often do you do the following types of physical exercise during your leave?]

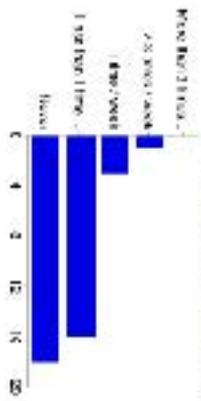
2/19

<https://docs.google.com/forms/d/1mG2aZP7-cXFDU44QzKt5LUOQHfAKGcVdORuWdz2S0vewwvmlfca>

3/19

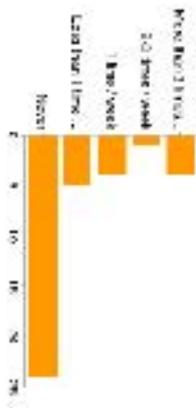
5/20/24

[with permission from Google Analytics] - Google Drive



Frequency	Count	Percentage
More than 3 times / week	1	0%
2-3 times / week	5	31%
1 time / week	2	8%
Less than 1 time / week	16	82%
Never	18	87%

**Night training** [a. On average, how often do you do the following types of physical exercise during your leave?]

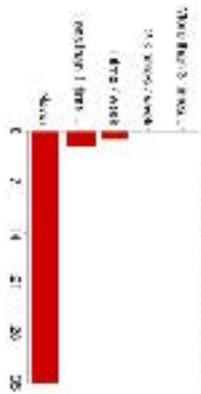


Frequency	Count	Percentage
More than 3 times / week	1	10%
2-3 times / week	1	8%
1 time / week	4	17%
Less than 1 time / week	5	21%
Never	24	82%

**Aerobic indoor training** (aerobics, zumba, pilates etc.) [a. On average, how often do you do the following types of physical exercise during your leave?]

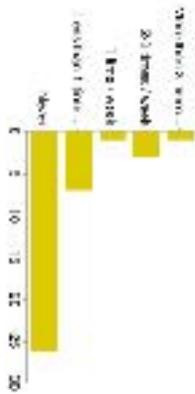
5/20/24

[with permission from Google Analytics] - Google Drive



Frequency	Count	Percentage
More than 3 times / week	0	0%
2-3 times / week	0	0%
1 time / week	1	5%
Less than 1 time / week	8	32%
Never	26	82%

**Aerobic outdoor training** (hiking, cycling, rowing, cross-training etc.) [a. On average, how often do you do the following types of physical exercise during your leave?]



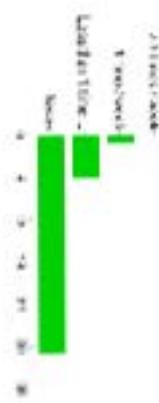
Frequency	Count	Percentage
More than 3 times / week	1	5%
2-3 times / week	0	0%
1 time / week	1	5%
Less than 1 time / week	7	28%
Never	26	82%

**Cross-country sailing** (rall sailing) [a. On average, how often do you do the following types of physical exercise during your leave?]

2022/24

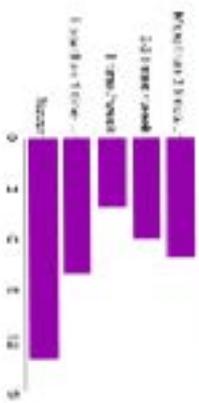
100% of respondents completed previous group task

Report 1 type:



More than 2 times / week	0	0%
2.0 times / week	0	0%
1 time / week	1	1%
Less than 1 time / week	6	6%
None	21	22%

Walking (for exercise) [4] On average, how often do you do the following types of physical exercise during your lease?



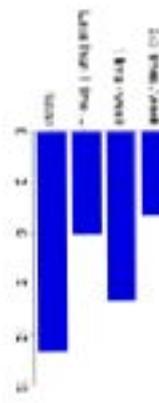
More than 2 times / week	7	7%
2.0 times / week	6	6%
1 time / week	4	4%
Less than 1 time / week	6	6%
None	13	14%

Incremental exercise, ie. Gardening, tennis work [4] On average, how often do you do the following types of physical exercise during your lease?

2022/24

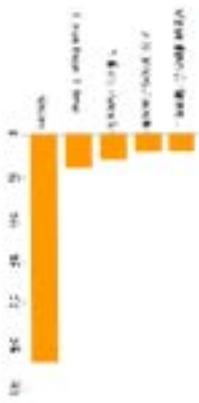
100% of respondents completed previous task

Report 1 type:



More than 2 times / week	4	4%
2.0 times / week	5	5%
1 time / week	10	10%
Less than 1 time / week	6	6%
None	13	14%

Other tennis based [4] On average, how often do you do the following types of physical exercise during your lease?



More than 2 times / week	2	2%
2.0 times / week	2	2%
1 time / week	3	3%
Less than 1 time / week	4	4%
None	27	27%

Other regular exercise, which?

extreme sports (skydiving etc) (approx) (high altitude) (mountain climbing) (skiing) (water skiing) (bungee) (base jumping) (paragliding) (skydiving) (mountain climbing) (skiing) (water skiing) (bungee) (base jumping) (paragliding)

Jogging / Running [5] On average, how often do you do the following types of physical exercise during your lease period (the chart)?

https://www.researchgate.net/publication/351111111

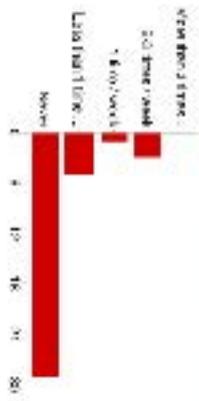
2022/24

100% of respondents completed previous task

2022/24

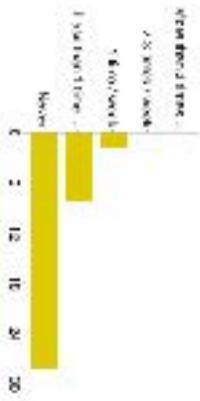
2022/23

Health and care services (including general practice) - 2022/23



More than 3 times / week	2	0%
2-3 times / week	1	8%
1 time / week	1	7%
Less than 1 time / week	1	7%
Never	15	100%

**Ball sports** [5] On average, how often do you do the following types of physical exercise during your time onboard the ship?

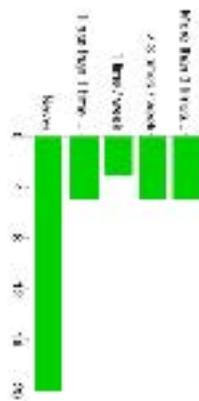


More than 3 times / week	1	0%
2-3 times / week	1	0%
1 time / week	1	4%
Less than 1 time / week	1	2%
Never	16	74%

**Weight training** [6] On average, how often do you do the following types of physical exercise during your time onboard the ship?

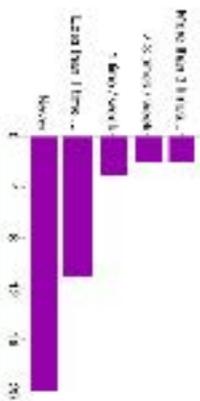
2022/23

Health and care services (including general practice) - 2022/23



More than 3 times / week	6	13%
2-3 times / week	6	13%
1 time / week	3	6%
Less than 1 time / week	6	13%
Never	19	55%

**Cycling** [5] On average, how often do you do the following types of physical exercise during your time onboard the ship?



More than 3 times / week	2	0%
2-3 times / week	2	0%
1 time / week	3	6%
Less than 1 time / week	1	2%
Never	14	52%

**Walking (for exercise)** [5] On average, how often do you do the following types of physical exercise during your time onboard the ship?

https://www.gov.uk/government/statistics/health-and-care-services-2022-23

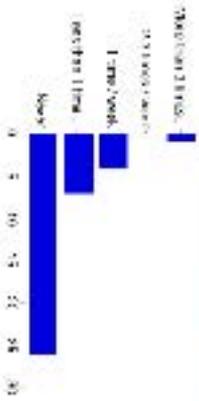
4/9

https://www.gov.uk/government/statistics/health-and-care-services-2022-23

2/9

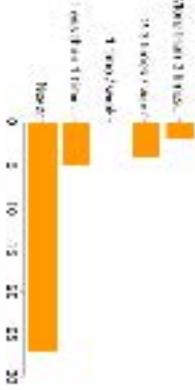
2020/23

Health and safety survey: Staff's working patterns - Weightlifting



More than 2 times/week	1	3%
2-3 times/week	0	0%
1 time/week	4	11%
Less than 1 time/week	7	18%
Never	28	68%

Aerobic indoor training (ie, indoor cycling, rowing, cross-training etc.) [6] On average, how often do you do the following types of physical exercise during your time onboard the ship?

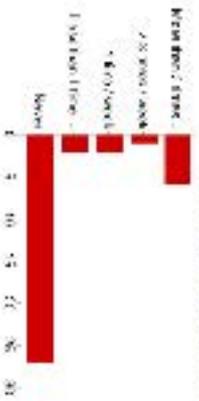


More than 2 times/week	2	7%
2-3 times/week	4	11%
1 time/week	0	0%
Less than 1 time/week	5	13%
Never	27	71%

Other (state below) [5] On average, how often do you do the following types of physical exercise during your time onboard the ship?

2020/24

Health and safety survey: Staff's working patterns - General Work



More than 2 times/week	6	19%
2-3 times/week	1	3%
1 time/week	2	5%
Less than 1 time/week	2	5%
Never	27	71%

Other regular exercise, which?

Walking to work: Very good weather during daylight hours/No strong wind/No rain/No heat haze/hurricane risk/No sea state/No glare/No darkness etc. Walking to different work parts: Working hard. Swimming. Working out. Access to gym facilities on board/riding work out in 6 weeks

### Options on exercising

5 I would increase the amount of physical exercise. The employer would provide more opportunities for this

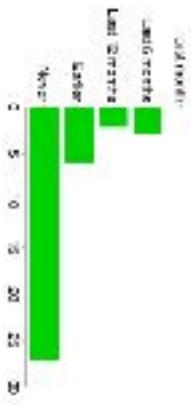


7 I would use 1 hour of paid work time per week for physical exercise. If this would be made possible.



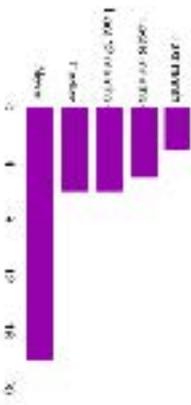
2020/11

Health and new services, including access of the patient



Last month	0	0%
Last 6 months	1	3%
Last 2 months	2	5%
Earlier	4	10%
Never	27	73%

Neck and shoulders [14 health problems of the musculoskeletal system in your present profession.]

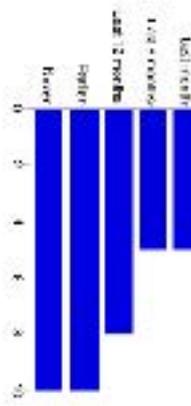


Last month	1	3%
Last 6 months	2	5%
Last 2 months	2	5%
Earlier	4	10%
Never	27	73%

Back [14 Health problems of the musculoskeletal system in your present profession.]

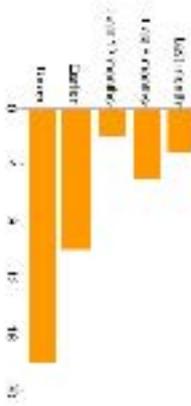
2020/11

Health and new services, including access of the patient



Last month	4	13%
Last 6 months	4	13%
Last 2 months	3	9%
Earlier	3	9%
Never	20	62%

Lower extremities (legs or feet) [14 health problems of the musculoskeletal system in your present profession.]

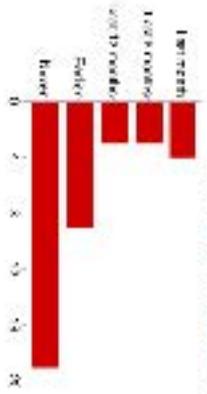


Last month	2	6%
Last 6 months	2	6%
Last 2 months	2	6%
Earlier	2	6%
Never	20	62%

Upper extremities (arms or hands) [14 Health problems of the musculoskeletal system in your present profession.]

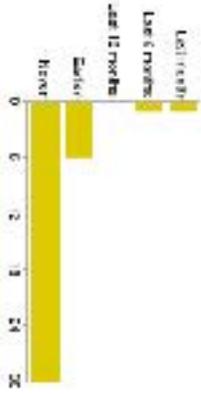
2020/21

Health care workers (with Clinical background) - Overall Total



Last year	4	11%
Last 6 months	8	58%
Last 12 months	8	58%
Earlier	9	24%
None	19	50%

Other [14 Health problems of the musculoskeletal system in your present profession.]

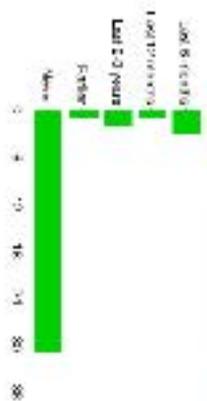


Last year	1	2%
Last 6 months	1	2%
Last 12 months	0	0%
Earlier	6	16%
None	20	78%

Work-related injury resulting in sick leave [15 Cause of possible sick leave in the present profession.]

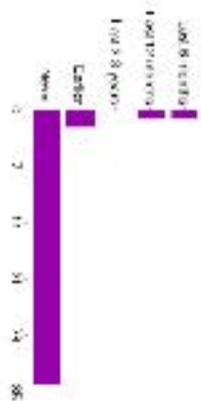
2020/21

Health care workers (with Health Policy background) - Overall Total



Last 6 months	3	8%
Last 12 months	1	3%
Last 2-5 years	2	5%
Earlier	1	3%
None	31	82%

Sports injury resulting in sick leave [15 Cause of possible sick leave in the present profession.]



Last 6 months	1	3%
Last 12 months	1	3%
Last 2-5 years	0	0%
Earlier	2	5%
None	24	88%

Other health issue resulting in sick leave [15 Cause of possible sick leave in the present profession.]

