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INSPIRATIONAL TRAINING GUIDE FOR FARMERS

Degree Programme in Physiotherapy 2012



Inspirational Training Guide for Farmers

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Purpose of the thesis was to produce an inspirational and easy-to-follow training guide. Training guide is designed to give inspiration and to give information on how to increase physical wellbeing. Target group is farmers who are just starting their businesses and the ones who are already working in the agriculture field. The aim of the training guide is to increase the knowledge of maintaining a good functional capacity of cervical spine and shoulder girdle. Training guide is designed to be easy to approach and to give an effective workout.

This thesis and training guide is a part of the farmer's well-being program. Farmers' Social Insurance Institution (MELA) has prepared a well-being program for farmers. It is an ongoing project that will continue until 2025. Purpose is to increase and maintain farmers' health, ensure that they get on a holiday healthy and also that they can retire healthy. Farmer's Social insurance Institution has made targets towards the program.

Wellbeing program has four targets by 2025. Firstly, raise the retirement age by three years from 60 to 63 years of age. Second target is to decline the number of new disability pensions by 20 percent (6.7 ‰ → 5.5 ‰). Thirdly, the number of accidents decline by 20 percent (57 ‰ → 45 ‰). Fourth target, aims to have all the farmers who are starting their business, to be clients for the Farmers' occupational health care, rise from 40 percent to 70 percent.

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1 INTRODUCTION

Work continuity is beneficial to both, employee and employer (Website of Local Government Pensions Institution). Prevention of losing working ability and the promotion of wellbeing is seen as the most important means to extend working careers. Employees' opinions, efforts to extend working lives do not appear in the workplaces. Local Government Pensions Institution (KEVA) has made a research which indicates that almost all of the respondents (94 and 96 %) consider wellbeing promotion and work ability prevention highly important (Website of Local Government Pensions Institution).

According to the Finnish Minister of Social Affairs and Health Paula Risikko, work wellbeing is the key factor, to workplaces and social success. Improvement of the work wellbeing will provide sustainable development for the work careers. It brings continuity to businesses and careers. Problems in the working life and the work disability are causing misery. In addition, Finland is losing billions of euros each year, due to early retirements, sick leaves, work accidents and decreasing of work efficiency. Every year 23 000 Finnish people will retire on disability pension. The most common causes of disability retirement are musculoskeletal problems and depression. Workplaces need informational support and effective incentives for the development of the wellbeing among the people (Ministry of Social Affairs and Health press release, 30.5.2012).

Farmers' Social Insurance Institution (MELA) has prepared a well-being program for farmers. It is an ongoing project that will continue until 2025. Purpose is to increase and maintain farmers' health, ensure that they get on a holiday healthy and also that they can retire healthy. Many areas are effecting on the well-being program. Occupational health, rehabilitation services, safety at work and work ability (Website of the Farmers' Social Insurance Institution 2012).

This thesis/training guide is a part of the farmer's well-being program. Farmers, who are just starting their businesses, are facing heavy and physically loading work. Health and work ability are essential for individual functioning. Personally knowing

the farm work, I know that it consist lifting heavy objects, sitting a lot when driving different vehicles and walking a lot around the farm. In order, to be able to perform different chores on a farm, the mental and physical well-being is important. It is very important to be in good shape to avoid injuries and that is why physical activity is important.

Training guide is designed to give inspiration and to give information on how to increase physical well-being. When I was working on a farm and the tasks were physically demanding, I really noticed the importance of mental and physical wellbeing. It really helped coping with the job, when I was physically active, and socially active outside the work environment. Stress handling, coping at work smoothly and overall vitality are all qualities, which were better and affected positively towards work when I took care of my own wellbeing. Training guide provides pictures and instructions, how to perform exercises and movements, which help on body functioning. Both, mental and physical condition, are keys to a balanced health. In order to be able to work for many years healthy, it is important to take care of one's well-being.

As a part of well-being package, training guide is aimed to help farmers improve and maintain their physical well-being. Training guide, which provides information combined with pictures, is meant to be a tool for the farmers. Training guide is tool for farmers, to get into better shape and any work including farm work, can be sometimes stressful, and our body has to make an effort to handle different situations. It will help farmers to cope in their physically loading work, throughout the year.

2 PURPOSE AND AIM OF THE THESIS

Purpose of the thesis is to produce an inspirational and easy-to-follow training guide. Target group is farmers who are just starting their businesses and as well as the ones who are working in agriculture field. The aim of the training guide is to increase the knowledge of maintaining a good functional capacity of cervical spine and shoulder girdle. Training guide is designed to be easy to approach and to give an effective workout.

Aim is to get the farmers to be more physically active. Training guide involves theoretical part, and actual training part with a resistance band, with the help of photos and instructions. Purpose was to make the training guide into a file which can be downloaded easily from the internet and also as it can be ordered from MELA's web pages. Main purpose and aim for the thesis is to get good results on farmer's wellbeing, and help on everyday living, as a part of wellbeing project. The purpose and aim is to impact on the attitudes, and to give knowledge how to achieve results by training.

3 WELLBEING PROGRAM

Farmers' Social Insurance Institution (MELA) has prepared wellbeing program for farmers. Program has started in 2011. It is an ongoing project that will continue until 2025. The aim is to increase the healthy years of work. Purpose is to increase farmer's health, ensure that they go on a holiday healthy, and they can retire healthy. Many areas are connected on the wellbeing program. Areas are: occupational health, rehabilitation services, safety at work and work ability. Other areas that are connected with the wellbeing program include: occupational health of farmers, vacation services, rehabilitation, professional services for occupational safety and wellbeing at work. Preventative and promoting activities, which promote work ability and wellness services, are priorities in the program. (Website of the Farmers' Social Insurance Institution 2012)

Training guide is a tool for the farmers, from which they get information and instructions. Now day's workers suffer a lot of different musculoskeletal problems in the upper-limbs and also in the back area. Particular problem in agriculture is musculoskeletal problems. This kind of well-being project is for helping on preventing musculoskeletal problems. Well-being program combined with training guide is really current, because the increasing problems on peoples well-being (Website of European Agency for Safety and Health at Work)

Farmer's Social insurance Institution has made targets towards the program. Wellbeing program has four targets by 2025. Firstly, raise the retirement age by three years

from 60 to 63 years of age. Second target is to decline the number of new disability pensions by 20 percent (6.7 ‰ → 5.5 ‰). Thirdly, the number of accidents decline by 20 percent (57 ‰ → 45 ‰). Fourth target, aims to have all the farmers who are starting their business, to be clients for the Farmers' occupational health care. Rise from 40 percent to 70 percent. (Website of the Farmers' Social Insurance Institution 2012).

3.1 Factors affecting farmers coping and wellbeing at work

One of the most dangerous jobs is farming. Every year in farm work there is approximately 5000 occupational accidents and about 300 entrepreneurs suffer an occupational disease. Accidents in agricultural work are also serious. Farmers have to face the problems that occur from keeping up with the work. Farmers working and functional capacity is put to the test, due to these problems. Most common reasons for disability retirement are musculoskeletal and mental health problems. Society sets more pressures to farmers on the issues towards environment, animal wellbeing and financial matters. (Website of the Farmers' Social Insurance Institution 2012)

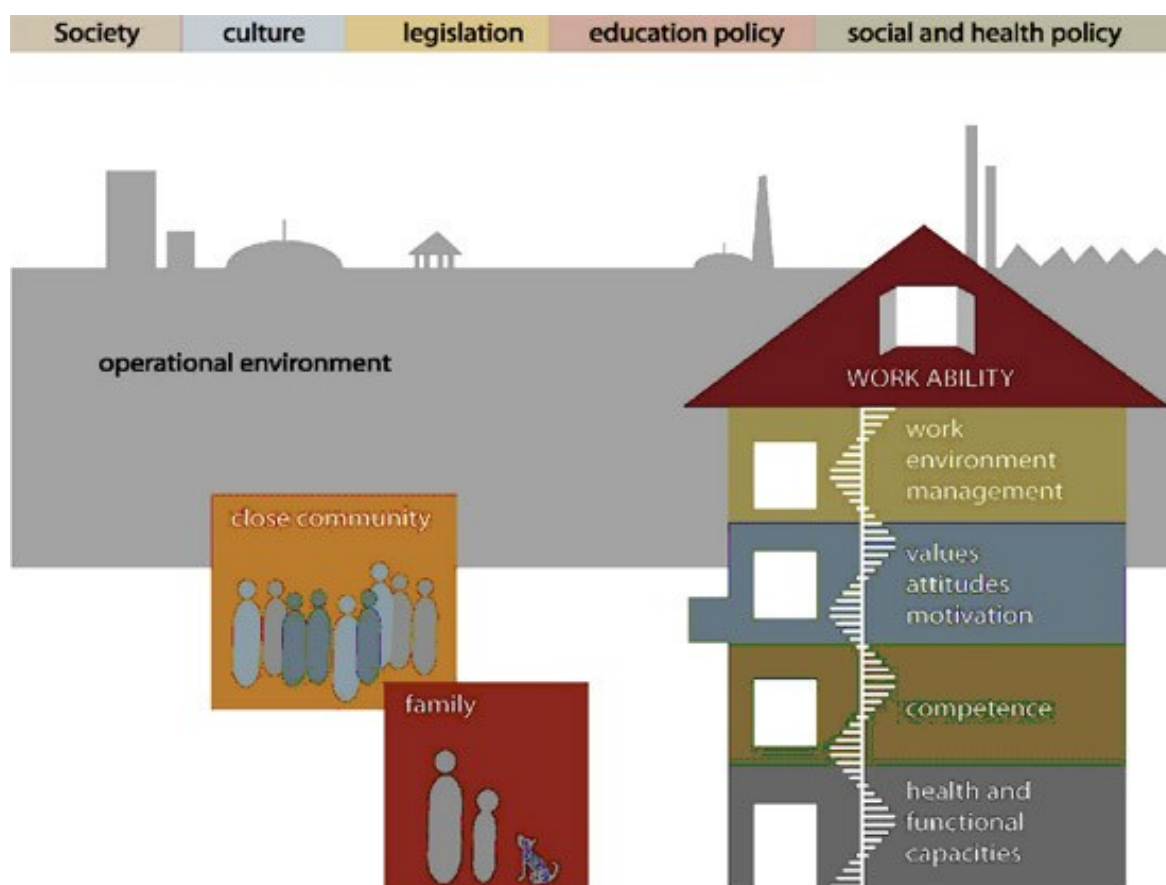
Farm work has changed a lot in a short time and work requirements are increasing all the time. The need for expertise, including management issues is growing. Major changes in social, economic, market and agricultural policy will reduce the feeling of control. Uncertainty towards the future will undermine the work wellbeing. (Website of the Farmers' Social Insurance Institution 2012)

Family is acting as an important resource for the farmers. If the family is not working well, it will affect negatively. According to MELA's customer survey, factors which are affecting farmers coping at work were: regular vacations, adequate rest and high quality leisure time. Also relationships, friends and family were important factors for the resources. Health and good mental and physical condition were important factors affecting the working ability. (Website of the Farmers' Social Insurance Institution 2012)

3.2 Work ability & wellbeing

Strengthening the functions of the organizations strategy and promoting the wellbeing, promotes efficiency of work. It creates the conditions for the continuation of work and provides tools for managing disability risks (Website of Local Government Pensions Institution). There is work ability models developed to give information towards work ability. Work ability house- model (table 1) is developed by Professor Juhani Ilmarinen. It is based on studies which established factors which effect on work ability (Website of Finnish institute of occupational health 2012).

Table 1. Work ability model by the Finnish Institute of Occupational Health, 2006 (http://www.ttl.fi/en/health/wai/multidimensional_work_ability_model/Pages/default.aspx)



Work wellbeing is built from safe, healthy and productive work, which is done by skilled workers and working communities in a well-managed organization. When the workers and working communities find their work meaningful and rewarding and when the work supports their life management, it increases the work wellbeing. The development of work wellbeing is about development of the work. It is about human resource perspectives towards the organization's strategic planning and implementation. That way it is development towards systematic and pro-active leadership, expertise, working conditions, work ability, work content and work process (Website of Local Government Pensions Institution).

Work wellbeing means that the work is meaningful and fluent in a safe, health-promoting, and supporting career working environment and community. In the workplace, the most important resource is healthy and happy employees. Work wellbeing affects on the organization's competitiveness, financial performance and reputation (Website of Finnish Institute of Occupational Health). Work wellbeing is based on co-operation. Occupational health and safety is aiming to increase work wellbeing at workplaces. Work wellbeing consists of many different factors. The most important factors are the employee's health along with managing at work, workplace safety, good job managing, work environment and management (Website of Ministry of Social Affairs and Health).

The main threats to working ability were considered spiritual threats, stress and depression. Diseases, occupational diseases and accidents were also considered to be threats to work ability. Excessive workload, time pressure and the binding nature of the work are often the reasons that there is not enough time for threat prevention. To improve work wellbeing it was hoped from MELA, the development of holidays, rehabilitations, "get fit" courses as well as training, information and guidance. Development of occupational health was considered important. Wishes were also various events to promote occupational health and opportunities. (Website of the Farmers' Social Insurance Institution 2012)

3.3 Actions towards wellbeing program

About 40% of MYEL's (pension insurance) insured farmers are in the occupational health care. MELA wants to encourage farmers to join the occupational health care. Occupational health care measures will help farmers to maintain the capacity to work, and keep going for longer in work in good health. Connection between health and working conditions are essential to farmer's occupational health care system. A significant part of this are farm visits, which will determine the working conditions or working habits, related to health and safety hazards. Visiting the current farm is done according to occupational health care policy, at least every four years or in the state where circumstances in the farm are changing. (Website of the Farmers' Social Insurance Institution 2012)

According to MELA, the following development measures can promote the impact of occupational health care (table 2) to promote farmers' ability to work, centralization of occupational health care systems and closer co-operation. Concentrating occupational health care services into larger units, which can provide consistent quality services, when a sufficient amount of customers secure the skills of the occupational health care staff (requires a change in the law). Also one action is co-operating among agriculture workers and co-operation groups. (Website of the Farmers' Social Insurance Institution 2012)

Table 2. MELA's development of occupational health care services.

Development of farm visits towards the farms specific requirements.
Reform of the state visits to the registry to better support the monitoring of measures. It will help the monitoring of the work in the farms.
Increasing the occupational health care services:

The simplified accession procedure and a new brochure
Improving the internet information (such as a list of occupational health care professionals in each state)
Holidays

MELA wants to make sure, that service planning is running smoothly, and stand-in workers during the holidays will get a proper orientation to the farm. MELA has made a plan to improve stand-in workers professional skills and for the availability of the workers. MELA wants to recruit youngsters to the holiday workers job, and improve the workers education. Co-operation with all the holiday workers is important. MELA wants to improve the co-operation between the entrepreneurs, stand-in workers and with the firms which provide the services. (Website of the Farmers' Social Insurance Institution 2012)

Safety and wellbeing at work is important issue. Improving the communication and information is on the top of priorities. Internet pages and brochures must be updated, rehabilitation service marketing and co-operation with all the fields in agriculture. MELA targets the grant money to projects which will support longer working careers. They make their own information-and training activities and also events which will target the safety at work. (Website of the Farmers' Social Insurance Institution 2012)

Knowledge augmentation is on the wellbeing package. Being in contact with the students during the studies and activating the study grant. Also co-operation with organizations to improve safety at work is on the priority list. To reduce permanent occupational harms, accident injuries and to promote wellbeing, it is important that injured or disabled will receive treatment at the early stage. Also the rehabilitation is best to start as soon as possible. Therefore, while processing financial compensa-

tions, it is important to pay attention to all the measures which are involving in the process. (Website of the Farmers' Social Insurance Institution 2012)

MELA effects on the money transfers from MYEL- pension payments. Money transfers are controlled directly to actions which promote farmers working abilities. Making sure, that workers have insurance, extending careers is possible from the beginning. (Website of the Farmers' Social Insurance Institution 2012)

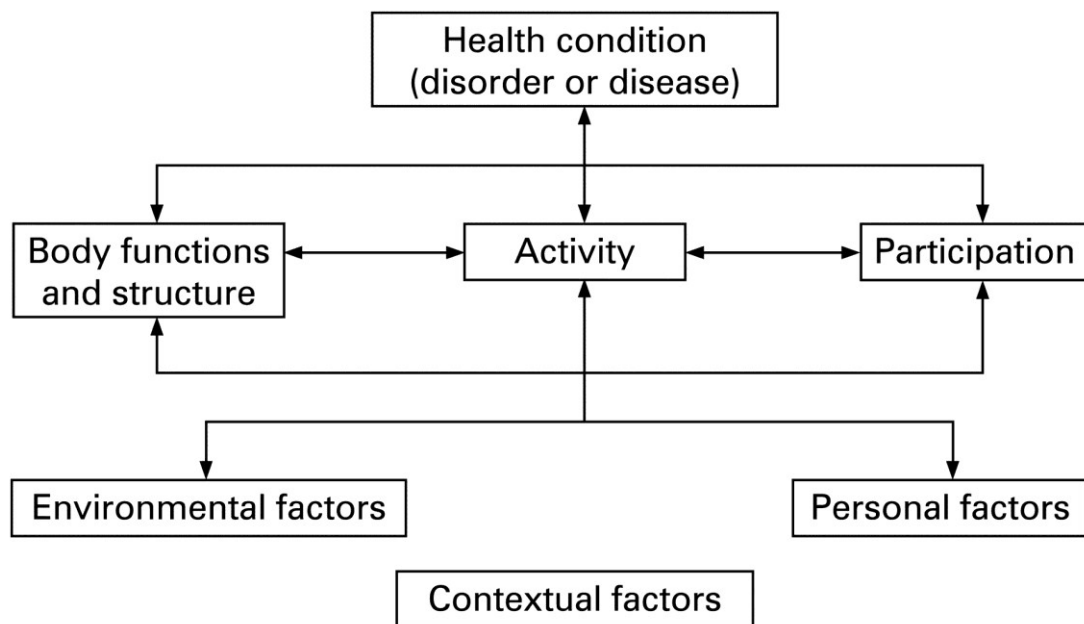
4 HEALTH PROMOTION

“Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions” (Website of World Health Organization 2012). “Health promotion is probably the most ethical, effective, efficient and sustainable approach to achieving good health” (Davies, Mcdowall. 2005, 7).

Health was initially defined by World Health Organization (WHO) in the 80’s. In public there is many terms to health promotion issues for example health education, health improvement, health protection, disease prevention and health development. Since the first definition, it has been refined due to economic, environmental and social factors. When considering health and health promotion it has to be also considered that different cultures and societies define health differently (Davies, Mcdowall. 2005).

World Health Organization (WHO) has made an international classification for health and health related domains. In common language it is known as ICF, The International Classification of Functioning, Disability and Health (table 3). Domains in ICF classification are classified by two lists by the perspectives from body, individual and societal. Body functions and structure is a one list and domains of activity and participation is another. Health and disability at both individual and population levels are measured with the ICF (Website of World Health Organization (WHO)).

Table 3. International classification for health and health related domains, ICF (<http://www.hqlo.com/content/6/1/30/figure/F1>)



4.1 Physical activity

Physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure (World Health Organization). Exercising and being active should be part of enjoyable everyday routines. Physical activity is important; purpose is to impact on the attitudes and to give knowledge. Physical well-being helps keeping the quality of life high. Employee can take care of well-being by being physically active as much as possible, at work and at free time. It is good to replace car by bicycle, use the stairs instead of elevator and if possible, it is good to walk to work for example (Website of Finnish Institute of Occupational Health).

Physical well-being effects on the mental and social wellness. Being active and doing regular training will prevent and fight against many disorders. It prevents from musculoskeletal disorders, heart-and cardiovascular diseases and metabolism works well. Being active, you boost your self-confidence, decrease stress and your body awareness becomes better, and you will improve posture (Website of American Heart Association). Training should consist of aerobic and muscle strengthening activities. Examples of aerobic activities are activities which will make breathing harder and

heart rate faster. Activities that will make muscles stronger are weight lifting and resistance band exercises for example (Website of U.S Department of Health and Human Services)

When training neck-and shoulder area, it is important that muscles are warmed up. While doing exercises, it is good to do pumping movement and longer repetitions to get the blood circulation better and also the metabolism will get better. Pre-stretching is advised thing to do; it effects on the blood circulation on the trained muscle, and also gives a good stretch. When training and rehabilitating neck-and shoulder area, it is important to train upper back muscles also. Different rowing and pulling movements are recommended. Also neck muscles should be trained and stretching is really important for the neck-and shoulder area. Stretching has to be done always carefully and by using the right technique. (Aalto, 2005, 143-146.)

‘Intensity refers to the rate at which the activity is being performed or the magnitude of the effort required to perform an activity or exercise. It can be thought of "*How hard a person works to do the activity*". Physical activity varies between people, and the intensity of different forms. Previous exercise experience and their relative level of fitness, is affecting on the intensity of physical activity. The examples given below, varies between individuals and examples are provided as adviser (Website of world health organization 2012).

Physical activity which requires a moderate amount of effort and noticeable accelerate of heart rate, is considered to be moderate physical activity. World health organization has given examples of moderate intensity physical activity. Few examples are for example: brisk walking, house- and domestic chores, gardening and carrying moderate loads (<20 kg). (Website of World Health Organization 2012).

Vigorous intensity can be included into activities, which require a large amount of effort and which will cause a rapid breathing and significant heart rate increasing. Examples of vigorous intensity physical activity are: running, fast cycling, competitive sports and carrying/ moving heavy loads (>20 kg). (Website of World Health Organization 2012). (Website of World Health Organization 2012).

Metabolic Equivalents which are abbreviated as METs, are usually used to define the intensity of physical activities. Metabolic Equivalent is the same as a person's working metabolic rate relative to their resting metabolic rate. Metabolic Equivalent is defined as the energy cost of sitting easily and is equal to a caloric consumption of 1kcal/kg/hour. It is estimated that compared with sitting easily, a person's caloric consumption is higher when being moderately active, up to three to six times (3-6 METs) and when being vigorously active, more than six times higher (>6 METs). (Website of World Health Organization 2012), (Website of Duodecim, exercise physiologist Eija Kutinlahti, 30.10.2012)

Daily activity should last at least thirty minutes, and it should be loading enough, that it causes shortness of breath and some sweating (ktl.fi). Important role is also to maintain agility and balance training. Daily 30 minute lighter exercise can consist for example of walking, doing snow removal from driveways, or cleaning. Daily amount can be divided into a few shorter sessions. Alongside lighter exercise, it is recommended to do heavier exercise for improving muscle condition and oxygen intake. Heavier exercise should be done at least three times a week, for 20 minute per session (ktl.fi). Recommendations are for healthy people and amounts are the minimum. Being more active, it will gain more health benefits. It is important to know, how much own personal limits are. Body needs to recover from physical performance. Rest is crucial for well-being. When training neck-and shoulder area, it is important to do longer repetitions to get good rehabilitation. (Website of Finnish institute of occupational health 2012), (Website of National Institute for Health and Welfare 2012)

4.2 Work load and functional capacity

Farmers work has changed in a short period of time. A lot of work is done by machines but it is still hard work. Different lifts with heavy loads and painful and tiring postures are very loading for the body. Workers in agriculture are in the highest risk of getting upper limb disorders which are work related. It occurs on pain and causes headache for example. Working in agriculture field and in work life generally, occupational health risks are always present. Individual's psychological and physical health, as well as organizations effectiveness, can be at risk due to work related

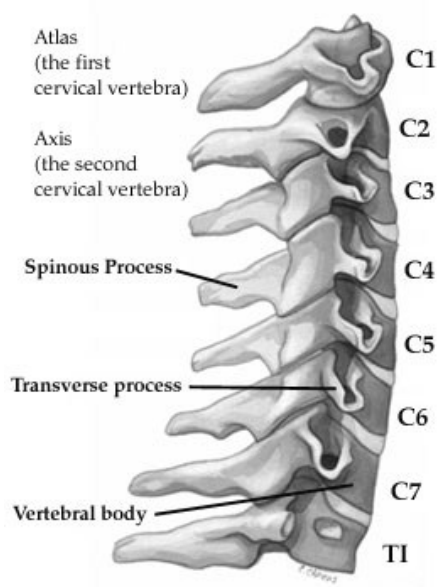
stress. It is globally recognized as a major issue to workers and organizations health. Working environment is frequently a place, where most of the waking hours are spent for working people (Website of the Farmers' Social Insurance Institution 2012) (Website of European agency for safety and health at work 2012).

Numerous surveys indicate that performed activities are found to be demanding, constraining, and stressful. It is recognized, that leading causes for early retirement from work, high absence rates, overall health impairment, and low organizational productivity, are mental health problems and stress related disorders. Best ways to prevent stress are good management and good work organization. (Website of World Health Organization 2012).

5 CERVICAL SPINE AND SHOULDER GIRDLE

The cervical spine begins at the base of the skull. Seven vertebrae in the neck make up the cervical spine (table 4) with eight pairs of cervical nerves (Agur & Dalley 2009, 286, 295)

Table 4. Cervical Spine. (<http://www.hughston.com/hha/a.cspine.htm>)



The cervical spine allows different movements and positions of the head with good support. Cervical area has the greatest range of movement of the spine, it allows flexion, extension and rotations and lateral flexion's from side to side. (Gailliet 1981, 1)

Ligaments, tendons, and muscles help to support and stabilize the cervical spine. In addition they work to prevent extreme movement that could result in serious injury. Muscles provide spinal balance and stability, and help to provide movement. In response to nerve impulses, muscles contract and relax originating in the brain. Some of the muscles work as antagonists, which means when a muscle contracts, the opposing muscle relaxes. There are different muscle types, which are forward flexors, lateral flexors, rotators, and extensors. (Website of spineuniverse 2012)

Cervical spine which consists of 7 vertebrae's, is a part of the whole spine. Cervical spine is the most moving part of the spine. Cervical spine is separated to upper-neck and lower-neck. Cervical spine has great mobility, especially at rotation movements. Vertebrae's in cervical spine are quite small, and there is not that much weight that vertebrae's should carry. Flexion and extension adds more pressure, but otherwise there is not that much pressure in the cervical spine. Working in a farm causes stiffness and pain, especially to the neck- and shoulder area, back might be tired and headaches might occur. Problems will occur at some point, and problems can effect on the work ability. (Taimela 2002)

Shoulder girdle and shoulder joint form a joint combination, which has three essential joints: shoulder joint (glenohumeral joint), acromioclavicular joint and scapulothoracic joint. Essential bones are scapula (shoulder blade), clavicle and humerus. Scapula is a triangle shaped bone, the prominent part of scapula ends laterally to acromion, which reaches over the front space of the shoulder joint and attaches to clavicle. (Taimela 2002, 41). Movements of the scapula are protraction (forward movement), retraction (backwards movement), elevation (upwards), depression (downwards) and rotation. Many different muscles are involving in the movements by supporting the structures. (Taimela 2002, 46)

Table 5. Muscles supporting the scapula (Taimela.S, 2002, 46)

Muscle	Function
M. Trapezius	Lateral rotation, elevation and retraction (upper part); retraction (middle part); depression (lower part). If scapula is fixated, extension and lat. flexion of the cervical spine.
M. Rhomboid major & minor	Retraction of the scapula. Bringing scapula to the neutral position.
M. Levator scapula	Elevation of the scapula.
M. Serratus anterior	Protraction of the scapula, dynamic supporting to thorax and rotation.
M. Pectoralis minor	Protraction of the scapula. If scapula is fixated, elevation of the rib cage.

Clavicle goes almost horizontally at the base of the neck. Clavicle joints are not supported by any muscles directly; stability for the joints in the clavicle is relied on ligaments. Upper extremity is attached to the body with clavicle. Clavicle has three purposes: it supports the upper extremity from the body in a way that the movement is possible in upper extremity. It provides muscles attachment and moves forces from upper extremity to the body. (Taimela 2002, 45)

Head of the humerus bone is round and head of the humerus fits into a joint socket in the scapula to form the shoulder joint (glenohumeral joint). Shoulder joint is a socket joint (ball joint) and due to that, range of motion is large. Range of motion is free to

different directions: flexion, extension, abduction, adduction, internal- and external rotations. (Taimela 2002, 41-42)

5.1 Mobility & stability of cervical spine and shoulder girdle

Mobility and stability is the key to shoulder functioning. Glenohumeral joint structure and simultaneous motion of all segments of the shoulder girdle provides a large mobility. In order to maintain mobility properly, muscle coordination is crucial. Due to the great mobility of shoulder joint, muscle control plays a main role on shoulder stability and glenohumeral capsule, labrum and ligaments play a minor role (Website of ScienceDirect)

5.2 Musculoskeletal disorders

Musculoskeletal disorders are common among the farmers. Agricultural work is carried out with high risk of exposure to diseases that affect the upper limbs. Neck and shoulder area is quite loaded on daily activities. For example, one-sided and awkward postures make neck and shoulders feel tight and easily sore. Agriculture work is physically strenuous for the body. For example, different lifts with ergonomically poor postures are among the factors that affect the neck and shoulder. By focusing on the body postures during lifting it is possible to prevent musculoskeletal problems (Website of European agency for safety and health at work 2012).

Musculoskeletal disorders are causing a wide range of problems in human health. Musculoskeletal disorders in agriculture are a big problem. Approximately 60% of all workers in agriculture are facing pain in postures (European Agency for Safety and Health Agency). Almost half (~50%) of the agricultural workforce is in raising and moving heavy loads. Workers in the field of agriculture are having the highest risk for musculoskeletal disorders among the construction workers, in addition to the upper limbs. Musculoskeletal disorders are common all over the world and those should be recognized and prevention against disorders is very important. Musculoskeletal disorders cause high health care costs in the workplace. (Website of European agency for safety and health at work 2012)

6 ERGONOMICS

“Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimize human wellbeing and overall system” (Website of International Ergonomics Association 2012)

Proper ergonomics provides better working facilities and it will prevent from injuries. When working, we should always consider how we lift or sit for example. Ergonomics is a big factor which effects a lot, posture is not always good when working and doing for example lifting. In reality, it's not always working, we might sit back twisted, or lift something the wrong way. Making sure that all the machines and equipment are used the proper way, we make sure that we don't overload our bodies too much. By adjusting for example the seat, and using for example some supports, we improve working (Website of International Ergonomics Association 2012)

When considering ergonomics, it is possible to divide it to three different parts. Physical, which involves tools, machinery, furniture and workplace structures. All of those must be organized in a proper way. It means that everything has to be easily in use and ergonomically adjusted. Still it is not always possible (tyosuojelu.fi). Cognitive; using knowledge to improve/maintain proper ergonomics. Organizational; workplace structures, facilities and break exercises for example (Website of occupational safety and health administration 2012)

Different characteristics of human, such as anatomical, anthropometric, physiological and biomechanical, are considered to be physical ergonomics. All of the characteristics are related to physical activity. Following topics are considered to be relevant: working postures, how materials are handled, repetitive movements, musculoskeletal disorders which are work related, layout of the workplace environment, safety at work and also health of the workers (Website of International Ergonomics Association 2012).

Cognitive ergonomics are related with mental topics. Perception, memory, reasoning and motor response, are examples of mental issues, as they affect interactions among humans and other elements of a system. Mental topics include: mental load that work is causing, decision making, skills, interaction between human and computer, human reliability, stress from and also training, because these may relate to human system design (Website of International Ergonomics Association 2012).

Optimization of organizational structures, policies and processes in the organization are concerned with organizational ergonomics. Topics which are related, are communication, management of the crews resources, work design, work times designing, teamwork, design of participation, community ergonomics, co-operative work, new work paradigms, organizational culture, virtual organizations, telework, management of quality (Website of International Ergonomics Association 2012).

7 THESIS PROCESS

First meeting considering the project was on May 2011. I was talking about the opportunity to be a part of the MELA's well-being project, and to be able to do thesis as a part of the project. I contacted MELA and their contact person. I send some questions regarding the project and agreed to start working on the project. In August, I started to plan the process and did some writing. I was finding out about the well-being project, and what to consider towards the thesis. We had the first meeting with the thesis supervisor. On the meeting we talked about the writing process, and made some decisions how to continue. On September, I contacted farmers from Satakunta region to answer for a questionnaire concerning their work and possible muscular-skeletal problems. I was able to get in contact with a few. I made them a simple three question questionnaire which they answered via e-mail. On the basis of the answers I was able to plan my training guide towards the proper needs and aims that MELA was looking in their project. In October, I was writing and planning the training guide and making decisions towards the actual exercises. Last two months of 2011 went to planning and organizing the photo-shoot. I was contacting the photographer, model and made the arrangements for the facilities and with MELA. The photos

were taken and then send to MELA in December 2011. During 2012, final theory was written and final layout for the text was done.

Table 6. Thesis timetable.

DATE	ACTION
May 2011	Talking about the project, sending e-mail to MELA
August 2011	First meeting with the thesis supervisor, start writing thesis
September 2011	Writing thesis, sending questionnaire to farmers
October 2011	Writing thesis
November 2011	Planning & organizing photo-shoot
December 2011	Photo-shoot for the training guide
January 2012- November 2012	Writing and finishing theory part of the thesis

8 DISCUSSION

Thesis process discussion and planning started on April 2011. Farmers' Social Insurance Institution (MELA) contacted school and offered thesis subject. I contacted MELA and got necessary information about the project, and the issues which I must cover, contract for example. I made the plan for the process and piloting for the questionnaire for farmers. I contacted farmers from the Satakunta region and got them to be interested towards the piloting questionnaire.

Information collection was easy from the musculoskeletal problems which farmers are suffering. Via email it was good to gather the answers from farmers and make the conclusions about the problems. Receiving the questionnaires, helped on the planning towards the actual training guide. It was easier to concentrate on the exercise planning when knowing which parts are the most painful.

The aim of the questionnaire was to find out, what kind of problems farmers get from their work. How the job especially effects on their neck-and shoulder area. Questionnaire was done to receive information about the pain, and to give good ideas how to plan the training guide to farmer's needs. Questionnaire was done in Satakunta region with the help of local farmers.

The questionnaire results gave obvious information about the musculoskeletal disorders which the farmers are suffering or which they have suffered. Most common place where the work results pain, is the neck- and shoulder area. All farmers who answered the questionnaire answered that neck- and shoulder area was the most painful. Lower back was painful too. Lifting heavy objects and using the machinery causes mostly the problems. Poor ergonomics is also behind the disorders.

I started searching information from the databases found in the SAMK library web pages. Problems that occurred were the amount of articles and the limitation of the proper ones, which are really connected with the thesis aim and idea. The challenging part was finding the most useful one's for this thesis. I also wanted to use mainly the latest researches, articles and other sources. Many web pages and SAMK library were also sources of information, good links were found. Web pages provide most of the material used in the process. Organizations web pages I found really well to use. Information through organizations from different fields provided the best information. For example from health and ergonomics, specific web pages provide a lot of information.

First I researched old publications on the similar subject which had same kinds of photo series. After that I contacted the photographer and we planned the photo shoot and the rough layout together. The model was booked at that time too. The photo shoot held place on SAMK campus on December 2011. Photographer brought all the equipments he needed and I arranged the exercising equipments used in the shoot. The shoot went nicely and the photos came out well. The final photos for the training guide were chosen after the pre-image processing and after that they were finalized and attached to the guide. Then the final product was sent to MELA where it was approved and sent to their graphic designer for the final layout.

The process of getting the actual guide into whole was started with the exercise planning and instructions after receiving results from the farmers answers. Exercises were easy to choose due to the obvious problems which farmers suffer. I contacted the model and photographer for discussion concerning the actual photo-shoot. Photo-shoot went well and the final layout work was done in MELA, by their graphic.

For future wellbeing and work quality assistance, wellbeing program is good to keep rolling. Wellbeing affects the work and these different parts of the program provide useful information and ideas which will help and motivate the farmers who are starting their business as well as the ones who are in the agriculture environment. In the future it is good to keep some parts of the wellbeing program towards physical activity, to provide necessary information.

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ATTACHMENT 1. Research questionnaire

Questions:

1. Does the work result in pain
 - In the neck-and shoulder area?
 - Back?
 - Lower back area?
 - Or somewhere else?

2. What are the tasks that you feel the most loading?

3. Have you had
 - Pain in the neck-and shoulder area?
 - Headache?
 - Pain in somewhere else?

ATTACHMENT 2.

Farmers in Pori region, summary of results

1 Do you feel your work causes

a) Pain

- Neck and shoulder?
- Lower back?
- Something else, what?

b) Muscle stiffness

- Neck and shoulder?
- Back?
- Lower back?
- Something else, what?

2 Which tasks do you feel strain on neck and shoulders?

3 Have you had?

- Ache the neck-shoulder region?
- Headache?
- Pain somewhere else, where?

Results:

Based on the responses entrepreneurs suffer from very similar problems. All received answers pointed out, that muscle stiffness has appeared in the neck and shoulders. Some farmers have pain in the lower back. Loading, especially in the neck and shoulder area occurs, when running machines during plowing season. Neck- and shoulder pain/aches have occurred in each of the participants.

