Tampere University
Health Sciences

NOT A LAUGHING MATTER

- Getting serious with laughter and health

Master Thesis
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THE ABSTRACT

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The research of laughter could seem ridiculous. As the different aspects on the subject are uncovered, the more serious nature of the topic emerges. This study tries to shed light to many characteristics of laughter. The work is divided into three major parts. The first one is the literature review where after the empirical study follows and a discussion gathers the threads at the end. The literature review takes a starting point in a mind and body relationship and deals with the immune system, the placebo effect, psychotherapy and health determinants. Laughter as a phenomenon and its health linkage is described and evaluated. In the empirical part of the study the three research questions are proposed and answered.

A small-scale laughter diary based empirical study, health questionnaire and detailed interviews showed a connection between laughter and health. It also identified laughter as a mean for coping and communication. The diary approach was evaluated as a methodological innovation that served its purpose well, but had also some limitations. Modifications needed for better implementation in future studies are being presented.

Keywords: Laughter, humour, health, diary

TIIVISTELMÄ

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Naurun tutkimus saattaa aluksi vaikuttaa naurettavalta. Kun aihealueen eri puolia kuitenkin tarkastellaan, asian vakavampi puoli nousee esiin. Tämä tutkimus koettaa valottaa naurun monia ominaisuuksia. Työ on jaettu kolmeen osaan. Ensimmäinen on kirjallisuuskatsaus jota seuraa empiirinen osio. Pohdinta lopussa kerää tiedon eri osat yhteen. Kirjallisuuskatsaus lähtee liikkeelle mielen ja ruumiin yhteydestä ja käsittelee siten immuunijärjestelmää, plasebo-vaikutusta, psykoterapiaa ja terveyteen vaikuttavia tekijöitä. Naurua ilmiönä ja sen yhteyttä terveyteen kuvaillaan ja arvioidaan. Empiirisessä osiossa esitetään kolme tutkimuskysymystä ja niihin vastataan.

Pienimuotoinen naurupäiväkirja, terveyskysely ja syventävät haastattelut toivat esiin yhteyden naurun ja terveyden välillä. Ne osoittivat myös naurun aseman selviytymiskeinona ja kommunikaation välineenä. Päiväkirjamuotoinen tutkimus arvioitiin kokeellisena tutkimusmuotona toimivaksi, kuitenkin muutosehdotuksia esitetään lopussa mahdollisia jatkotutkimuksia varten.

Asiasanat: nauru, huumori, terveys, naurupäiväkirja

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1. INTRODUCTION

Eyes are pouring down water and just the fact that I have been laughing so much, makes me giggle even more (laughs). It does give a positive feeling, or a kind of a good feeling. Regardless of what the laughter was triggered of. Also here and now when I give a laugh it feels like something begins to happen inside. (Less laughing woman)

Laughter is a funny matter. Trying to catch the essence of it makes it fade away. As a research topic, to many it seems to be ridiculous. Getting serious with laughter is not plausible. For that reason the existing knowledge from the field is limited. For obvious reasons, it is not a research area which has a lot of prestige and money in it. Positive research seldom has. Nevertheless new results are emerging, though much of the research still is methodologically limited and draws conclusions from old anecdotes, which are not by any means verified. I am not trying to laugh my way out of this task, but view the topic with critical eyes and see what is there to discover from the matter of laughter.

Laughter occurs mostly as a result of humour. It is a highly social trait and its meaning to us differs depending on the given situation and the individual. Laughter prolongs life, says an old saying. Whether this is true, will be the motivating question of this study. How to measure laugh is also one of my key interests. Though the subject deals with laughter mostly, it is good to bear in mind, that it is only an example of many positive feelings that a human being can experience and which all may alter the whole being.

The work is roughly divided into two parts. The first one is the literature review going through what is known about the subject at the time. The second part is the empirical part, in which I shed light to the subject through empirical methods. The literature review takes a starting point from the mind-body relationship. It explores different ways a mind can influence a body and vice versa. Thereafter several health determinants are taken up for evaluation. The study of laughter follows and concludes the review with more health specific issues. The empirical study is a combination of both quantitative and qualitative research. A diary based study with a health questionnaire included in it makes the quantitative part of the study, and two interviews quoted throughout the

report represent the qualitative side of the study. The final chapter combines the different elements of the study to discuss the results of the research in the light of existing knowledge on the field. The methods used are then also evaluated.

2. LITERATURE REVIEW

Considering how good the feeling is after one has really laughed, it has to have some sort of an effect. There - in the body - begins to happen something. It gets something. I suppose everything has its reason, otherwise they would not exist, both crying and laughing. (Less laughing woman)

2.1 The power of the mind

Biological bodily functions and psychological processes are combined in a human being to create a complex and multi-faceted creature. It is an entity, in which both the psychological and the biological aspects support one another and a life without the other is not possible. Body and mind work together seamlessly. This co-operation can either benefit both or it may have an adverse effect on both. Modern medicine mostly deals with the biological aspect of human beings often neglecting that the two may be inseparable. However, there is strong evidence, also from the medical world, for how the body and mind work together and influence one another. In the following different ways of collaboration are being explored.

2.1.1 The immune system

The immune system plays an important role in both preventing and fighting a disease. The overall capability of the immune system is referred to as the level of immunocompetence. A body with a high level of immunocompetence is more fit to fight infection than a body with a low level of immunocompetence (Hyland 1989).

The immune system is a complex system with several components contributing to the whole. It can be simplified into three functional aspects, the first one being various barriers to infection, e.g. the skin. The second component is the various lines of immune cells, which identify and neutralize threats as viruses, bacteria and cancers. Immune cells are specialized white blood cells fighting against diseases and having different functions in mediation of immunity. Thirdly, there are tissues and organs that actually produce these immune system cells (Bennett 2000).

The immune system is intimately linked to the central nervous system, which in turn plays a controlling role in the human body. The central nervous system allows the body

to respond to not only physical events, such as a feeling of cold, but it also makes the body respond to psychological factors, such as a feeling of stress. This happens even in the absence of any physical changes or demands from the immediate surroundings. (Bennett 2000) Psychological factors can affect different components of the immune system separately through the central nervous system, but they can also influence the effectiveness of the system as a whole (Hyland 1989). As the psychological processes influence the immune system, it clarifies one of the aspects how the mind affects the biological processes in a body, which in turn has direct consequences on a person's health.

2.1.2 The placebo effect

"Placebo effects are generally defined as those effects of a treatment that are not attributable to the mechanics of the treatment itself, but rather to the circumstances surrounding it" (Kent & Dalgleish 1996). As Kent and Dalgleish explain, placebo can be very effective as a treatment, but it does not work always with all patients. A variety of factors can play a role in a placebo effect. According to Kent and Dalgleish approximately 35 % of patients obtain relief to their symptoms from placebos, but with the range being from 0 to 100 % depending on the treatment and condition in question as well as personality traits and demographic characteristics of the patient. Situational factors, such as the patient's and physicians' own belief in the efficacy of treatment, are also important factors that influence the placebo effect. According to Kent and Dalgleish, physicians, who are more enthusiastic about a particular course of treatment, achieve better results than the sceptical ones.

A strong belief in either a treatment or a specific occurrence can cause expected results. This can be called a self-fulfilling prophecy. Voodoo deaths are an example of extreme cases of such having to do with expectations of death (Kalat 1995, 421-422). According to Kalat, sudden death in a frightening situation might have to do with excessive activity in the parasympathetic nervous system. Placebo effects are based partly on the power of expectations.

There seems to be strong evidence that placebos work partly through releasing endorphins into the body. Endorphins are morphine like substances that have powerful analgesic effects. The brain controls pain by releasing endorphins into the nervous system (Goldstein 1999). Several studies testify placebos being addictive and mimicking the effects of active drugs. Placebos have also been reported to have side effects, and a proportion of patients can have reverse effects and may report a worsening of their symptoms. However different views on placebo effects have also been presented, suggesting that the effects have to do with classical conditioning or a spontaneous recovery. Also other explanations on effects after placebo use have been discussed, but none of them seem to provide a full explanation. (Kent & Dalgleish 1996) It would therefore seem that placebo effects bear witness to the strong effect that psychological processes can have on the physiology.

2.1.3 Psychotherapy

Within the psychotherapeutic frame the aim is to identify and remove the obstacles in front of mental development and maturation. According to Pylkkänen (Lönnqvist et al. 1999) psychotherapy aims to enhance the patient's understanding of the existing thought and action patterns and to help the patient find new and more useful ways of thinking and functioning. Psychotherapy is an overall concept, into which many different psychotherapeutic approaches fall under.

A brain possesses plasticity different from most of the other organs in the body. The brain can therefore be influenced by an experience. The environmental input affects the brain and alters the gene expressions (Gabbard 2000). According to Gabbard, the sequence of a gene cannot be altered through environmental experiences, but the transcriptional function of the gene is certainly influenced. This means that experiences can make changes in genes so that the genes' protein production is altered and the strength and type of synaptic connections are modified. Psychotherapy could be seen as an experience of such character.

Gabbard (2000) describes several studies where psychotherapy was used in comparison with medical intervention. Metabolism and brain functions can be observed by imaging.

From these studies it can be concluded that psychotherapy causes biological changes in people in a similar way as a medical treatment does. One of the research projects that he describes focused on cancer patients, who were divided into two groups. One group received psychotherapy and the other group was a control group not receiving psychotherapy. The death rate was found to be significantly lower in the therapy group, even though the therapy only lasted for six weeks.

Consistent with Gabbard, Aalberg (in Lönnqvist et al. 1999) states that the results of psychotherapy have proved to be good. The outcome of psychotherapy can in the correct scenario be regarded as just as good as or even better than with medication. The results depend on several factors such as the duration of the therapy and what kind of therapy is pursued. Important factors are also, which disorder is treated, and how competent the therapist is.

Though psychotherapy is proven to be efficient, there is still a tendency in the modern western world to divide psychologically based disorders from biologically based and to treat those accordingly. The mind and the body are separated against better knowledge. A holistic view would instead call for an understanding of the person as a whole and treating therefore always the whole person, not only either the body or the mind. Both approaches should be used to meet the needs of a human being. As Gabbard (2000) expresses it: "medications have a 'psychological' effect in addition to their impact on the brain, and psychotherapeutic interventions affect the brain in addition to their 'psychological' impact." Furthermore, one could say that psychological and physical effects are not that separate, but merely different perspectives of a single unit.

2.1.4 Exercise and well-being

Exercise is another good example of a factor which influences the body as a whole. In this case it seems to be a reverse effect. The body affecting the mind. There is no doubt that motion is important for a human being. A human body needs a certain amount of exercise in order to maintain its functions. Exercise may very well be just activities of daily living, which keeps the body going or it can be an action which is directed towards maintaining or enhancing the condition, just as jogging. To keep fit, the body has to

move. The influence of exercise on a human body has been studied quite well. Besides all the positive sides that it has for the body as such, there are plenty of other reasons to keep on exercising. The psychological influences are also many. Exercise has been said to enhance positive mood states, self confidence and positive self image. It can reduce muscle tension, anxieties and depression. Exercise increases general well-being (Vuori: *Liikunta ja terveys*).

Markku Ojanen has studied exercise and its influences on well-being. He has written several articles and books over the matter. He acknowledges that exercise, just as well as many other functions, work as mood enhancing elements through a kind of placebo effect. Expectation of positive results will cause positive results (Ojanen 1995).

Wolfgang Stroebe assesses several studies made on exercise and depression in his book *Social Psychology and Health* (2000). One of these studies is a one made of Blumenthal et al. (1999). In that study 156 men and women who were diagnosed with major depressive disorder, were assigned to three groups randomly. One group received antidepressants; other group underwent an aerobic exercise programme and the third group received both medicine and exercise. After four months, the outcomes were the same suggesting that exercise is a good alternative to medication in treating of depression (Blumenthal et al. 1999). Blumenthal also found out in a later study that the results gained through exercising were longer lasting as the habit of exercising tends to stay, while the positive results of the medication are dependent on the intake of medicine.

Paffenbarger (Stroebe 2000, 168-183) found out that exercise may even have a protective function in depression. A prospective study concluded that a relative risk of depression was 27 per cent lower for those individuals, who had exercised in their life. Several studies have, according to Argyle (2001, 115), indicated that exercise reduces responses to stress. He says that the reason might be that better physical capacity enhances the ability to deal with stress as well as it gives a sense of mastery and therefore makes people to believe they can cope with the stressing situation.

2.1.5 Somatoform disorders

Somatoform disorders have earlier been called as psychosomatic disorders or psychophysiological disorders. Nowadays the term somatoform disorders is prevailing. This group of diseases refers to somatic problems, to which a clear physical reason cannot be found. Physical disease may be present, but the severity or duration of symptoms cannot be explained by it. Therefore it is assumed that psychological factors play an important role in manifestation of these disorders. The most common somatoform disorders are somatization disorder, conversion disorder, hypochondriasis, body dysmorphic disorder, and pain disorder (http://www.merck.com/mmhe/sec07/ch099/ch099a.html). It is though good to bear in mind that diseases do have both physical and psychological aspect to them. Whether these somatoform diseases have a bigger psychological role to them, than others do, will be shown to us by the future. I believe that the approach to these diseases suffer from limitations due to lack of medical knowledge at the present time.

2.2 Determinants of health

There are several factors, which influence a person's health. Genes play a very crucial part in this puzzle. Gender, race, eating habits and habitual residence are also essential components, but here I will concentrate on elements, which have a stronger psychological aspect to them.

2.2.1 Social determinants of health

Social organisation is a fundament, which can either prevent health problems, or create them. Brunner and Marmot (Marmot & Wilkinson 2006, 6) argue that it is not necessarily the absolute deprivation that causes the health problems, but rather the relative deprivation. So experiencing that one is doing less well than the neighbour does, is more harmful than the actual lack of commodities. The distress from situation like that affects the health through different pathways. Immune system does not work well under stress and cardiovascular system responses increasing severe health risks. Chronic anxiety, insecurity, low self-esteem, social isolation and lack of control at work are all ingredients, which undermine both mental and physical health.

Social contacts can prolong life. There is substantial evidence in literature that a small number of social contacts can cause earlier death whereas increased longevity is associated with social ties and networks (Bennett 2000). In Reynolds and Kaplan (1990) study, described in Bennett (2000), it became evident that women with few social contacts were at double the risk of developing hormone-related cancers than the less isolated women were. They also had a fivefold risk of dying from those diseases. Social class is a powerful predictor of health. The class influences a person's life in numerous ways. It influences what we eat, how we work and where we live. Social class affects to what extent a person encounters stressful life situations and which resources there are available to her. Individuals from lower social classes therefore both suffer more from illnesses and die earlier than those from higher social classes (http://www.workhealth.org/risk/johnson%20article.html). Workplace or rather the perceived prestige of a certain occupation can predict longevity. Blue collar workers are known to be more in a risk of dying young, or younger, than white collar workers. The less possibilities there is to influence ones own work, the more likelihood to become unhappy and stressed about it. Whereas the feeling of being in control of the situation reduces stress. Psychosocial conditions in the workplace are related with certain diseases. Coronary heart disease, musculoskeletal disorders and mental illness are the most common diseases linked to that (Marmot & Wilkinson 2006, 97).

2.2.2 Stress and health

Stress as a phenomenon has been studied quite intensively. It provides maybe the best evidence for the connection between the mind and the body. Stress can be a temporary experience, in which the stressor prevails only for a brief period of time. It can also be a longer lasting phenomenon or even become a chronic stress. The body's response to chronic stressors is different from its response to temporary emergencies (Kalat 1995). With the prolonged stress, the effects on the brain and the body become more prominent and can be regarded as a health risk. Stress has consequences on immunity as the immune system does not work that well in a stressed body. Stress is unfortunately not an unambiguous concept, but applies to a wide variety of events, which influence the body in different ways (Kalat 1995, 422-425). However, there seems to be consensus in the literature, that the most important factor, when it comes to stress, is how a person

perceives it. Bennett (2000) writes about "a stress in the eye of the beholder ". So instead of focusing on how severe the stressor is, the focus should be on how the person experiences the stressful event. For example a divorce can be experienced by many as an emotionally difficult event in life, but there are also those, who might experience it as liberating. Events, which are experienced as negative and that imply a long-term threat, are the main reasons resulting in stress (Kent & Dalgleish 1996).

In the hectic world we live in, it is important to tackle the stress and try to reduce it when possible. Different ways work for different people. Emotional disclosure seems to improve the quality of life and enhance physical functioning. There have been quite few studies on this subject, but all those bear witness to the fact, that being able to talk about the distresses of one's life helps to cope with them and it even eases up the physical health problems. Kelley et al., referred to in Bennett (2000), arranged a study, in which she evaluated the effects of emotional disclosure in patients with rheumatoid arthritis. Patients were assigned to two groups, from whom the first group got to talk privately about trivial things whereas the second group talked about the stressful events they had experienced. By a three-month follow-up patients in the emotional disclosure group reported better physical functioning than the patients in the other group did. So finding a suitable way to relieve one's mind seems to be beneficial.

2.2.3 Personality and health

Particular types of personality have been linked to certain diseases. According to Bennett (2000), a number of studies witness of an association between hostility and coronary heart disease. In one of those studies conducted by Barefoot et al. (1983) 255 physicians were followed for 25 years. The study showed convincing evidence that those, who scored above the median on hostility scale, had nearly five fold risk of experiencing a myocardial infarction (Bennett 2000). The mechanism, through which the hostility is linked to health, is still unknown. Possible explanation is that the trait of hostility acts as a moderator of the stress-illness relationship. Hostile persons also often lack the social support of their social environment and they often have a more health impairing lifestyle (Stroebe 2000).

2.2.4 Faith, love and hope

Miracle healings have always existed and do happen still. People recover from an illness, while the medical science cannot explain, what cured the person. The person herself might have an idea of, what the crucial thing was. It might have been a special alternative medicine, but often people do state that it was their own willpower to survive that helped them through the sickness. The patient's faith, be it in doctors, medicine, own will power or even in God, works a lot like placebo. Miracles can happen at will. It is a common truth that losing one's hope means giving up and loosing the battle. It is therefore always important to have hope. A normal person's psyche luckily works in a way that each one of us thinks we are a bit more fortunate than the rest of the people. There is evidence for better survival for persons, who are religious (Oxman et al. 1995) and attend religious services (Koenig et al. 1999).

Love makes people happy and according to some studies it has been found to be beneficial for health (Esch and Stefano 2005). Faith, love and hope have all in common that they enhance the positive mood state and act as a defence towards depression. When the psyche is well, it is more likely the physics functions well too.

2.3 Laughter

Laughter appears in children across the world at around four months of age. Young children at five to six years of age laugh on average 400 times a day whereas adults laugh only about 15 times a day. The amount of laughing has diminished in the last 50 years. While we used to laugh approximately 18 minutes per day, now we laugh only six minutes (http://www.hrs.ualberta.ca/EFAP/Newsletters/Vitality-5-1.pdf). Laughter involves both physical and mental compounds of a person. It is a good example of how the mind and the body are intertwined. This chapter concentrates on finding out, what laughter actually is, and why it does exist.

2.3.1 Defining laughter

According to Oxford dictionary, laugh is "…sounds and movements of the face and body that express lively amusement, joy, contempt, etc" (Hornby 1989). Laughter is thereby defined as a vocal and physical occurrence, which has a psychological basis to it. Robert Provine, a psychologist and neuroscientist, has explored laughter from a

scientific perspective. In his book *Laughter: A Scientific Investigation* (2000) he establishes laughter as an ancient, unconsciously controlled vocal relic. Provine has studied laughter structure and found out that a human laughter, though it differs from human to human and from culture to culture, has common traits, which make it easy for us to recognize the act, when seen or heard. A single element, a syllable, of laughter consists of a consonant and a vocal, e.g. *ha*. This is called a laughter note. A common laughter includes five notes which are similar. If there is variation, it is normally the first or the last note that differs from the rest, e.g. *ha, ha, ho*. One note takes about 75 milliseconds and an interval of 210 milliseconds. The sound is produced while exhaling. The amplitude of laughter becomes lower as the volume of air in lungs becomes smaller (Rusch 2006, 77).

Humour and laughter are often understood as one. Though they are often linked together, both can exist separately. Laughter as such, is a physical response to a stimulus which often is humour. However, the stimulus can also be many other things, e.g. laughing gas. Laughter is not a reflex, but a cognitively mediated response. Humour instead is a construct of the mind (http://www.psichi.org/pubs/articles/article_81.asp). In this study, the word laughter is used in a sense of mirthful laughter if not mentioned otherwise. This type of laughter has the humorous aspect to it.

2.3.2 Laughing species

Humour and laughter are important characteristics of a human nature, though humans are not the only species, which can produce laughter. Chimpanzees and other great apes can perform laugh-like vocalization, when tickled or during play. Humans do not have a patent on laughter. Only humans laugh like humans do, but other primates can also laugh. Apes produce laughter like vocalization during both inhaling and exhaling. If played from the tape, a human does not necessarily recognize apes laugh as laughter. Their laughter is not as harmonic as the human laughter. It does not become more silent towards the end and its frequency is twice as much as in human laugh. Apes' laughter and vocalization in general is different from humans' because of their physical appearance. Humans have developed a different breathing system and a chest structure as bipeds (Rusch 2006, 80-81). This fact enables humans to use their throat and vocal

organs in a better way in order to produce speech. Other animals have also been reported to laugh or cry. E.g. rats can produce vocalization, while engaged in play. The sound is so different from human laughter, that it is difficult to equate it with laughter (Provine 2006). Even though the vocalization would not seem to be there as we understand it, it does not mean the feelings do not exist. As mentioned before, laughter can be regarded as a physical phenomenon separate from humour and mirth.

2.3.3 Why do we laugh?

The meaning of laughter is not fully clear. Laughter has a strong biological basis as it is a bodily function combined with emotions. It is a reflex like learned response, which has become a human trait. Reasons for laughing are not possibly fully understood yet, but several explanations have been proposed. Most likely one explanation will never be enough, but all of them reveal one aspect of the truth. Why humans did begin to laugh? Evolutionary views are represented among others by Charles Darwin (lived in 1809-1882) and Desmond Morris (1928-). According to them, laughter has served certain purposes in human development and functioned as a means of communication. Morris suggests that laughter is a fear response followed by an instant relief. As the possibly short moment of danger is passed, a burst of laughter can occur (Morris 1967). Darwin viewed laughter as an expression of joy. He meant that a smile was a precursor to a laugh and that it was not a reflex of the body, but a learned response, which had existed for generations.
(http://darwin-online.org.uk/content/frameset?itemID=F1142&viewtype=side&pageseq=1). In laughter we show our teeth in an open mouth display, which is common with other primates. When done relaxed, it is a call for a play for many mammals. The resemblance with human laughter in both form and context is striking according to ethologist Jan van Hooff cited in lecture transcription called The Evolution of Laughter (http://www.uni-duesseldorf.de/WWW/MathNat/Ruch/PSY356-Handouts/The%20Evolution%20of%20Laughter.pdf). This open mouth display could be the starting point, wherefrom the human laughter has developed. It signals to others, that the situation is not dangerous and it indicates trust in one’s companions. Provine has studied tickling alongside with laughter. He regards those two as companions. The

first being physical play and the latter being vocal play. Both behaviours have a strong social aspect to them.

When looking back in time laughter has always existed in societies. Different religions and different philosophers have had varying views on laughter. It has been regarded both as morally questionable and divine. In the antique and later on in the middle age, laughter could be cruel and directed towards the weakest and the most vulnerable. Platon opposed to laughter as it had in his mind the power to shake up the balance. Aristoteles instead was a bit more accepting. A joke could be sophisticated to a certain degree, but should not be exaggerated (Rusch 2005). Christianity is and has always been quite a serious religion. Laughter does not really fit together with the fear of God. Laughter has therefore been regarded somewhat dangerous. Freud (original text from 1905, translation from 1976) became interested in laughter and saw it as a means to express nervous energy that had been piled up and was finally released as a burst of laugh. Later on the social aspect of laughter became generally the source of interest.

2.4 Laughter and health

Laughter has both short and long term effects. Dividing health into different categories undermines severely the holistic view of the person. I have chosen to do so in order to simplify the processing of the entity. Physical, psychological and social aspects of laughter have all in common that they can enhance the quality of life in many ways. Can laughter prolong life? The question has been raised by many, but answered by few. In what different ways can laughter influence the health of a person, will be the topic of this chapter.

2.4.1 Physical aspect

Laughter affects the human body in many ways. The study of laughter from the physiological point of view has recently been named gelotology. Various regions of the brain are involved in laughter production. Professor of psychology, Peter Derks, has found out that actually the entire cerebral cortex is involved in laughter. When a joke is heard, an electric wave is passed through the cortex. The left hemisphere of the cortex is

believed to analyze the words and the structure of the joke, while the right hemisphere seems to carry out the intellectual analysis (Doskoch 1996). Amygdale is the part of the brain, which guides the person's emotions. Therefore it is also the laughter centre of the brain. While laughing, the nose muscle, the smiling muscle and the big cheek muscle contract whereas other muscles relax efficiently. A couple of minutes laughing has been said to be equivalent with 45 minutes of relaxation. Laughter is excellent exercise for diaphragm muscles and it purifies and makes lungs stronger. It enhances metabolism, digestion and salivation. It is good for the stomach muscles and works as an efficient prevention of constipation (Karvinen 2003, 25).

In literature it is fairly easy to find evidence for laughter and health linkage. It is not difficult to find several scientific tests where laughter has been proven to affect the body in different ways. As mentioned earlier, laughter has been proven to influence bodily functions, such as the respiratory system and metabolism. According to research laughter works also as a mean for both exercising and relaxation and has been found to be an effective analgesic. Provine (2000) raises nevertheless a critical voice and states that these findings often have their scientific weaknesses. Therefore one should look at the test results with clear criticism. He does not mean that laughter would not have considerable health benefits, but according to him it has just not yet been proven to be so. Paavo Kerkkänen from the University of Joensuu has made a thesis of humour and health in Eastern-Finland's police force (Kerkkänen 2003). He investigated the health status and sense of humour of approximately 100 policemen. He found no correlation between the two factors. He drew a conclusion that the health and humour linkage is exaggerated, but in his investigation there were also limitations. Generally the scientific work seems to support the idea of humour and laughter influencing health of the person in many positive ways.

In practically all research made on laughter, a case of Norman Cousins is taken up as an example. He was an Englishman working as an editor in Saturday Review. As he became ill with a threatening disease ankylosing spondylitis, he after a while started his own programme to cure himself. He decided to influence his body with positive feelings by reading funny books and watching comedy. He supplied the cure with lots of vitamin

C. To an amaze of his doctors, he became better and was finally cured. He wrote an article *Anatomy of an Illness (As Perceived by the Patient)* of his experiences and it was published in 1976 in the New England Journal of Medicine. He meant the positive emotions had benefited him in his battle against the disease. The huge public interest twisted the results to seem as if he had laughed his way out of his disease. Later on he tried to explain that it was not just humour, but all kinds of positive feelings that had caused the recovery. The positive collaboration with his doctor was not the least of his remedies.

New research has also emerged on this field. Obviously humour has been judged by many to have potential, which should be further investigated. Unfortunately, this field of study does not gather money around it and therefore the methods often are limited to be as cost efficient as possible. Recently (2007) In Japan, Kimata Hajime found out that watching humorous films would help patients with atopic dermatitis in their problem with night-time wakening. She also found out, that laughter of mothers, who were breast feeding children with atopic dermatitis, could reduce allergic responses of the infants (http://www.newscientist.com/article/mg19426086.900-laughter-improves-breast-milks-health-effect.html). Natural killer cells, which are important for the immune system, have been of interest to many psychoneuroimmunological studies. In Indiana State University School of Nursing in USA, a research was made in 2003 in which this NK cell activity was measured before and after a humorous intervention. They found out that laughter improved NK cell activity thus being a useful cognitive-behavioural intervention in patients with cancer and HIV (http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=pubmed&dopt=AbstractPlus&list_uids=12652882). The state of relaxation gained through laughing, is interesting because this can decrease the level of stress hormones. If laughter is actually proven to be able to do that, then that can explain the health benefits in form of an improved immune system. Some study results show this connection, but good scientific proof does not yet exist (http://ecam.oxfordjournals.org/cgi/content/full/nem041v1). If it is ambiguous to measure health benefits of laughter, it is also so with measuring laughter itself. How to measure a feeling? As laughter is not only a physical occurrence, it is challenging to capture the phenomenon.

2.4.2 Psychological aspect

HA HA HA HA HA! Presumably we all have experienced a burst of laugh. That is the kind of laughter, which occurs without warning. Just like that. It is an instant response when we have seen or heard something amusing. On the other hand laughter might also come sneaking. It starts as a tickle in a stomach. It tickles and tickles demanding to get out loud and mostly it does. I suppose we all acknowledge also the nice feeling, which is left behind after a laughing moment. We feel that it has a positive effect on us, but is that true for real? Can we laugh ourselves happy?

Laughter is not an unambiguous matter, but has several aspects to it. Laughter can be experienced in both negative and positive ways. It can be a source of a huge resource or it can be a handicap for someone. As we grow older, the amount of laughter in our daily lives generally diminishes. We perhaps begin to take the life and ourselves too seriously. The joy of life takes a step backwards and the ability to show the enjoyment fades, which in turn can unfortunately result to further steps backwards. Depression has become a public health problem. According to the Finnish Association for Mental Health, every fifth person in Finland is at the risk of becoming depressed during their lives. 6 % of the grownup population suffers from a severe depression. It is nowadays one of the biggest reasons for incapacity for work and the most important reason for early retirement. Good social relations and caring for one's spirits is important. More joy in each one's lives would certainly not be harmful!

A popular idea, that humorous and optimistic people would live longer than others, has some truth in it. Robert Provine (2000) points out that it is not necessarily the laughter in itself that has the health sustaining ability, but the way humour is used to confront the challenges of life. Humour used as a coping method can relieve the stress remarkably. That brings along health benefits and is therefore per definition beneficial. In Finland Päivi Åstedt-Kurki (2001) has made research on humour in nursing practise. She also has found out the benefits of humour as a coping method. Furthermore, humour helped the communication between patients and nurses and therefore is, according to her, a valuable tool in nursing practise.

2.4.3 Social aspect

Laughter has a strong social function. People are about 30 times more likely to laugh while in a social situation than they are alone. According to Robert Provine (2000), laughter most often is not triggered by humour, but laughter has to do with relationships between people. It is a way of positioning people. According to Provine, laughter has evolved in order to change the behaviour of others. Social rank plays an important role in laughter patterns. It has been studied, that in nervous situations we laugh more as we try to make others feel more comfortable. We of course hope that the others will laugh along and thus make the situation less threatening. Dominant individuals use humour more than their companions. According to some studies chiefs laugh more than their subordinates. Controlling laughter situations means exercising power as the emotional climate is being controlled. By laughing it is also possible to strengthen the position of others. By not laughing the opposite might happen. Of course it is also possible to laugh at someone ill willingly. However, laughter occurs mostly while people are comfortable together. Laughter is contagious and works as a bonding mechanism. The more laughter, the better relationships and in return again more laughter. The gender plays also a role in laughter patterns. Men are usually bigger laugh-getters while women laugh more to attract men.

A much cited anecdote describes how a laughter epidemic started in Africa in 1960's. The place was Tanganyika, which is Tanzania nowadays. There, in a girl's boarding school, three girls started to laugh at something and the laughter continued. It was infected to others causing the school to close down for some months. All in all, the epidemic caused 14 schools to close down and 1000 people were infected in that region. The occurrence describes quite well the contagious nature of laughter. We cannot actually choose to laugh, it may just happen.

As mentioned before, laughter is often not a result of amusement. It can be a way of communication, being a natural part of language or it can be a tool of reflecting the social rank. Besides all that, laughter can also be triggered by other kind of stimuli. Laughing gas or alcohol are examples of such stimuli. This speaks for more

unconscious nature of laughter function. However, German psychologist Willibald Ruch found out, that laughing gas does not work just as well when taken in solitude than it does while amongst others (Http://www.uni-duesseldorf.de/WWW/MathNat/**Ruch**/Texte/Exhilara.DOC). Laughter has obviously a strong social nature, but it can also be provoked by stimulating certain areas of the brain. Some brain tumours can therefore cause unwilling laughter. As mentioned before, laughter is not produced by only one particular part of the brain, but the impulse runs rather as a circuit through the cortex. Therefore impairment in just one part of the brain can also cause inability to laugh at all.

The role of humour is irreplaceable in medical world. If used with care, it serves well in patient – physician relationships facilitating discussion also of more sensitive topics. Since humour can be used as a coping method, it can work well in relieving the stressful experience. Humour has been found to be beneficial in medical education and an efficient means of coping in hectic working milieus, e.g. hospitals. Humour is often used to establish relationships. It helps the patient to cope with the bizarre situation where the patient is dependent on others and where the privacy of the person is invaded. Humour can provide some social control over situation where control is actually not in one's own hands. It also promotes group solidarity and cohesion and facilitates change and survival in the system (Robinson 1991).

3. EMPIRICAL STUDY

…laughter comes and goes actually in all situations. Sometimes often, sometimes not that often and then every once and a while one laughs as a maniac. Sometimes instead a day goes by so that (laughs) life is one serious business. (More laughing woman)

3.1 Research questions

The aim of this empirical study is to answer the following questions arisen from the literature review.

1. Is there a connection between laughter and health?
2. What does laughter mean to people?
3. Can laughter be measured through a diary based study?

3.2 Material and methods

The material for my empirical study consists of two separate components, the first being the laughter diary and the second being two interviews. I ended up with this construction, because I wanted both qualitative and quantitative methods in my study. In my opinion all research should include both aspects to be a whole. I have used interviews and diary notes to give my study a kind of a face and some colour in form of quotations. Both interviews were done with the same interview frame, included in appendix. I used Steinar Kvale's book *Interview* (1997) as a methodological guideline. The two interviewees were chosen on the basis that they represented both ends of my laughter scale, one being amongst those of my respondents, who laughed the most, the other one amongst those, who laughed the least. Carrying out the interviews was interesting, and the results give insight to what laughter means to these particular persons in their daily lives. Besides the actual content of the interview, I also counted how many times the interviewees laughed during the interview.

I also wanted to measure the amount of laughter in a number of people within a certain period of time. I could not find a ready made tool for that purpose and therefore I came up with the idea of a diary. I designed a laughter diary by myself and got help from my father to print and bind it into a form of a notebook that would be easy to handle. I

decided that a two weeks period of time would be sufficient for a diary keeper to get used to keep the diary, and to ensure that the period would actually represent quite a normal period of life. I assumed that this two week's time would contain not only both good and bad days, but also days at work as well as leisure time with different life situations. I therefore thought it would be fairly representative of a person's daily life. I tried to make the diary easy to use, so that it would be used as regularly as possible. Simplicity was intended also in order to get the response rate as high as possible. As I was not able to produce a huge amount of diaries, the more important it was to get back as many as possible in a filled out state. The diary part did not demand a lot of data to be filled out. Besides marking the laughter situation each time, there were an optional page to fill out and give more detailed information about a distinctive day or a laughter situation. These remarks I have also used as quotations throughout this report. I also paid attention to making the diary appealing so that the respondents would be interested to start it out and to keep up with their interest. For that reason I included a cover with funny faces and some poems and phrases inside the diary.

The diary in itself consisted of two parts. There was a real diary part, in which respondents marked each of their laughter situations during the two weeks period. The second part was a health questionnaire at the end of the diary. This questionnaire aimed to reveal the respondents self reported health status. The questions included both a physical and a psychological perspective and the respondent's own idea of her health. The questionnaire was based on a health questionnaire used in 1986 in a Finnish health survey and described in Manderbacka's *Terveydentilan mittarit* (1995). The questionnaire, which I have used, is included in appendix.

The diary was dealt to 55 persons and it was returned to me by 38 persons. Respondent percentage is therefore 69. That can be regarded as an average result. The sample was chosen in a way that I handed out to my friends and acquaintances three diaries for each. They kept one for themselves and gave the two others to their friends and acquaintances. That way I did not know all of the respondents. This method is also known as a snowball method. I included in the diaries envelopes with my address and stamps so that the diaries could get back to me in confidentiality. Of those who

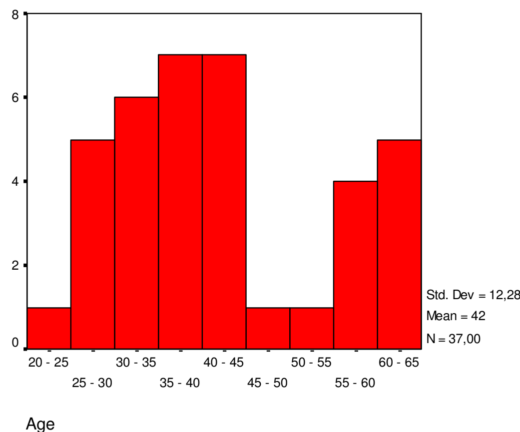
returned the diary were 7 of them males and 30 women. In one of the diaries the gender was not informed.

TABLE 1. Gender

Gender	Frequency	%
Male	7	(18,4%)
Female	30	(78,9%)
Missing	1	(2,6%)
Total	38	(100%)

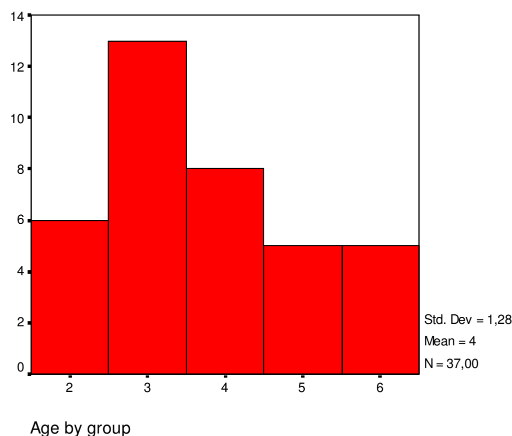
The youngest replier was 21 years old while the oldest was 64 years. The mean age was 42 years.

FIGURE 1. Age



Because the sample is quite small and the respondents represent several age groups, I decided to make a new variable by grouping the respondents into different age groups. This way each group represented a number of people instead of only one or two. For example the first group includes persons from age 20 to 29 and so on. This variable is used in many of the statistical analysis. When divided into the age groups, the major sample falls into the group of 30 – 39 years.

FIGURE 2. Age by group

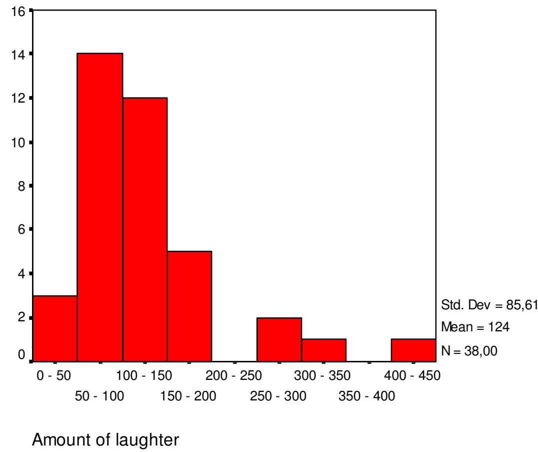


Descriptive statistics, such as mean, median, range and percentages, were used to describe continuous data and some graphics are included in order to give a better overview of the results to a reader. I have used nonparametric tests in the analysis, because the distributions were skewed. When exploring the connection of laughter with other variables such as health and physical activity, I have used mostly Kruskall-Wallis Test and Mann-Whitney's U-test. The limit for significance was set equal to 0.05. The statistical analysis of this study was carried out using SPSS for Windows (version 10.0).

3.3 Results

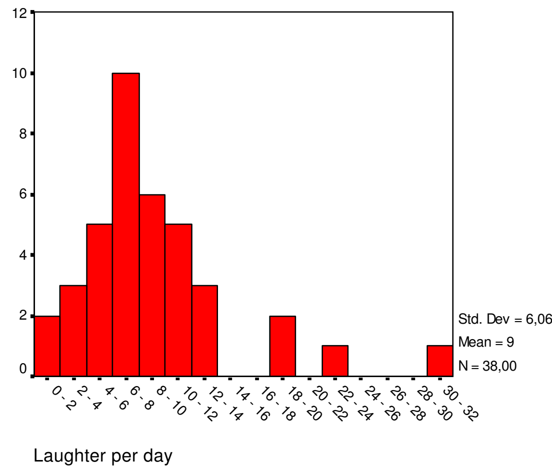
Respondents reported all their laughter situations during the two weeks period. The person, who had laughed the most, had laughed totally 448 times during that period, whereas the person, who laughed the least, had only reported laughing 8 times during the two weeks time. The mean amount of laughter was 124 (median 106). From the figure underneath, it is possible to see how most of the laughter gathered to the lower end of the scale. Most people laughed similar amount and only few people laughed more.

FIGURE 3. Amount of laughter



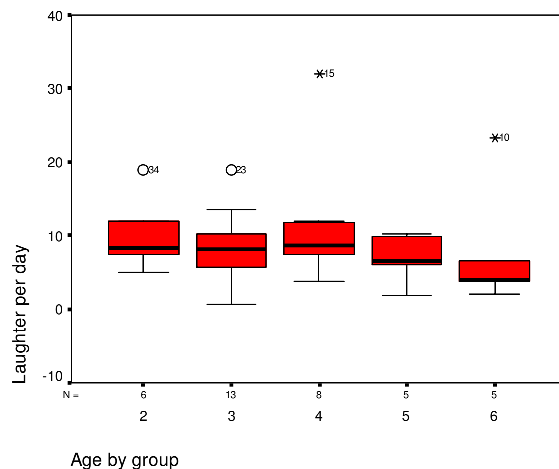
In order to get a better idea of the amount of laughter, I created a new variable by dividing the amount of laughter by fourteen. This way I obtained a figure which represents one person's laughter per day. This figure is easier for everybody to grasp and compare to either one self or to others. This figure I have used in most of the analysis. The mean amount of laughter is 9 times per day (median 7,6). While the number found in literature (Karvinen 2003) says that an average adult laughs about fifteen times a day. Therefore I can conclude that my sample for some reason have reported less laughter than those in earlier studies.

FIGURE 4. Laughter per day



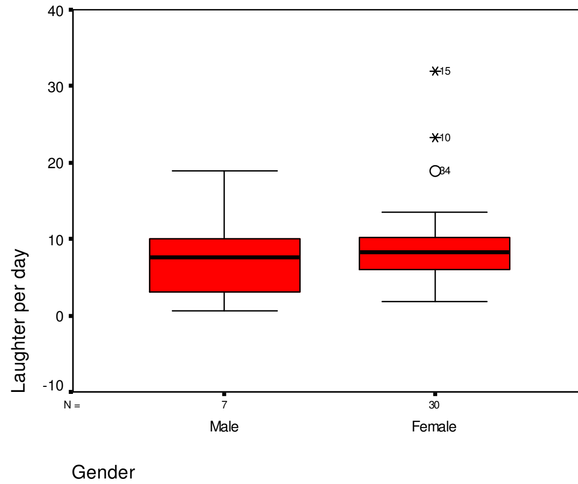
It is quite interesting to look into what type of a person laughs the most. In my study the person is a female between 40 and 50 years. The amount of laughter apparently diminishes by age. The difference between genders can be noted since females (median 8,4 and range 30,1 (1,9 - 32,0)) have reported more laughter occasions than males (median 7,6 and range 18,4 (0,6 - 19,0)) have, but statistically meaningful difference cannot though be stated (P-value: 0,449 – appendix, table 1). Figure 5 is a boxplot graph, which visualises the dispersion of the laughter occasions within age groups. It is possible to see, that the dispersion is least in the group of the oldest participants (age group 60-69) and that they also laugh the least.

FIGURE 5. The amount of laughter by age groups



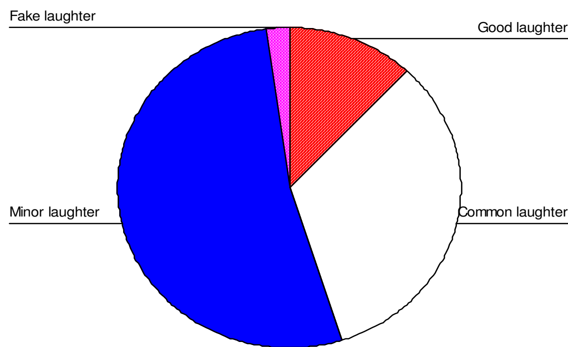
According to Karvinen (2003) the genders do not differ from one another so much when it comes to humour. The reasons to laugh can though be different. According to Ojanen women tend to suffer more of depression than men do, but they also do show more positive feelings. In generally women usually show mood changes to a greater extent than men do (Ojanen 2001). It is therefore very possible that women laugh a bit more than men do, or maybe just more openly. Figure 6 shows the rather scarce difference between the genders in this population.

FIGURE 6. The amount of laughter by gender



In the diary people reported the type of each of their laughter situation. Laughter was dealt into four different groups and each laughter occasion was marked according to which type of laughter it had been. Minor laughs were reported the most and only very few fake laughs were reported. A good laughter was reported also rather seldom.

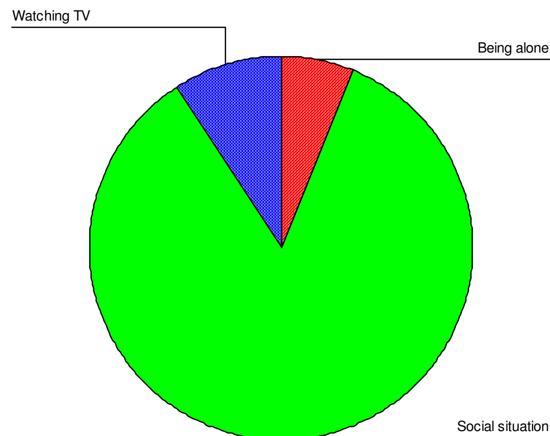
FIGURE 7. Laughter type



Each laughter situation was also given a code depending on the setting in which the laughter occurred. The social situation was reported by far the most and that relates to a laughter, which occurred in the company of others. The least reported was laughter while being alone. Laughter while watching TV did not occur that often either. This

outcome is consistent with other studies that show how laughter is mostly a social phenomenon and that people tend to laugh in the company of others (Karvinen 2003).

FIGURE 8. Laughter situation



As the diary included a health questionnaire at the end of the booklet, all the respondents answered few questions regarding their health at the end of the diary period. One of the questions asked the respondents to report their own experience of their health status with a scale from A to E, where A corresponds with very good health and E correlates with very poor health. All answers located within A to C where C stands for average health. When exploring the connection between this own experience of health and daily laughing, I found a statistically meaningful connection. Those, who have reported their health as good or very good do laugh significantly more than those, who have reported their health as average (P-value: 0,036 – appendix, table 2). In several earlier studies, it has been documented, that the perceived health is an excellent predictor of mortality (Manderbacka 1995, 24-28). That is what makes this finding quite interesting. The connection with laughter and health seems to be there.

Between laughing and physical and psychological symptoms there could not be seen any statistically meaningful connection (P-value: 0,847 – appendix, table 3). Neither did there appear any connection between physical activity and laughing (P-value: 0,222 – appendix, table 4) nor physical activity and psychological and physical symptoms (p-

value: 0,745 – appendix, table 5). One of the questions aimed to reveal, whether the respondent had any longer lasting pain. 16 persons answered they had a bother while 22 had not any. Of those who had a problem, only 7 thought that it had somewhat of an influence to their daily lives. The rest thought it had no influence. When exploring whether there was a connection between the amount of laughter and daily menace, it did not show a significant connection (P-value: 0,794 – appendix, table 6).

Respondents rated their attitude towards life as being very positive, rather positive, slightly negative or very negative. There were no answers which represented a very negative attitude, but most answers represented a rather positive attitude. I tried to see, whether there was a connection between a positive attitude and laughing, but my study did not reveal that. However this attitude parameter corresponded quite well with symptoms. Those who reported their attitude towards life as being very positive or rather positive, had fewer symptoms, both physical and psychological, than those who have reported their attitude slightly negative. The difference is statistically almost meaningful (P-value: 0,056 – appendix, table 7).

In the questionnaire, there was also a question of, whether the respondent thinks she laughs enough or whether she thinks she laughs insufficiently. The group of those, who thought they laughed generally enough, constituted 60 % and the rest thought they did not laugh enough. I checked whether this was consistent with reported laughter situations during the diary period and found out that it was so. Those, who thought they laugh enough, did laugh more in my study than those, who regarded themselves as being slightly negative. (P-value: 0,050 – appendix, table 8). As mentioned earlier, the perceived health had a significant connection with the amount of laughter and the connection came through, also when explored with the personal estimate of a laughter habit. The connection is statistically almost meaningful (P-value: 0,059 – appendix, table 9). Personal estimate of the amount of laughter did not seem to be a gender specific issue (P-value: 0,761 – appendix, table 10).

As the aim of the study was to conclude whether there is a connection between laughter and health, it must be stated that this connection did appear in my empirical study. The

self evaluated health and the amount of laughter did have a statistically meaningful connection. As the self evaluated health often reflects health status in a better way than physical health measures, it is a meaningful parameter. According to Manderbacka (1995, 25) self evaluated health reflects a detailed medical health assessment. It is regarded as a better estimate of health when a detailed medical assessment of health status cannot be obtained. As my health questionnaire did not include very detailed medical questions as regards to health, the best estimate of health is the self assessment of health. To draw big conclusions from this data would however be wrong. For that purpose the group of respondents has been too small. Respondents could have been selected in a way that makes them differ from average people by their health status or laughter habits. According to Manderbacka (1995, 25) there are also limitations to self assessment. “Silent illness” is a concept used by Blaxter (referred to in Manderbacka 1995), which refers to health problems, like high serum cholesterol, which do not give a feeling of illness and therefore can be ignored by this self assessment. As Manderbacka points out, the perceived health measures something more and something less than a medical health assessment.

It has already been mentioned that the group of respondents in this study laughed fewer times per day than an average person does according to other studies. Therefore my respondents have either been more serious people or this study design just did not capture all laughter moments. In any case, the results of the study are certainly influenced by that. Surprisingly, even though actual laughter occurred more seldom than usual, 60 percent of the people had rated by themselves that they laughed enough and only 40 percent thought they did not. It could be, that the survey has influenced people to be more aware of their laughing and therefore after two weeks time they thought they had laughed a lot, even though they had not. This gives a hint of the fact, that self evaluated results can be altered by just increasing the awareness. This should of course be also seen as a bias in a research. The only statistically significant result was the connection between laughter and self evaluated health. Furthermore almost meaningful was the connection between symptoms and attitude towards life as well as the connection with self evaluated health and self evaluated laughter habit. These,

regardless of all possible biases, give a hint of that health could be influenced by a positive mind – or vice versa.

It is basically the human nature. Whether she morns all her things or whether she doesn't care of them. Many difficulties can be bypassed by laughing. At this age there would be many complications if one would think of those (laughs). But when one doesn't revolve in those then they cannot catch one (laughs). (More laughing woman)

The second goal of the study was to determine, what laughter means to people. This topic was approached through interviewing. The outcome gave insight to, what laughter means to the two interviewees in their daily lives. Though they represented both ends of my laughter scale, the two women did not differ from each other dramatically. The less laughing woman told that the period, during which she had kept the diary, had been slightly more melancholic than usually. The differences could be seen in small things though. The less laughing woman was not as talkative and seemed to be not quite as social a person as the more laughing woman. The interview in itself contained far less laughter with the less laughing woman than it did with the more laughing woman. The less laughing woman laughed totally 19 times during the interview while the more laughing woman laughed 44 times properly and a lot more giggles came on top of that. Their experiences with laughter were nevertheless quite similar. Laughter played an important role in their lives, the main significance being the feeling of well-being. They experienced laughter as an outcome of a positive experience, which in turn generated still more positive feelings.

Laughter worked also as a powerful tool to turn things upside down: a negative incident seen in a positive light. Laughter helped the interviewees to get through difficult times, but it also helped to deal with new and demanding situations. Laughter relieved tensions between people and made it easier to cope with the situation. Laughter had the stress relieving ability and was also able to diminish threats as mentioned in literature review.

Sometimes, as I have a good feeling, all things make me laugh, but also sometimes some negative things are being passed by through laughing and thereby being turned around. I alter the thing so that it must be laughed at; otherwise it cannot be by passed. (Less laughing woman)

Laughter functioned as a binding factor in friendships. The social character of laughter came up in several connections during interviews. Diary notes commented often that it was the children that brought laughter into people's daily lives. Laughter worked as a mean of communication with a friend and it operated also as a way to make new acquaintances.

That was the most remarkable thing, that immediately one could not even recognize all of them, but when they began talking and laughing it was like all those tens of years were gone. We were like we always had been. It was an amazing feeling. One can only imagine that twenty, thirty or even forty years can vanish just like that – phiu (laughs). (More laughing woman)

One of my friends calls me every now and then. She is one of these scout friends and says that "I have had such a troublesome day so I would like to hear your voice. You anyhow begin to laugh at some point" (laughs), she says. (More laughing woman)

Both of the women that I interviewed had an experience that laughter was an important factor in their lives. They thought that a positive attitude played a role with them being quite healthy persons. The interviews and diary notes gave an idea that laughter means a variety of things to people. It is experienced as a medium of pleasant feeling and a means to maintain and develop social relations. Laughter works as a coping mechanism and was regarded as a health promoting matter. The scarcity of laughter in daily life was experienced by many (40 %) through the diary keeping. It puzzled people and was perceived as a void in their life. Some even wondered whether it was a sign of depression. The shortage of laughter was also explained often with weather being rainy or cloudy or pressures at work.

A foggy day and a blue mind. (Man, 33)

The lack of laughter I defended to myself with work having been really rough and stressing for some weeks. Under working pressures laughing is scarce. (Woman, 28)

There is no simple answer to whether laughter as a phenomenon can be measured with a laughter diary. I believe it did give a realistic idea of, who is laughing a lot, and who is not, but there are also several things that it fails to take into consideration. The precise

amount of laughter cannot be trusted as such. The diary does give a hint of a person's laughter behaviour, but the results are too much dependent on a single person and her ways of understanding the issue. People are different in many ways. Some are better than others to complete a task consistently and mark down laughter situations quite precisely. Some do not care whether they fill out a diary all the time. Laughter means different things for different persons. We also express happiness in different ways. While one person can laugh openheartedly the other one might just smile or giggle at the most. Laughter in itself is a concept, which should not be taken too seriously or it might suffer from it. As one of my interviewees said: "if one would really mark down all one's laughter situations, then one would need to be quite serious about it."

In the laughter diaries, there were several comments on the fact that it had been quite difficult to keep the diary. Respondents often wrote that the amount of laughter should not be trusted fully, but that the amount of laughter was quite near the truth. Apparently the error exists on marking down too few laughter situations as the diary was not at hand all the time. According to comments it was also difficult to remember all small laughs at the end of the day when finally marking down the day's situations. Respondents gave also positive feedback of the outlooks of the diary and the small poems inside of it. Many commented that it had been interesting to keep the diary. It had enhanced self understanding and people became more aware of laughing and especially of their individual reasons for it.

It was interesting to keep this diary and realize how little I laugh. This adulthood is apparently boring. As youngsters we used to laugh all the time. (Woman, 33)

Two weeks were maybe too long a period for laughter observation. The enthusiasm wore down after first week. First it was real fun to mark down laughs, even seeing the diary caused pleasant giggles. (Woman, 58)

The positive thing with the diary was that I realized how few laughter situations there is in my life and I began to wonder how to increase the joy in my life! So thank you! (Woman, 39)

I obviously always laugh in the company of others. I need people around me. Being by myself is not amusing. (Woman, 33)

4. DISCUSSION

When everything fails, it doesn't make one laugh a lot, and those days do exist every once and a while. Some days everything burns (laughs). It doesn't make one laugh that moment. The next day it might (laughs). (More laughing woman)

Laughter seems to be a laughing matter. It is difficult to take seriously a study of laughter as well as it is difficult to take seriously a laughing person. Laughter seems to be in a contrast to being serious. The word -serious- describes well the attitude towards being serious. According to a dictionary the synonyms for the word serious are e.g. determined, earnest, far-reaching, fateful, genuine, honest and humourless. Serious can therefore be a state of mind, but it is also a way of doing things or a way of being. This is a way that calls for respect. Therefore being serious does not only mean not laughing, but being someone you can count on. So laughter and respect do not match.

Cultural differences can be seen in the attitudes towards humour. Western cultures, which often are described as individualistic cultures, promote the individual's rights and responsibilities. In this setting laughter has not the same value as it is seen more as a social phenomenon. The Eastern cultures on the contrary are regarded generally as collective cultures which value common wealth and common goals. Laughter serves the common good and is therefore seen more as an asset. To acknowledge the individual benefits of laughter and to become more aware of our own surroundings is a way to enhance the laughter and well-being in our lives.

Humour has many faces. Some of them are not that noble. Humour can be used to position oneself and more importantly to position others. As mentioned earlier (p.23), social rank plays a role in laughing. Men are often more skilled in using humour as a tool than women are. Maybe men are more individualistic minded, while women might be more socially oriented. Gender differences as regards to laughter habits are usual. Besides gender roles, Provine (2000, 31) considers the organizational laughter. He points out that there seldom are leaders who giggle. According to him, laughter patterns change to fit the roles we play in life. Another big factor in the universe of laughter is age. The younger the person is, the more laughter. That may be reasonable enough; if

only the laughter would not vanish so totally from the adult life. After all laughter is a natural thing. Yet we seem to laugh less, when growing older. It might be because life does become more serious by then, but we also perhaps begin to take ourselves too seriously. Laughter ought to be a natural part of life. It could be showing to others - and not the least to ourselves - that we enjoy ourselves. We enjoy the situation, the company and life in general. I wonder why it is not that popular to reveal that to others. I recommend people to begin to laugh. It is good to show emotions and positive emotions tend ultimately to bring out positive responses from the surroundings.

Laughter is a resource, which is easily available. That is one of the reasons that make laughter interesting as a coping method, as it is not necessarily bound to a certain place or time. Laughter, though being most efficient as a mirthful reaction, works also as an intentional method. It is not necessary to have books, films or any equipment for laughing. Laughter, just as well as exercise, is always possible for anyone and anywhere. I regard laughter being quite similar to physical training. The first taking most obviously care of the mental health and the latter of the physical health. However, the subject is not that simple. Everything affects everything. Therefore the better the physics, the better the mind and vice versa. Sometimes the depression can be so deep, that laughing could feel like violating oneself. Physical damage on the other hand can make exercising difficult. I have an idea, that in these situations, the help needed, could be attained through the opposite pathway. Laughter could help the handicapped individual and physical training the depressed one. As Argyle (2001, 115) has argued, the sense of mastery makes people to believe they can cope with the situation. The spirits can be raised through exercise, and humour can help the physically restrained to heal and prevent further damage. This kind of support can give the resources needed for feeling of mastery. Unfortunately often a physical injury is a cause for later depression or other physical problems due to low immunocompetence. This could be helped by taking care of the patient’s mental health during the healing process. Therefore the holistic view in nursing business is vital. This view is often forgotten behind all the small details and the specialization. Little less speciality could sometimes be beneficial. As humour is a natural part of life, it should be, as Åstedt-Kurki points out, also a natural component of care and treatment of modern health care system (Åstedt-Kurki

and Liukkonen 1994). The benefits are clear to both the patient and the health care personnel.

Laughter is only one example of many different matters that can enhance the human well-being. Other means could be meditation, reading, or caring for pets. The possibilities are many. Though laughter is special in a way that it also affects the physical bodily functions by being a physical phenomenon as such, its mood enhancing ability is inarguable. Humour works also as a placebo. Believing that it is beneficial will be beneficial! Markku Ojanen (1995) has written about placebo effects and he suggests that many psychological changes are caused by two ingredients: There must be a need for the change and there must be an acceptance of the method used. These elements bring about a change, which can be related to a placebo effect, but in a sense that all psychological effects that are not specific, are placebo effects. He points out that cultural values and beliefs have always a strong influence on psychological effects.

A human being is a versatile creature, who does not always act and behave in a very structured and predictable manner. The reactions and manners of behaviour are much dependent on earlier experiences and prevailing surroundings. As a social creature, a human being is very much dependent on social circumstances. Brunner and Marmot claim that there is a social gradient to all ill health. The social environment impacts the biology that causes disease (Marmot and Wilkinson 2006, 7). Therefore, attention should be paid to a greater extent for considering who has the ownership of the problem. Too often, if not always, the problem is seen as the individual’s problem. Ill health is seen as if it is caused by individual’s wrong actions and choices. The cure therefore is also seen as the individual’s own matter. A pill is described and a form of social control is practised. Helman (2001, 114) points out, that medicalisation is a way of controlling socially deviant behaviour. This way, the real reasons behind the problems are disguised and the society’s responsibility is avoided. It is always easier to change just one person, instead of dealing with the problems on a societal level. Depression is not really a metabolic disturbance, but has many societal causes. Unfortunately usually only the symptom is taken care of and the “weak” individual is treated.

David Blane (in Marmot and Wilkinson 2006, 54-77) explains how a person's past social experiences become part of the physiology and pathology of the body. All experiences are recorded to the body and will influence the future through different pathways, both physiological and psychological. From a life-course perspective each phase of life seems to be capable of adding its own protection – or disadvantage – to the individual. Blane says that these exposures are likely to accumulate over the course of life. Therefore, the beginning of life has a vital impact on the rest of the life. Wadsworth and Butterworth (in Marmot and Wilkinson 2006, 47) conclude that early life sets a scene for what follows in a way that it forms the basis of the biological, psychological and human capital. Brunner and Marmot use a term *social capital*, which comprises parental socio-economic status and education, parental self-esteem, family accord and area of residence (2006, 6-30). The childhood is obviously a crucial period for what will follow thereafter and should therefore be paid much attention to. Taking care of well-being of families with small children, will nothing but strengthen the society in the long run.

The results of the empirical study did reveal a connection between laughter and health. The notion of self-assessment of health was the main reason for that and it fits well within the reference frame of this study. The idea of that we know how our physics are doing is intriguing as it also challenges the physical view of health. How much of that has to do with the mind affecting the body? Believing I am doing fine might make me fine just as well as it might cause damage, if I think otherwise. What comes first is the constant dilemma. Does the good health generate a positive image of the health or is it the other way around? Does the good health generate laughter or is it the other way around? I assume it goes both ways around being a self-reinforcing process.

As a method I think the diary was interesting. With some modifications I assume it could work even better. The two weeks time was too long. I think that just one day would reveal the laughter habit of a person, if only the day would happen to be a "normal" day. If I were to do the laughter diary once again, I would ask people to fill it for just one day. I would ask them to choose a day, which they think will end up being

just a normal day and at the end of the day I would ask them to evaluate, whether the day was representative of their normal day and if not, then I would ask them to do it again. This way I think the person would be more honest and attentive towards the laughter situations and in writing down the marks. I also came across another way of measuring laughter during the process. Interviewing the two persons was enlightening. Listening to the tapes gave an idea that counting the laughs during the interview could give a realistic idea of the person's laughter habits. As the laughter is a social phenomenon, I assume that measuring it in a social situation would not harm the cause. The problem might be in a hidden agenda. It could be questionable to measure during the interview something one has not beforehand informed the interviewee of. By stating that in advance, could on the other hand influence the outcome. However, it could be worth the trial. Who knows, this might be a simply applicable screening method for revealing some aspects of the people's state of mind.

The respondent rate was fair, but the sample was too small to begin with. This had to do with costs that had to be limited. The workload also had to match the nature of the study. With these limitations the group of respondents was inadequate and the results of the empirical study are just reflections of reality and not by any means a clear-cut truth. Taken into consideration the nature of the diary, some regular coaching and possibly a follow-up could have benefited the outcome. Fairly interesting it would have been to analyse the group of non-respondents. Did they share some characteristics? Were they the ones who laughed the least and therefore did not want to participate? Or were they the ones with poorer health? This is not known and can be regarded as a methodological weakness of the study.

All in all, the laughter diary was a good pilot project, which generated a lot of thoughts. I received plenty of positive feedback on the design of the diary and people were grateful for having been a part of the study and therefore becoming more aware of laughter and well-being in general. That as such makes ME smile.

I was in a store with my son. He laughed so vividly into a telephone, that I almost forbid him until I remembered this diary and came to think of that one can never laugh enough. (Woman, 54)

5. CONCLUSION

Studying a certain subject tends to raise more questions than it gives answers. Having researched the subject of laughter and health has also brought up a variety of topics, which would need to be further elaborated. The research on the field has still a long way to go and certainly new findings will come to daylight soon. Methodologically correct research is needed to prove laughter as a significant factor for health and well-being. Fighting the health problems linked to depression is acute and would be in a society's interests. More new thinking and resources are needed for that. There is a call for positive thinking also amongst researchers and their financing partners. I believe I have learned to a great extent what there is to know of the topic at the time, but many questions are still unanswered. A great deal of the knowledge is contradictious and the truth is undiscovered. In future, my own interest would be to tackle the depression issue. Nationwide units, which have their purpose in focusing on the positive states of mind and increasing mental well-being, are needed. This should be conducted not only for already depressed people, but for regular people as well, those who are somehow in a risk of experiencing depression. A physical injury is in my opinion one characteristic of such individuals. Therefore, interesting would also be to study how physical training influences the mental state of an individual and how depression could be prevented by paying attention to patients with sudden physical injury. Well-being ought to be directed more towards well *being* instead of enhancing the amount of material assets in people's lives. There is a call for more joy and physical workout in the busy, stressful and automated world we live in nowadays. Laughter can be seriously used to fight the depression and enhance the well-being. Therefore laughter is NOT a laughing matter.

Finally this task is over; one can even begin to laugh. (Man, 62)

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7. APPENDIX

7.1 Interview frame

Haastattelurunko

– Mitä nauramiseen liittyviä muistoja sinulla on, kerro niistä.
– Onko sinulla muita muistoja / mitään ikäviä muistoja?
– Mitä nauraminen sinulle merkitsee?
– Onko naurun merkitys muuttunut elämäsi aikana?
– Onko naurutilanteet ja niiden määrä muuttunut elämäsi aikana?
– Liittyykö muutokset tiettyihin elämäntilanteisiin (ikä, lapset, ystävät, liikunta, terveys…)
– Kun koet iloa jostain asiasta, niin nauratko sitten helposti?
– Koetko nauramisen enemmän vapauttavana vai kenties nolona asiana?
– Tuleeko mieleesi jotain noloja tilanteita?
– Uskotko nauramisen ja terveyden välillä olevan mitään yhteyttä?
– Haluatko kertoa jotain omasta terveydestäsi?
– Entä liikuntatottumuksista?
– Uskotko että liikunnan määrällä ja positiivisella mielellä olisi mitään yhteyttä?
– Uskotko tietynlaisten ruokien vaikuttavan mielialaan?
– Noudatatko itse jotain dieettiä?
– Itketkö helposti?
– Sanotaan että itku ja nauru eivät usein ole kaukana toisistaan. Päteekö tämä sinuun?
– Onko kaikenlaisten tunteiden osoittaminen sinulle helppoa / vaikeaa?
– Uskotko muiden ihmisten pitävän sinua enemmän tosikkona vai ilopillerinä?
– Miten näet itse itsesi?
– Milloin olet viimeksi nauranut kunnolla?
– Saako sinut helposti nauramaan?
– Nauratko vitseille helposti?
– Oletko itse hyvä kertomaan vitsejä?
– Minkälaiset tilanteet naurattavat sinua eniten?
– Nauratko enemmän itsellesi vai muille?

– Nauratko tekonaurua koskaan?

– Nauratko ääneen vai hiljaa itseksesi?

– Minkälainen olo tulee kun olet nauranut?

– Oletko koskaan ollut naurujoogassa?

– Onko naurupäiväkirjan pitäminen millään tavalla muuttanut nauramistasi?

7.2 List of figures and tables

Table 1. The amount of laughter by gender

NPar Tests
Mann-Whitney Test
Ranks

	gender	N	Mean Rank	Sum of Ranks
laughter per day	male	7	16,21	113,50
	female	30	19,65	589,50
	Total	37		

Test Statistics

	laughter per day
Mann-Whitney U	85,500
Wilcoxon W	113,500
Z	-,756
Asymp. Sig. (2-tailed)	,449
Exact Sig. [2*(1-tailed Sig.)]	,458

a Not corrected for ties.
b Grouping Variable: gender

Table 2. Laughter and own experience of health

Kruskal-Wallis Test
Ranks

	own experience of health	N	Mean Rank
laughter per day	A	4	24,88
	B	25	21,58
	C	9	11,33
	Total	38	

Test Statistics

	laughter per day
Chi-Square	6,674
df	2
Asymp. Sig.	,036

a Kruskal Wallis Test
b Grouping Variable: own experience of health

Table 3. Laughter and symptoms

Nonparametric Correlations
Correlations

			laughter per day	all symptoms
Spearman's rho	laughter per day	Correlation Coefficient	1,000	,032
		Sig. (2-tailed)	,	,847
		N	38	38
	all symptoms	Correlation Coefficient	,032	1,000
		Sig. (2-tailed)	,847	,
		N	38	38

Table 4. Laughter and physical activity

Kruskal-Wallis Test
Ranks

	physical activity by group	N	Mean Rank
laughter per day	1	15	22,43
	2	13	19,88
	3	10	14,60
	Total	38	

Test Statistics

	laughter

	per day
Chi-Square	3,006
df	2
Asymp. Sig.	,222

a Kruskal Wallis Test
b Grouping Variable: physical activity by group

Table 5. Physical activity and symptoms

Kruskal-Wallis Test

Ranks

	physical activity by group	N	Mean Rank
all symptoms	1	15	21,20
	2	13	18,35
	3	10	18,45
	Total	38	

Test Statistics

	all symptoms
Chi-Square	,588
df	2
Asymp. Sig.	,745

a Kruskal Wallis Test
b Grouping Variable: psysical activity by group

Table 6. Laughter and menace

Correlations

		laughter per day	menace
laughter per day	Pearson Correlation	1,000	,071
	Sig. (2-tailed)	,	,794
	N	38	16
menace	Pearson Correlatio	,071	1,000

	n		
	Sig. (2-tailed)	,794	,
	N	16	16

Table 7. Attitude and symptoms

Kruskal-Wallis Test

Ranks

	attitude towards life	N	Mean Rank
all symptoms	A	6	16,25
	B	26	17,98
	C	6	29,33
	Total	38	

Test Statistics

	all symptoms
Chi-Square	5,773
df	2
Asymp. Sig.	,056

a Kruskal Wallis Test
b Grouping Variable: attitude towards life

Table 8. Laughter and own view of laughter

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
laughter per day	38	9,057	6,055	,6	32,0	5,552	7,640	10,577
own view of laughter	38	1,39	,50	1	2	1,00	1,00	2,00

Mann-Whitney Test

Ranks

	own view	N	Mean	Sum of

	of laughter		Rank	Ranks
laughter per day	A	23	22,35	514,00
	B	15	15,13	227,00
	Total	38		

Test Statistics

	laughter per day
Mann-Whitney U	107,000
Wilcoxon W	227,000
Z	-1,956
Asymp. Sig. (2-tailed)	,050
Exact Sig. [2*(1-tailed Sig.)]	,051

a Not corrected for ties.
b Grouping Variable: own view of laughter

Table 9. Symptoms and own view of laughter

NPar Tests
Mann-Whitney Test

Ranks

	nauru omasta mielestä	N	Mean Rank	Sum of Ranks
koettu terveys uusi	A	23	17,48	402,00
	B	15	22,60	339,00
	Total	38		

Test Statistics

	koettu terveys uusi
Mann-Whitney U	126,000
Wilcoxon W	402,000
Z	-1,885
Asymp. Sig. (2-tailed)	,059

Exact Sig. [2*(1-tailed Sig.)]	,172

a Not corrected for ties.
b Grouping Variable: nauru omasta mielestä

Table 10. Gender and own view of laughter

Nonparametric Correlations
Crosstabs
own view of laughter * gender Crosstabulation
Count

		gender		Total
		male	female	
own view of laughter	A	4	19	23
	B	3	11	14
Total		7	30	37

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,092	1	,761		
Continuity Correction	,000	1	1,000		
Likelihood Ratio	,091	1	,762		
Fisher's Exact Test				1,000	,541
Linear-by-Linear Association	,090	1	,764		
N of Valid Cases	37				

a Computed only for a 2x2 table
b 2 cells (50,0%) have expected count less than 5. The minimum expected count is 2,65.

7.3 Health questionnaire

Kyselytutkimus

1. Millaiseksi koet oman terveytesi?
   - A) Erittäin hyvä terveys
   - B) Hyvä terveys
   - C) Keskinkertainen terveys
   - D) Heikko terveys
   - E) Erittäin huono terveys

2. Onko sinulla jokin pitkäaikainen sairaus, vaiva tai vamma?
   - A) Ei
   - B) Kyllä, mikä?

   ____

4. Jos vastasit kyllä yllä olevaan, niin rajoittaako tämä sairautesi, vaivasi tai vammasi työntekoasi tai haittaako se jokapäiväisten tehtäviesi suorittamista?
   - A) Suuresti
   - B) Jossain määrin
   - C) Ei lainkaan

5. Onko sinulla ollut seuraavia vaivoja viimeisen kuukauden aikana (ympyröi: paljon, jonkin verran tai ei lainkaan)?

	Ei lainkaan	Jonkin verran	Paljon
A) Päänsärkyä?	1	2	3
B) Vatsavaivoja?	1	2	3
C) Jäsenten puutumista tai niiden voimattomuutta?	1	2	3
D) Sydämen tykytystä tai epäsäännöllistä lyöntiä?	1	2	3
E) Pahoinvointia tai oksentelua?	1	2	3
F) Huimausta?	1	2	3
G) Käsien vapinaa?	1	2	3
H) Runsasta hikoilua ilman ruumiillista ponnistelua?	1	2	3

6. Entä onko sinulla ollut viimeisen kuukauden aikana seuraavia oireita?

	Ei lainkaan	Jonkin verran	Paljon
A) Ylirasittuneisuutta?	1	2	3
B) Muistin tai keskittymiskyvyn			

heikkenemistä?	1	2	3
C) Voimattomuutta tai väsymystä?	1	2	3
D) Unettomuutta?	1	2	3
E) Hermostuneisuutta tai jännittyneisyyttä?	1	2	3
F) Ärtyneisyyttä?	1	2	3
G) Alakuloisuutta tai masentuneisuutta?	1	2	3
H) Aloitekyvyttömyyttä tai päättämättömyyttä?	1	2	3
I) Tunne siitä että kaikki käy yli voimien?	1	2	3

9. Onko sinulla joitain muita vaivoja tai kipuja?
   A) Ei
   B) Joskus
   C) Usein, mitä?

   ____

10. Harrastatko liikuntaa?
   A) Päivittäin
   B) Kerran tai pari viikossa
   C) En säännöllisesti, eli melko harvoin
   D) Hyvin harvoin tai en koskaan

11. Nauratko mielestäsi?
   A) Riittävästi
   B) Liian harvoin

12. Onko elämänasenteesi mielestäsi?
   A) Erittäin positiivinen
   B) Melko positiivinen
   C) Hieman negatiivinen
   D) Erittäin negatiivinen

13. Muita kommentteja ja huomioitavaa:

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