

# **Equine Assisted Therapy in Physiotherapy**

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## ABSTRACT

Horses have been used in physiotherapy treatment, mainly for children with life long dysfunctions, for half a decade, aiming to influence posture, balance and muscle tone while adding pleasure and leisure activity to the treatment situation. Despite a long clinical tradition there are difficulties, incorporating this specialized area of functional rehabilitation into the public health system partly due to lack of scientific studies.

The chief aim of this thesis was to study equine assisted therapy (EAT) within physiotherapy, as treatment for patients with long lasting functional problems. A second aim was to describe it as a form of physiotherapy suitable for these patient groups. The treatment was focused on enhanced body awareness for the patients/riders.

Two studies were carried out as an action research in order to explore the health benefits of equine assisted therapy for patients within psychiatric care, mainly with eating disorders and anxiety, and patients in public health with long lasting neck- and/or back pain. In the first study 35 informants and in the second 28 patients shared their experiences. Data was collected in interviews, seminars, field notes and assessments.

Complexity and co morbidity were characteristics for the study populations. Similar effects on symptoms were reported in both studies. Positive influence from the treatment in addition to expected effects on symptoms were reported. A transitional process towards enhanced body awareness and coping ability in daily living was reported. A mutual interest in riding forming the foundation for the creation of a true therapeutic alliance was another finding of importance. A model for equine assisted therapy in physiotherapy in the dimensions of Body Awareness, Competence, Emotion and Environment was presented. The horse is beneficial to physiotherapy treatment by its simultaneous influence on motor control, mobility, body awareness and physical activity. The enriched environment with animal contact and nature added a stress-reducing component to the treatment situation different from institutional settings.

Equine assisted therapy in physiotherapy is health promoting and provides specific and unique beneficial components.

*Key words:* physiotherapy, physical therapy, equine assisted therapy, action research, animal assisted therapy, eating disorder, pain, back, neck, body awareness, enriched environment



To ride.....

Exciting, scared, will the horse fall into pieces...

When we were presented to the horses I felt that

THAT

To be back home

Big warm cosy horses, safe smell, joy, excitement

I could tack and lead

The horse

And when I sat up there

Then

I felt it

...The FEELING

sitting on top of the world....

loving life.....

and be able to ride far, far and fast.....

or slowly.....

a huge power grew from the horse and into my body

and I wanted to cry.....

I had forgotten where to look for my life!

Helene

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## LIST OF PAPERS

This thesis is based upon the two following papers:

1. Håkanson M, Hane M. Kroppskännedomsträning till häst –utforskande partnerskap i behandling och utvärdering. Nordisk Fysioterapi, 1998.2:19-25. (Body Awareness Therapy on Horseback – participation research in treatment and assessment)
2. Håkanson M, Möller M, Lindström IL, Mattsson B. The Horse as a healer – a study of riding in patients with back pain. Article in press Journal of Bodywork and Movement Therapies aug 2007.

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## WORD LIST/DEFINITIONS

### **Adapted riding**

Riding is done as a recreational activity by people with a handicap. ([www.pegasuseurope.be](http://www.pegasuseurope.be) )

### **Animal Assisted Activity**

AAA provides opportunities for motivational, educational, recreational and/or therapeutic benefits in order to enhance quality of life. AAA are delivered in a variety of environments by specially trained professionals, para-professionals and/or volunteers, in association with animals that meet specific criteria. ([www.deltasociety.org](http://www.deltasociety.org) )

### **Animal Assisted Therapy**

AAT is a goal directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialized expertise and within the scope of practice of her/his profession.

AAT is designed to promote improvement in human physical, social, emotional and/or cognitive functioning. AAT is provided in a variety of settings and may be group or individual in nature. This process is documented and evaluated.[1] ([www.deltasociety.org](http://www.deltasociety.org) )

### **Anthrozoology**

Anthrozoology is the study of [human-animal](#) interaction ("animal" referring to all *non-human* animals), also described as the science focusing on all aspects of the human-animal bond. [1] and a bridge between the natural and social sciences.

### **Back rider**

The therapist sits behind the patient on the horse's back. For animal welfare purposes there is a weight limit for the pair. For the welfare of the therapist, there is a limit for the height of the patient.

### **Biophilia Hypothesis**

The term "biophilia" literally means "love of life or living systems." It was first used by [Erich Fromm](#) to describe a [psychological orientation](#) of being attracted to all that is alive and vital. [2] Wilson uses the term in the same sense when he suggests that biophilia describes "the connections that human beings subconsciously seek with the rest of life." He proposed the possibility that the deep affiliations humans have with nature are rooted in our biology. Unlike [phobias](#), which are the aversions and fears that people have of things in the natural world, [philias](#) are the attractions and positive feelings that people have toward certain

habitats, activities, and objects in their natural surroundings. The hypothesis helps explain why ordinary people care for and sometimes risk their lives to save domestic and wild [animals](#), and keep [plants](#) and [flowers](#) in and around their homes. In other words, our natural love for life helps sustain life. ( <http://en.wikipedia.org> )

## **Enriched Environment**

Environmental enrichment, also called behavioral enrichment, refers to the practice of providing animals under managed care with environmental stimuli. The goal of environmental enrichment is to improve an animal's quality of life by increasing physical activity, stimulating natural behaviors, and preventing or reducing [stereotypical behaviors](#). In principle, enrichment can be beneficial to any relatively intelligent animal, including [mammals](#), [birds](#), and even [octopuses](#). ( <http://en.wikipedia.org> ).

Research on brain plasticity and on environmental psychology implies that the human being reacts similar to environmental enrichment as animals. Research on recovery from traumatic brain injury in humans suggest that “ During stays in an enriched environment ( that is nature with qualities mediating an effectual emotional tune) an interaction takes place between sensory stimulation, emotions and logical thought –an interaction that leads to a new orientation and a new way of seeing one’s self and one’s resources.”[2]

## **Equine Assisted Therapy (EAT)**

EAT is the use of the horse as a partner in therapeutic and educational work with a view to improving the quality of life of children, young people and adults with specific needs.

EAT presents many, varied opportunities to work in a goal oriented way within the triangle client-therapist/educator- horse to overcome problems of a physical, psychological, educational and/or social kind.

The relationship between the animal and the human, the interaction and contact with the horse, riding the horse and the stimulus of the movement, the symbolism and the ethos of the horse are central to EAT.

In EAT riding is not the main goal of the activity but a tool within a therapeutic process.

### **Different forms of application of EAT**

Stimulating positioning for babies and very young children by lying on horse back

Reactive seat on a walking horse using the influence of the 3 dimensional movement of the horse on the rider

Active riding therapy whereby the horse is directed by the client

Gymkhana games and exercises with a partner or in small groups

Vaulting exercises beside or on the horse, on the lunge or in free walk

Horse care and contact with the horse

All these activities can be termed EAT if they are goal oriented in a therapeutic and/or educative context ([www.pegasuseurope.be](http://www.pegasuseurope.be))

## **Hippotherapy**

The classic hippotherapy is used by physiotherapists in orthopaedic disorders and often in congenital and acquired neuro motor disorders. ([www.pegasuseurope.be](http://www.pegasuseurope.be)) The rider do not use a saddle, the horse is long reined from behind, and in walk. The aim is to influence on the muscular tone, balance and mobility on the rider by the movements of the horse. The rider is not supposed to influence on the horse.

According to AHA “In hippotherapy, a PT, OT or Speech Therapist is working directly with a patient on the horse to help the patient improve their functional skills.”

(<http://en.wikipedia.org> )

## **Physiotherapy/Physical Therapy**

“Physical therapy provides services to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan. This includes providing services in circumstances where movement and function are threatened by ageing, injury, disease or environmental factors. Functional movement is central to what it means to be healthy.

The capacity to move is an essential element of health and well being. Movement is dependent upon the integrated, co-ordinated function of the human body at a number of different levels.

### **Underlying assumptions**

#### Movement

Movement is purposeful and is affected by internal and external factors.

Physical therapy is directed towards the movement needs and potential of individuals and populations.

#### Individuals

Individuals have the capacity to change as a result of their response to physical, psychological, social and environmental factors.

Body, mind and spirit contribute to individuals views of themselves and enable them to develop an awareness of their own movement needs and goals.

#### Interaction

A mutual understanding between the physical therapist and the patient/client/family or care giver is an integral part of physical therapy.

This kind of interaction is necessary to positively change the body awareness and movement behaviours that may promote health and well-being.”

(WCPT Position statement [www.wcpt.org](http://www.wcpt.org) )

“The discipline physiotherapy contains knowledge of and studies on man in motion regarding her ability to sense, apply, control and use the body appropriate regarding the demands from the physical and social environment.”

(LSR Definition of the discipline of physiotherapy [www.lsr.se](http://www.lsr.se) )

## **Recreational therapy**

Recreational therapists, also known as Certified Therapeutic Recreation Specialists (CTRS), provide treatment services and recreation activities to individuals with disabilities or illnesses. Treatment services utilize leisure activities to diminish or eliminate disabling conditions. These conditions may include physical, cognitive, social, emotional, spiritual, or other areas which limit the individual. The recreational therapist may use a variety of techniques, including arts and crafts, animals, sports, games, dance and movement, drama, music, and community reintegration outings. (<http://en.wikipedia.org> )

## **Riding for disabled**

Riding used as a sport by people with a disability, in recreational or competitive way, and under the guidance of qualified instructors. ([www.pegasuseurope.be](http://www.pegasuseurope.be) )

## **Surcingle**

A surcingle is a strap made of leather or leather-like synthetic materials such as nylon or neoprene, sometimes with elastic, that fastens around a [horse](#)'s girth area. A training surcingle, sometimes called a "roller," has many extra rings attached, running from the ribcage up to the withers area. It usually has padding to relieve pressure on the spine. A variation of this design is used for [equestrian vaulting](#). (<http://en.wikipedia.org> )

## **Therapeutic recreation**

Therapeutic recreation is defined as the specialized application of recreation or experiential activities or intervention processes that assist in maintaining or improving the health status, functional capacities and/or quality of life for all persons who may benefit from it.

(Carter et al. Therapeutic Recreation) See Recreational therapy.

## **Therapeutic riding**

Riding skills are included in the therapeutic work and the rider learns to use her body and aids in order to become an independent rider. In therapeutic riding, care of the horse and handling the horse from the ground is often included in the therapy. The horses equipment are adjusted to the riders functional ability and may be adapted individually.

“In Therapeutic Riding, a certified therapeutic riding instructor is teaching a person with special needs how to ride.” Definitions by AHA. (<http://en.wikipedia.org> )

## **Vaulting**

The horse is on the lunge, (moving in a circle) in an even gait, walk, trot or canter. The horses equipment is a surcingle and a blanket. The rider performs specific gymnastic exercises on horseback alone, in pairs or with several partners. Vaulting is characterised by the elements of cooperation and of the rhythmical bodily balance tasks as therapeutic intervention. The rider is not supposed to influence on the horses performance.

Equestrian vaulting is most often described as [gymnastics](#) and dance on horseback, and like these disciplines, it is both an art and a highly competitive sport. Therapeutic or Interactive Vaulting is also used as form of treatment for children and adults who may have balance, attention, gross motor skill, or social deficits. (<http://en.wikipedia.org> )

## **ABBREVIATIONS**

AAA	Animal Assisted Activity
AAT	Animal Assisted Therapy
AHA	American Hippotherapy Association
EAA	Equine Assisted Activity
EAT	Equine Assisted Therapy
FRDI	Federation for Riding for the Disabled International
HT	Horticultural Therapy
IAHAIO	International Human Animal Interaction Organisations
ICF	International Classification of Functioning, Disability and Health
LSR	Legitimerade Sjukgymnasters Riksförbund (Swedish Association of Registered Physiotherapists)
OT	Occupational Therapist
PT	Physiotherapist
TR	Therapeutic Riding
WCPT	World Confederation for Physical Therapy

## **INTRODUCTION**

This thesis is the result of several years' experience of physiotherapy practice in psychiatric care using body awareness training, relaxation therapy and physical activity adapted to enhance well-being and overcome limitations, regardless of whether originating as a physical, mental or social dysfunction. This led me to a holistic approach to physiotherapy.

After experiencing riding as a valuable tool for reducing fear and anxiety, I began to use horseback riding as a motivating factor for patients with eating disorders. However, the advantages were greater than expected and I started seeking evidence for therapeutic riding, hippotherapy and therapeutic remedial vaulting. There was a lack of scientific evidence and yet, there have been physiotherapists practising this special area of physiotherapy for 50 years.

I was asked to collect evidence and thus began the journey into this fascinating field of knowledge. The obstacles have been numerous, but support from colleagues has been extensive.

This thesis is a contribution to a growing body of knowledge on how physiotherapy can gain by the combined use of environment, influence on movement and adapted physical activity – a special body of knowledge important to clinical practice for patients suffering from long lasting and severe limitations.

## **PHYSIOTHERAPY – MOTION AND EMOTION**

Physiotherapy is originally aimed at influencing movement and the capacity to move [3]. Physiotherapy also influences self-development as well as development of function in a social process with an understanding of the body as being, relating and meaning [4-6]. The experience of movement is related to nature and the joy of movement. Health and body-movement are closely related to sensory experience [7-10].

The theories of physiotherapy vary depending on context, but all share the fundamental idea of the influence on bodily-initiated change of function, primarily by influencing the motor system (World Confederation of Physical Therapy/ Position statement).

Motor learning, motor control and body awareness are essential concepts in the practice of physiotherapeutic rehabilitation. Motor development and motor learning are interwoven in the treatment of children and adolescents with restricted function from an early age. Body awareness therapy has emerged from the understanding of motor development [11]. A central

concept in body awareness therapy is the interaction between psychomotor function and mental attention [10, 12, 13]. The basic view of the body is that it expresses our life history and that we live through our bodies. In other words, tension and conflicts as well as resources are expressed in psychomotor functions, such as sitting, standing, walking and breathing [12, 13]. The body is both an object and a subject for the individual. We express basic biological as well as existential needs through the body [4, 5, 14]. Physical activity and body awareness are ways of experiencing movement and body functions. Physical contact is another vital part of physiotherapy and its influence on stress reduction as well as on the experience of the body is important in body awareness therapy and pain treatment. Stress reduction is a prerequisite for enhanced body awareness and pain reduction [15]. Knowledge of how the body functions prevents negative feelings caused by imagined disease as a response to misinterpreted body signals.

Body awareness therapy consists of movement, breathing exercises and massage. The aim is to increase physical and mental balance, increase freedom in movement and breathing and strengthen the ability to be mentally present [16-19]. In body awareness therapy body movements are addressed as a whole and without focusing on symptoms [18]. Natural movements in walking and resting are used in movement patterns involving the body as a whole. No external forces are used to influence range of motion. Methods within manual therapy or neurological treatment focus directly on the movement problem and the affected body part. Strength and increased range of motion as well as improved coordination of the affected area are common components of treatment as well as an overall increased physical activity level. Both traditions strive toward the same treatment effects.

It can be argued that what is described as physiotherapy might just as well be described as learning new motor strategies – i.e. motor learning.

The relational aspect of physiotherapy is also of importance in treatment. The relationship between therapist and patient in physiotherapy is characterized by a physical closeness and treatment results are highly related to the extent in which mutual trust can be established [4, 8]. Physical contact is essential to the relationship and hands-on situations form the basis for communication and trust [4, 8] between patient and physiotherapist.

Patients receiving physiotherapy learn to apply new strategies for using the body, mainly recognized as movement strategies but also as coping strategies [8, 20].

### ***The horse in PT - equine assisted therapy***

The profession of physiotherapy has its roots in the early 19<sup>th</sup> century. In 1813 medical gymnastics was a part of the gymnastic educational programme created by PH Ling in Sweden. Apart from medical gymnastics and hands-on treatment, mechanical tools were

introduced with industrialisation and “physical therapy” began competing with medical gymnastics. The mechanical horse was constructed among other mechanical “movement-givers” by Zander in the 1890’s for training the body in a scientific manner [3, 21] thus reducing the need for staff workers. The mechanical horse was said to enhance balance and equilibration of the trunk and to vibrate intestines in a healthy manner. It was also thought to have a positive influence on muscle balance in trunk and hip joints [21].

In the early 1950’s Liz Hartel, a young Danish dressage rider, disabled and suffering from poliomyelitis, won the silver medal in the Olympic Games in Helsinki competing against able-bodied riders. Inspired by her competence, three Nordic physiotherapists, from Denmark, Norway and Sweden, started treating children with poliomyelitis with the help of horses and riding at the end of the 1950’s [21]. From the start in the Nordic countries the use of the horse in physiotherapy and *riding* as physiotherapy soon spread worldwide. It developed and became known under different names throughout the world. In Germany and middle Europe *hippotherapy* emerged, and in the UK *riding for the disabled* became the term used. Throughout the world *therapeutic riding* programs were developed and staff were recruited from the health, teaching and riding professions [1].

In the middle Europe tradition *vaulting* and *remedial vaulting* was used and developed in treatment parallel to hippotherapy. The horse was used as a moving surface first and foremost for treating movement problems and not necessarily riding skills. Several new categories of patients were found to benefit from the horse in therapeutic and educational programmes. Developmental, psychotherapeutic and remedial riding were developed for people with special needs apart from riding provided as a part of physiotherapy treatment.

In the Nordic countries, riding as physiotherapy was mainly applicable to children with neurological disorders, but even adults with neurological diseases benefited. In Sweden the educational tradition in riding schools influenced the way treatment using horses was carried out by physiotherapists. Vaulting was rare in the Swedish tradition and what is regarded as hippotherapy in middle Europe is rarely used in Swedish physiotherapy treatment. There are different traditions of how the horse is used by physiotherapists. The terminology is blurred and covers different contents of physiotherapy or therapies from other professions [22].

In 2005, project Pegasus, a pilot project within the European community, aimed to unify guidelines and terminology for the use of the horse in therapy and education. Equine Assisted Therapy (EAT) was presented as the overall label for therapy utilising horses. In this thesis Equine Assisted Therapy is chosen as the overall term, but as parts were written before 2005, different terminology occurs in the studies. EAT is characterized by the use of the horse as a partner in therapeutic and educational work for improving quality of life. Learning to ride is not the main goal but a tool within a therapeutic process.

As many professions use the horse in therapy such as occupational therapists, psychologists, nurses, physicians, speech therapists, special educators among others, the labelling and theoretical foundation of equine-facilitated therapy is still under development, influenced by the extensive diversity of contexts throughout the world.

From this perspective there is a need for a closer description of how the horse benefits physiotherapy and how this is integrated with theories of physiotherapy and health.

### ***Why PT's use equine assisted therapy***

Physiotherapy on horseback challenges the patient with complex movement training. It offers a training situation where the movements are natural and within the normal range of motion for every joint. The pubic bones of the rider are the support base and surface where rider and horse meet in a movement dialogue. Debus [23, 24] described that ” *The horse provides a repetitive movement stimulus that requires a continuous motor response from the person on its back. The horse moves the patient's pelvis in a pattern, which very closely resembles human gait and gives the patient/rider constant feedback on motor performance. Several authors have observed that hippotherapy also regulates abnormal tone in the limbs, an effect which has been confirmed independently by all participants in our study. Importantly, the changes in tone and motor output during hippotherapy provide users with new sensory input. In combination these factors allow users to practice new, corrected motor patterns with each step of the horse*”.

The movement transferred from horse to rider will flow through the trunk and extremities. The change in joint pressure in the hips, knees and ankles differ from the forces of walking but the movements are similar. Counter rotation of the torso occurs as in walking and the movement of the shoulders and upper extremities are thus affected. The motor influence from the horse's movements provides a passive movement pattern. Combined with movement tasks, voluntary and involuntary movements of the trunk and extremities simultaneously provide the physiotherapist a unique opportunity to influence the rider's body.

Movement patterns of muscle chains are functionally used when riding and extension or flexion patterns are influenced. The astride position breaks the extension pattern in the lower extremities by the flexed hips and knees, reducing reflex chains for those affected by abnormal muscle tone from neurological dysfunction or fear. The approximation of the spine while trotting affects postural muscle tone and the influence of proprioception from the trunk enhance body awareness and alertness.

Selvinen [25] points out that: “*Sensory processes and their contribution are important in building up functional representations of the body called body schemas. They are needed for movement control, for building up self-concept and for feeling own body ownership, also called body awareness. It is well known that disorders in processing of sensory information*

*disturb the development of functional body schemes, which are also important for the control of balance.... On the horseback the rider gets an enormous amount of sensory inputs, and all the sensory systems involved in balance are activated allowing multi-sensory integration to take place.”*

These aspects of the movement influence from horse to rider can be described in terms of specialties in physiotherapy. It is a combination of manual therapy and neurophysiologic treatment in motor patterns in a state of presence and awareness of body movements. Simultaneously the body is bilaterally influenced in a gait-like motor pattern by the horse's movements while walking. Change of speed and direction challenge the postural system in deceleration and acceleration and with centrifugal forces [21, 23, 26, 27].

## **How physiotherapists use equine assisted therapy**

Physiotherapists describe their treatment methods in scientific papers showing the many approaches to the profession.

Debus [22] uses the definition of hippotherapy to describe a very specialized physiotherapy treatment: *“Hippotherapy is specialised physiotherapy treatment that makes use of horses' unique three-dimensional movement impulses at walk to facilitate movement responses in patients astride the horse. During hippotherapy the patient does nothing to actively influence the movement of the horse; on the contrary, the patient is moved by the horse and responds to the horses movement as required, through changes in cadence, stride length and direction.”*

In this setting the patient is treated individually by one PT.

Hammer et al [28] describes their physiotherapeutic riding (TR) sessions as follows; *“The TR was individually tailored to the subject's physical needs and ability to ride. Each riding session began with a few minutes of physical exercise with aimed to provide a better sitting position and enhance the balance component on horseback. Exercises contained trunk rotation components, for example reaching for the horse's ears or tail with one hand, reaching for the opposite knee or diagonally, towards the ceiling. Exercises that combined selected training components from a physiotherapeutic perspective with enhancing riding skills were then carried out. They included weaving through cones, changing the reins through centreline and riding diagonals and circles..... Riding over poles further enhanced balance components. The subjects rode mainly at a walking pace, but many tried a few laps trotting.”* In this setting the patients rode in small groups supervised by one PT.

Von Dietze [27] claimed that speed is necessary to influence posture and expresses the basic principles in her guidelines for movement and balance (p17- 18) *“Based on the model of how movement develops during childhood, it is possible to identify three clear principles for learning movement. The trunk develops before the **extremities** because it is the trunk which provides stability for the extremities. At first the infant learns to support himself on the*

*shoulders, then the elbows, then the hands and, once confident with these movements, begins to grasp with his fingers. Specific movements of the extremities only become possible when the trunk is stable. The command of one's own body develops from the trunk to the extremities or, expressed more generally: **from the inside to the outside.***

*Initially movements are exaggerated and are executed with more effort than necessary. Gradually they are optimized and subsequently applied economically with the least possible effort: **from the raw form to the fine form.** It is impossible to move in a new position before having developed the necessary coordination to hold this position in a still stance. An infant will at first stagger and waver on all fours before being able to balance properly in this position; he also learns to walk before being able to stand still: **through movement to posture.***

*Anyone learning to ride will also be subjected to these principles.”* The principles are applicable in individuals as well as in group settings regardless of functional level.

Larsson [29] described riding in physiotherapy as “intensive, goal-directed motor training on horseback” assessing a five-day riding camp in an adapted enriched environment. In addition to two hours of daily individually tailored riding, the opportunity to participate in the daily care of horses, dogs, rabbits and hens as well as fishing and swimming was provided. Patients were children with neurological and intellectual dysfunction. Families were present at the camp and parents and siblings actively participated in leisure activities and provided support at the riding sessions if needed. The effects of the camp experience were described.

Silfverberg and Tillberg [21] described rehabilitation after stroke: “*Studies show that training after brain trauma should be experienced as meaningful and contain active problem solving in order to gain the best results. Riding is an example of a complex and varied activity that fulfil those demands. The movements of the horse and the therapeutic values of riding are complex and are relevant for many aspects of a person's ability...the relation to the horse and the necessity to communicate in riding enhance motivation and add excitement to the situation. Alertness is influenced and active participation is necessary.*”

## **What equine assisted therapy adds to PT treatment**

Documented from physiotherapeutic treatment with hippotherapy and therapeutic riding are multiple effects on body structure and function, activity and participation levels of functioning according to International Classification on Functioning, Disability and Health, ICF [30].

Body structure effects reported are range of hip motion [31, 32], acetabula growth/increased stability of the hip [22], posture [22, 25, 31-38], muscle tone [22, 28, 32, 36, 38-41], lumbar movements [24, 38, 42-44].

Body function effects reported are, among others, improved gait [22, 28, 29, 32, 36, 41, 45-48], gross motor function [22, 29, 32, 45, 47] and pain modulation [28, 34, 36, 49].

Increase in well-being, communication ability, self-esteem, self-efficacy and reduction in fear avoidance are reported as well and are often regarded as facilitating the physical effects reported. More often these factors are reported but not assessed.

The effects on activity level is mainly improvement in balance, posture and gait function described as carry over effects with regard to increased mobility in daily living [22, 29].

Carry over effects on activity and participation levels are reported [22, 29, 49, 50]. Examples of these are fewer falling incidents, learning to ride a bike, ability to motor performance not possible before riding, stabilising trunk or extremities leading to independence and an increased willingness to challenge oneself in daily living. An important effect is increased ability to perform personal care for people with increased muscle tone [22]. This affects self-respect and dignity and is essential for independence.

*“This unique physiotherapeutic intervention on the ability to move, give effect on function, activity and participation and is per se a holistic intervention”* is the conclusion from assessment of a week-long camp with two riding sessions a day for children with neuromuscular dysfunction [29]. Silfverberg pointed out the importance of challenge and risk taking and of direct feedback on functional abilities in meaningful activities necessary for well-being and quality of life [51].

The assessments of the effects on mental, emotional and social abilities following physiotherapeutic use of the horse are scarce. Few studies are found measuring influence on quality of life or well-being following EAT [28].

### ***The relational aspect between horse and rider/patient***

To include the horse in treatment means not only to provide a moving surface for movement training. It also means including another living individual in relation to patient and therapist thus changing from a dyad to a triad in the treatment situation [52]. Communication between horse and man is non verbal and is expressed by the bodies in posture and movements.

The horse is a communicating individual who immediately reacts to human non verbal communication. It is also a social animal with the same basic needs for social interaction as any other group-living creature including man. The horse will initiate interaction as well as respond to interaction. Thus the horse will provide a movement dialogue regardless of the human's position on the ground or on its back. The horse will emotionally influence humans by its personality and by the effects from the interventions on ground or on horseback. In addition the horse has a symbolic value connected to emotional reactions of the humans involved. The non verbal communication will include long lasting physical contact when on horseback.

## ***The Horse and the Physiotherapist***

The horse is a prey animal, which means that its survival is dependent on fast reactions to danger and the ability to quickly escape from a predator. Homo sapiens are a combination of prey animal and predator. The relationship between man and horse relies on the trust between two species with different survival strategies [38, 53]. Interaction between man and horse thus demands special knowledge to reduce risks in the relationship. Knowledge of ethology and in horse handling has to be added to the physiotherapeutic knowledge bank when using the horse in therapy.

In addition, optimal use of the movement possibilities that the horse's movements provide demands a personal knowledge and understanding by the physiotherapist of the horse's movements and of its influences on the human body [22, 23, 27, 54].

The physiotherapist must be familiar with non verbal communication between horse and rider and its influence on motion and emotion. Only then can the full potential of the horse in physiotherapy be utilised. Thus, professional use of the horse in physiotherapy demands specialized and embodied knowledge from the physiotherapist of the horse's movement patterns and behaviour [27, 54]. This is equivalent to the demand for development of professional skills in body awareness therapy or in psychotherapy [12, 18, 55].

## **ENRICHED ENVIRONMENT AND MOTOR LEARNING**

The effects of enriched environment have been known since the 1940's and experiments on laboratory mice and rats in an enriched environment have shown effects on brain functions and structures on numerous levels. These include everything from change in weight of structures to the complexity of neurogenesis [56, 57]. Environmental complexity influences neuroanatomy as well as learning and memory. Environmental enrichment has shown to improve motor and cognitive outcomes after middle cerebral artery occlusion in rodents [57]. Environmental complexity in rodent cages have also shown to decrease voluntary intake of alcohol consumption, decrease aggressive behaviour and decrease reactivity to stress [56]. Voluntary exercise is equivalent to an enriched environment in its influence on adult hippocampal neurogenesis and improved spatial learning ability. Olsson et al [39] conclude that enriched environment and voluntary exercise should be regarded as distinct interventions with regard to hippocampal plasticity and associated behaviour to optimize influence on

neurogenesis. This entails beneficial positive effects on a traumatised brain from both enriched environment and from voluntary exercise.

An enriched environment influences development of the tactile system via the hippocampus. The tactile system is also deeply associated with the calm and connection system which may serve as an endogenous stress-buffering system by the hormone and neuropeptide oxytocin [58]. Physical contact is essential for the release of oxytocin. Long-lasting effects are reported from repeated exposure to oxytocin. This effect is thought to emerge from changes in stress response systems as a result of influences from the calm and connection system [59]. Oxytocin-related calm and connection pattern is also activated by environmental factors. Thus a calm surrounding as well as a warm, supportive and friendly social environment may stimulate calmness and social interaction [59]. Research on oxytocin has been carried out on humans as well as on mammals, implying that the same mechanisms influence individual responses regardless of species. Thus, there is reason to believe that research on the central nervous system in rats may mirror functions in humans.

Exposure to enriched environment by as little as 6 hours a day for 2 days has shown significant lasting change in gene expression in adult rats. The conclusion is that even limited exposure to a more complex environment at almost any age appears beneficial for development and function of the central nervous system [56]. Thus exposure to a complex environment has profound effects on brain function, structure and behaviour as well as stress-mediating systems.

In conclusion – enriched environment, physical voluntary activity and physical contact affect similar parts and functions in the brain as to memory and learning.

## **NATURE – CONTEXT OR HEALING FACTOR**

The context of physiotherapy is usually indoors and within medical care. Treatment may also take place in the patient's home, in a nursing home or at a rehabilitation centre. Treatment may take place outdoors, but this is not a setting commonly described in physiotherapy research. However, some studies have described outdoor treatment in physiotherapy.

Schrivier [5] described outdoor treatment of patients after knee surgery and back pain as far more efficient than treatment indoors. Effects are described as faster recovery due to a more varied training situation and a relational and supportive situation not only by fellow patients, but by the surrounding environment.

Sjödahl Hammarlund [20] described outdoor gait re-education for patients after transfemoral amputation due to trauma in combination with body awareness training. The outdoor environment was consciously chosen and considered a factor of importance. The aim of being

outdoors was to create a flexible and normalized gait technique and to improve proprioception. Training took advantage of varied terrains; forest, beach and park. Physical and mental coping ability was positively affected.

Nature-based therapy, recreation science and other scientific areas have provided several important studies on the influence of nature on human health.

Ottosson [2] describes the importance of nature for recovery after traumatic brain injury. Nature itself has been described as having a healing effect separate from the effect of physical activity. He claimed that *“the rehabilitative effect of nature is tied to its function as an enriched environment. During stays in natural settings, an interaction takes place between sensory stimulation, emotions and logical thought – an interaction that leads to a new orientation and new ways of seeing one’s self and one’s resources. This seem to largely be a question of how we human being take in and process information.”*

Ulrich [60] described the restorative elements of nature in recovery from hospital care following gall bladder operations. Patients with a view of trees needed fewer analgesics and were discharged earlier than patients viewing a wall. Ulrich claimed that human beings are biologically adapted to living in a natural environment. Ulrich’s studies were directed at the psycho-physiological effects of stress and showed that exposure to natural surroundings reduced stress significantly [61].

Kaplan and Kaplan [62] presented their theory of the restorative elements of nature as a result of a research program where individuals suffering from mental fatigue participated in an outdoor programme. After spending time in the wilderness, individuals appeared to have recovered from symptoms, felt better and were better able to cope with their situation [62]. The Attention Restoration Theory has, since then, been tested and supported several times and is now accepted as an important factor in understanding the effects of rehabilitation in therapeutic gardens and nature [63].

Main elements in the restorative effects of nature are stress reduction and improved concentration and attention [2]. Two kinds of attention, soft fascination and directed attention have different impacts on the demand for energy expenditure in the brain. Soft fascination [62] requires little effort. This is the kind of attention we use most in natural surroundings [2]. Directed attention is used when carrying out tasks and functions requiring effort and is connected to the brain’s function of filtering out irrelevant information. Our capacity for directed attention is finite. We utilise our capacity for directed attention for addressing problems in private life as well as to perceive the artificial stimuli of modern society. As this capacity is limited, input overload will result in information collapse with loss of focus and attention.

Demands on attention in a natural environment are different from those of artificially created surroundings. Here, the sensory system faces input that stimulates soft fascination and

effortless processing rather than directed attention. This provides opportunity for restoration and rest.

## **ANIMAL-ASSISTED THERAPY (AAT)**

Animal-assisted or pet therapy has its origins in studies of anthrozoology, human-animal bonding and interaction, nature therapy and recreation sciences. Animal domestication is nearly as old as man's history and animals are part of the context of man. Attention has been placed on the relationship between man and animal and good health and a healthy lifestyle are related to contact with nature and animals. In the field of human-animal interaction focus is placed on interaction in society, between species and individuals within the species, on human health in society, animal and human welfare and on the interaction between human and animal welfare.

The historical use of animals in health care was first described in the notes of Florence Nightingale who noted that "*a small pet is often an excellent companion for the sick, particularly in long chronic diseases*" [64]. Later on, small animals were used in psychiatric care in the U.S. in an attempt to decrease drug use. In Sweden, farming was a part of daily psychiatric care in large mental hospitals in the early 1900's, but special effects of the animals were not noted or used systematically. At the time neuroleptic drugs were introduced in psychiatry in the mid 1950's, farming had already ceased and occupational therapy aimed at leisure activities and work, was introduced in psychiatric rehabilitation.

In Sweden, pets are more or less banned from medical care due to allergic and hygienic considerations, but are gradually being introduced in the care of the elderly. Horses are mainly used in neurological rehabilitation for children and adults. Animals are used very differently throughout the world in medical care and rehabilitation, but pet visiting programmes and animal-assisted therapy is growing within the healthcare system worldwide [65].

The strongest health improving factor in AAT is believed to be the effects of the relationship between patient and animal, but the physical contact and the symbolic value of the species are also pointed out for their importance [66-69]. Effects from AAT are related to buffering effects on stress and improved coping strategies, more so in terms of effect chains than of a single effect [70]. The effects are presented as improved motivation to participate in therapy, improved mood and ability to communicate, take responsibility and participate in daily living and an increased interest in activities of daily living [66]. There is also a growing interest for research on how interaction with animals contributes to the development of empathy in children [71] as well as the fundamental role of physical contact in the mammalian development including man's [59]. There are no reports of particular species having a

specific influence on human health apart from the benefits of dogs assisting people with functional limitations and the horse in riding.

## **PATIENTS WITH LONG LASTING HEALTH PROBLEMS**

Patients suffering from long lasting pain or anxiety have a repeated need of medical care sometimes lasting decades. Their lifestyle is influenced by a reduced activity level and lack of stimulus compared to healthy persons of comparable age [72, 73].

In an investigation of patients with diffuse musculoskeletal pain, 54% suffered from kinesiophobia [74]. Back pain was the most commonly reported localisation and neck pain the second. The prevalence of widespread pain was more frequently reported by women than by men. Lundberg [75] claimed a need for encouraging physical activity for patients suffering from widespread pain to enhance quality of life and that joyful forms of adapted activity should be available and engaged in under the supervision of physiotherapists.

Eating disorders commence during or before adolescence. Physiotherapy treatment aims to enhance body awareness but patients are often poorly motivated for body awareness therapy and compliance is poor. Still, the chance for recovery is related to the extent of restoring a disturbed body image [76].

Mostly women suffer from eating disorders [76] (10/1), as well as anxiety and long lasting non-specific pain [74].

All patients, and adolescents in particular, with a life-long need for physiotherapy treatment have periods of low compliance thus, a motivational treatment situation is valuable.

Complexity and chronicity are often combined with comorbidity. Eating disorders may lead to cardiac failure and osteoporosis. Back and neck pain may occur in persons suffering from other diagnoses. Comorbidity is a “yellow flag” in patients receiving physiotherapy treatment for neck and/or back pain. The “yellow flag” indicates a need of a more complex intervention often involving many specialties.

Treatment of patients with long lasting pain, pain from neck and/or back or suffering from anxiety and eating disorders have been helped by body awareness therapy models in physiotherapy [9, 35, 76, 77],[6, 15, 36, 78, 79].

## **RATIONALES FOR THE THESIS**

Addressing emerging complex, lifestyle-related health problems, physiotherapists need to incorporate the growing body of knowledge based on how environmental factors influence

health. Using the horse in therapy adds environmental factors and health-promoting leisure activity to the treatment situation thereby naturally leading to a change towards a health-promoting lifestyle.

The use of the horse in physiotherapy has shown to be beneficial for patients, particularly children, with complex functional problems. Few studies describe the benefits of riding as physiotherapy treatment from the patient's perspective [22] nor have the benefits to patients with long lasting functional problems been investigated from the aspects of physiotherapy. This lack of scientific evidence for this multifaceted treatment form was the motivation for the studies reported in this thesis.

## **AIMS**

The aims of the thesis are:

- To explore the health components in Equine Assisted Therapy within physiotherapy
- To study Equine Assisted Therapy as treatment for patients suffering from psychiatric disorders, and eating disorders in particular, and from neck/back pain
- To describe Equine Assisted Therapy as an aspect of physiotherapy treatment for patients with long lasting health problems

## **METHOD**

A qualitative approach is the natural choice exploring the effects and meanings of new interventions. The studies were carried out in clinical, psychiatric practice. It was important from a methodological perspective to use a research method that could fulfil the criteria of scientific rigour without negatively interfering in the treatment situation. Action research [80-82] was a suitable method used during Studies 1 and 2. During the analytical phase following the two studies and preparing the thesis, interactive research [83] was employed.

### ***Study population***

The studies were carried out from 1994 to 2000 in the region of Western Sweden at the physiotherapy department of the department of psychiatry in a healthcare district, a rural and

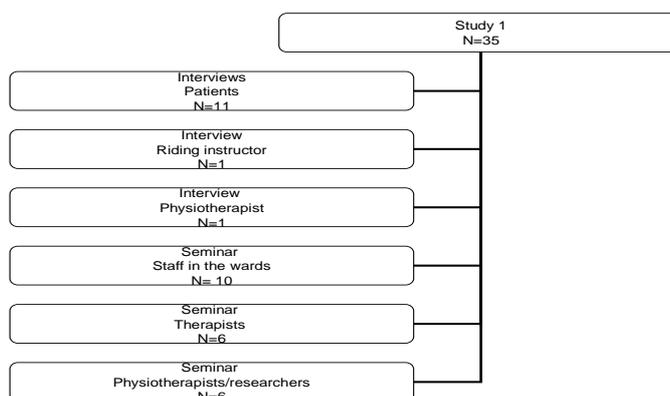
semi-rural community consisting of towns and cities with a total of 225 000 inhabitants. The patients were recruited from psychiatric and primary care and from rehabilitation centres in and around the cities of Trollhättan, Vänersborg and Uddevalla.

## Subjects

### Study 1

1. *Patients* in psychiatric care, mainly in-patients, participating in a riding programme within physiotherapy during 1994-96. Most of the patients were diagnosed with eating disorders Anorexia Nervosa and Bulimia Nervosa according to DSM IV. Patients with anxiety and mood disorders as well as psychoses were also included (n 11)
2. *Staff* from the wards involved with the patients during the riding programme (n 10)
3. *Therapists* from various professions involved with the patients during the programme i. e. psychologists, social workers, occupational therapists, dieticians and physiotherapists not involved with the riding therapy (n 6)
4. *Riding instructor* involved in the programme
5. *Physiotherapist* involved in the programme and as co-researchers
6. *Physiotherapists* involved in research and education in physiotherapy in Gothenburg (n 6).

Fig 1. Informants in Study 1



Patients were interviewed by an independent researcher. Due to confidentiality the identity of the informants were hidden to the physiotherapist and co-researcher (MH). Thus, restricted data regarding the informants was available.

Still, some records of the interviewed informants were noted. A total of 27 patients participated in a riding programme for two years. Age distribution was 12 to 38 years. The

number of sessions varied from 1 to 78. Twelve participants agreed to be interviewed; one could not participate in the interview. Eleven interviews were performed. One of the informants was a man. The youngest and the oldest of the riders were informants, as well as the one who rode the most and the least number of sessions during the riding programme.

The seminars with staff, therapists and physiotherapists/researchers were open seminars and no records of participants were kept.

The health professionals in psychiatric care were all employed at the department of psychiatry in the cities of Trollhättan and Vänersborg during 1996-97. The physiotherapists were teachers at the school of physiotherapy in Gothenburg during this period. The riding instructor was employed at the riding school in Vänersborg.

## Study 2

Participants were 28 out-patients suffering from chronic back and/or neck pain on a waiting list for physiotherapy in primary care or at rehabilitation centres in the cities of Trollhättan, Vänersborg and Uddevalla. Of 28 patients (18 women and 6 men) 24 completed the treatment. Mean age for women was 37 years (range 25-49) and 38 years for men (range 13-53). Three of four dropouts were men.

Table 1 Some background data on patients and treatment Study 1 and 2

	Study 1	Study 2		
		Total	Women	Men
Number	11	28	19	6
Age(years) range	12-38	13 - 53	25-49	13 -53
Age (years) mean	-	38	37	40
Treatment sessions range	1-78	3-32	-	-
Treatment sessions mean	-	7		
Treatment period (months)	0- 24	0,5 – 12		

Inclusion criteria were:

- Considerably disabling back and/or neck pain
- Previous experience of physiotherapy treatment for similar back and/or neck pain
- Participation in more than one riding session

Patients were successively included and treatment was according to functional ability.

### ***Patient Characteristics***

Patient disorders relevant for physiotherapy treatment in Study 1 were anxiety and distorted body awareness. Before the study was commenced the physiotherapist was well acquainted with the patients. Their limitations and problems had been assessed during the ordinary treatment sessions. Lack of compliance in body awareness therapy was the motivation for initiating therapeutic riding whereby many patients were known to be former riders and positive toward attempting body awareness therapy on horseback. Common problems were reduced awareness of body functions and body control, reduced ability to identify emotions and feelings such as fear, hunger and fatigue, reduced ability to read body language in people including themselves, persistent anxiety, hostility and mistrust towards others, especially some of the staff, and inability to limit physical activity level once starting exercise. Low self-esteem and self-hatred were common especially to the patients suffering from eating disorders. Many of the patients were unable to touch objects with the palm of their hands for fear of becoming fat so they just used their fingertips while gripping or touching. There seemed to be a dysfunction in spatial understanding and sensory integration in some patients. The knowledge of the functions or structures of the human body was sparse. Most of the patients were known to have a low level of compliance towards psychiatric interventions in general and had a long history of psychiatric care.

Most of the patients had several diagnoses, mainly psychiatric, but somatic comorbidity was also noted.

A safety agreement for the riders was agreed upon whereby the residual effects from drug or alcohol abuse were exclusion criteria for mounting the horse.

All patients had difficulties in maintaining a leisure activity during healthy periods which did not trigger excessive physical activity or threaten their physical health otherwise.

The main problems of the patients in Study 2 were chronic pain and the experience of having severely reduced ability to function in daily living. These patients were unknown to the treatment team at the start of the project.

The patients had difficulties in finding leisure activity beneficial to their pain problems which were not boring in the long run.

## ***Procedure***

Body awareness therapy on horseback focused on body awareness of the rider and the movement dialogue between horse and rider both on and off the horse. Patient riding skills varied and the level of exercise difficulty was adjusted accordingly. One weekly session (5-60 min) in an indoor arena during the semester (20 weeks) was offered. Weather permitting, a short ride (5-10 min) outside the arena in the surroundings was included.

In Study 1 the treatment period covered 24 months/four semesters.

In Study 2, the average treatment period was 3.5 months (range 0.5-12 months). Number of treatments varied from 2 to 32 (median 7) ranging from 5 to 45 minutes. Patients were treated individually (15) or in small groups (13). Most treatment was conducted in an indoor arena. Seven patients attended a week-long, summer riding camp with one daily, outdoor, group riding session.

In Study 1, the total riding experience, from entering to returning to the stable, was the focus of treatment. Care of the horse, riding lessons and social activities surrounding the lesson were included.

In Study 2, treatment focused on the riding lessons and the social gathering before and after the lesson while preparing for or summarising the lesson in the group. The handling of the horse, brushing, tacking and leading it was excluded to avoid risk of unnecessary stress and strain on the patient's neck or back. The horse was mounted from a ramp to avoid strain on the rider's sacroiliac joints, hips and low back.

Guidelines for riding instructors and physiotherapists were formulated for the treatment procedure:

Focus on and legitimate appropriate fear while working with horses

Focus on the ability to influence and reduce fear

Create confidence and trust both on and around the horse and with the staff involved

Prepare participants by providing knowledge of how to handle common situations on and off the horse

Treatment aims for both riding and physiotherapy should be formulated by the patient

The riding instructor was familiar with the horses and a high degree of safety was maintained regarding the selection of the horses. No horses with a tendency to buck, bite or kick were used.

If any doubts concerning safety arose, the horse was handled and lead by the physiotherapist during the session. Riders wore riding helmets throughout mounted sessions.

### ***Contents of a riding lesson:***

*The basis for a successful lesson was that the rider felt completely safe. Therefore, the horse was lead during the sessions until the rider decided to take the reins.*

*Preparations The horse was equipped with saddle and bridle or surcingle and blanket. The rider mounted and dismounted the horse from a ramp or stool to avoid unnecessary loading of the back and pelvis for both the horse and rider.*

*Introduction The rider was urged to focus on how the body felt before the horse moved. Did the left and right sides of the body feel the same, did he/she feel tense or relaxed?*

*Body awareness exercise The horse was led around the indoor arena at a walking pace. The rider was instructed to focus on different body parts beginning at the feet. Attention was placed on all joints in turn and the rider bent and stretched joint by joint. The seat and pelvis were given particular attention and the rider was urged to focus awareness on the movements the horse's body initiated via the seat/pelvis. Exercises were performed partly with eyes open and partly with eyes shut.*

*Riding exercises with focus on body awareness Communication with the horse was finely tuned by changing tempo and direction with a minimum of effort. The rider practiced starting and stopping with eyes open and shut as well as tempo changes from walking to trotting or galloping and vice versa. Insecure riders were lead and the advanced rider worked without being lead. Exercises were adjusted to the rider's competence.*

*Finish The lesson was terminated with the horse being lead once again. Riders focused on their bodies and the feeling of relaxation. They were encouraged to shut their eyes and follow the movements conveyed from horse to rider. Finally, the horse was stopped and the rider was again asked how it felt physically, possibly with regard to side differences and tension levels. After dismounting, the question of how the rider physically and mentally experienced standing on the ground was repeated. The horse was later patted and thanked for the ride. The rider joined the other riders and discussed the day's experiences over a cup of coffee before departing.*

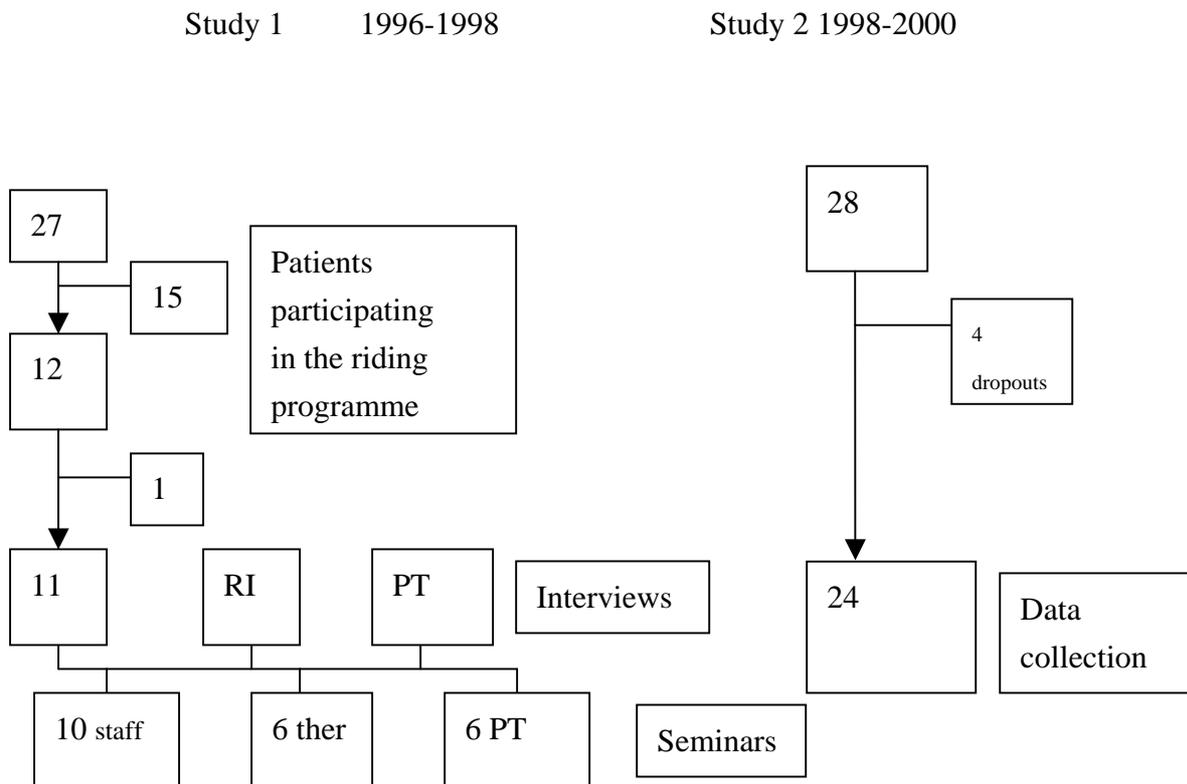
## Study Design

**Study 1** was carried out as participatory research [83], where patients, staff, therapists, riding instructor and physiotherapist contributed to exploration of riding therapy for patients within psychiatric care, mainly suffering from eating disorders and anxiety.

Data was collected from interviews and seminars after the completed treatment period. The interviews and seminars were conducted by an external researcher. MH, the physiotherapist, participated in all data collection excepting the initial interviews with the patients and the interview with the riding instructor.

**Study 2** was designed as an action research [80, 83-85], utilising the experiences from Study 1 with another group of patients, where body awareness was shown to be beneficial and where there was a need to find a suitable treatment leading to beneficial leisure activity and self-management. Data was collected successively and patients were allowed to enter the study up until one month before ending the treatment period.

Table 2. Data collection and informants Study 1 and 2



PT = physiotherapist

RI = riding instructor

Ther = therapists

After completing data collection in Study 2, a long phase of analysis followed. This was interrupted by practical education in different forms of physiotherapeutic use of the horse treating different patient categories. A period of scientific review of animal-assisted therapy and horticultural therapy completed this analytic period. Interactive research [83] became the design of this pendulum of practice to scientific reflection and back.

## **Data collection**

### **Study 1**

Data collection began after ending the treatment period. Letters were sent to participants, asking them to be subject to an interview concerning experiences of body awareness treatment on horseback. Twelve participants accepted, some didn't and some did not reply. One informant who had accepted could not be reached. One interview was carried out by telephone, the others in person.

Seminars were open to any staff member or therapist wanting to share experiences. Personnel from the four wards were informed of and invited to the seminars. One ward could not send representatives to the seminar, but commented orally on the material.

Steps in data collection were:

- Interviews were carried out (60-120 min) with patients. These were the primary and most important data source. These interviews were transcribed, read and validated by patients. The patients also gave their written consent to the use of the interviews as accessible data for the following seminars.
- Seminars, (90 -120 min) for providing reflection on the written interviews and for completing information from patients with information from observing staff from four wards, were carried out.
- Therapists not directly involved in riding therapy, but in regular contact with the patients, were invited to seminars to follow up and complement the data
- Separate interview with the riding instructor
- Separate interviews with physiotherapist were held on her observations during treatment and on reflections after having read the interviews and participated in the seminars
- Finally, to discriminate between general knowledge of effects from physiotherapy and effects from body awareness on horseback, physiotherapists active in education and research were invited to a seminar (90 min) on the total material

## Study 2

Apart from daily records from the PT and riding instructor, patients were asked to, at any time, share their experiences and the influence on symptoms and daily living of therapeutic riding. Written data from patients was returned to the patients if asked for. Data collected consisted of:

1. *Field notes* by both the PT and the instructor after each session. Notes included the need for technical aids and altered needs of assistance, observed or reported. Furthermore, changes in body control, sleep, pain levels, anxiety and self-confidence, as well as statements by fellow patients or therapist concerning pain behaviour and well-being were registered.
2. *Letters and notes* from telephone calls throughout the treatment period were archived.
3. A *Visual Analogue Scale (VAS)* was used to estimate the intensity and duration of the following variables: pain, anxiety, self-confidence, sleep and body control. The VAS was a 100 mm linear scale where 0 was 'no symptoms/difficulties' and 100 mm indicated the 'worst imaginable symptom/difficulties'.

The VAS included an *open question* on a separate page: '*How does riding therapy influence you and your daily living?*'

The VAS scales were distributed and used on several occasions: prior to the first therapy session, after the last session and at the end of every semester. VAS was also utilised before and after the riding camp. The number of measurements varied from two to five.

4. *Videos* of 15 treatment sessions, both individual riders and groups, were made. This material was used to both document the structure of the sessions and as a pedagogic instrument during the treatment. Film clips provided an opportunity for the patients to see themselves "in action". Comments on the video clips were made in the field notes but not systematically analysed.

## Data analysis

### Study 1

Interviews and seminars were performed by an experienced qualitative researcher familiar with research on clinical practice, work place problems and action research. Her experience as a psychologist broadened the perspectives of the research topic. During the seminars, MH acted as an observing participant. In analysis of the written documentation from interviews and seminars, both the physiotherapeutic and psychological perspectives were used, deepening analyses in regard to how and what findings were related more exclusively to physiotherapy. Both researchers took part in analysing the documented data.

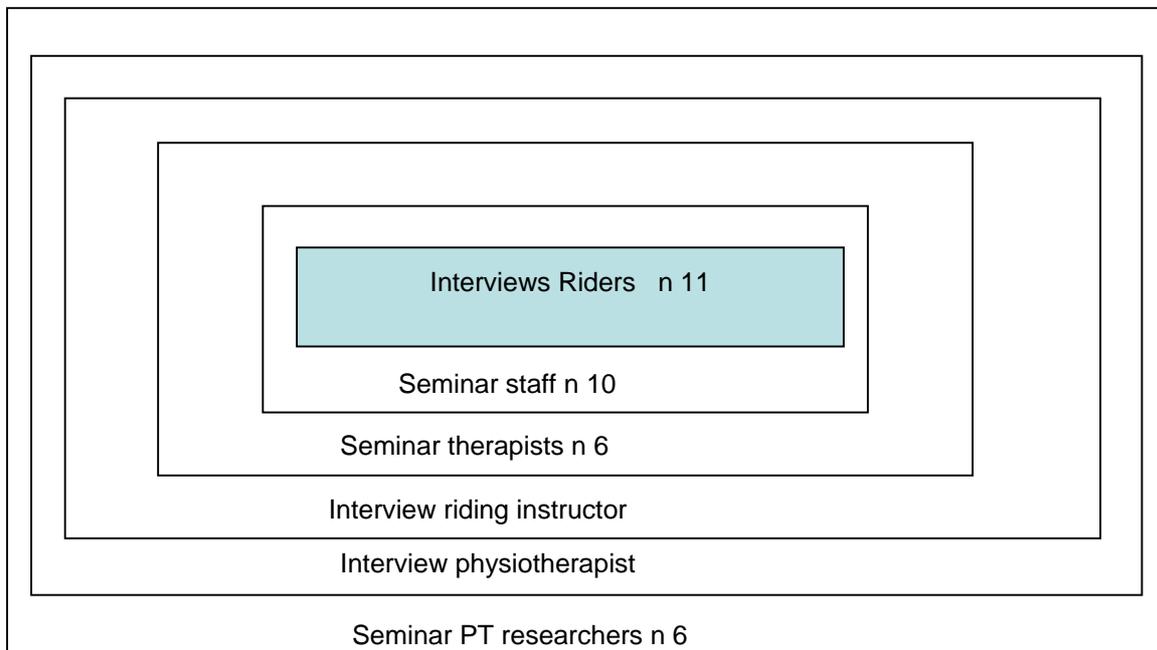
The stepwise analysis included:

- Individual reflections on the interviews

- Collective reflections on the interviews in the seminars and of the additional aspects during the seminars
- Reflections on the experiences of riding not mentioned in the interviews or the seminars but experienced by the PT or the riding instructor
- Key sentences formulated at the seminars
- Reflections on the narratives related to theories in physiotherapy

The research process can be described as the building up of a picture based on the interviews with the patients, enriched and successively completed by observations from new reflective occasions.

Table 3 The process of collecting and analyse data in Study 1



## Study 2

Data from the material gathered was analysed by the PT and the riding instructor individually and in dialogue. Two professional perspectives, the therapist's and the instructor's, were weighed together by discussion and reflection.

*Step 1.* VAS was analysed. "Positive", "negative" or "no change" was recorded. Denoting a change required a difference in measurement of at least 10% of the initial value.

*Step 2.* Changes in VAS variables were compared to recordings of the variables in field notes, answers to direct questions and observations.

*Step 3.* Written information on how riding therapy influenced ability and/or symptoms was analysed qualitatively [86]. Patterns were identified and categorized. The material was processed by the PT and the riding instructor individually and patterns were thematized. The themes were compared and in case of disagreement the material was rescrutinized until sufficient agreement was reached.

*Step 4.* The analysed data was compared using physiotherapy theories of movement science, body phenomenology and aspects of long-standing pain to capture further dimensions in the data.

*Step 5.* The material was rescrutinized from theoretical perspectives of environmental psychology, biophilia hypothesis and supportive healthcare design [61, 87]. Data was valued according to old and new theoretical perspectives and a theoretical framework was created.

## **ETHICAL CONSIDERATIONS**

The research project emerged from an ongoing clinical project where horses were used as a new way of motivating patients for body awareness training. Initially, patients came from psychiatric care, but later from public health and rehabilitation clinics as well. The clinical project was carried out during 1994-2000. There was no demand for ethical approval for research carried out in an ordinary clinical setting with non-invasive interventions. The Swedish law of ethical considerations was passed in 2004 and thus not applicable to the studies in this thesis.

The physiotherapy department had an ethical code for clinical work which stressed the patient's active participation in decisions and considerations regarding treatment. There was also an understanding that if research was started at the department, the study design had to be adjusted to the patient's active participation as partner and not as an object of research.

Still, in psychiatric care, there is a special need for respecting the vulnerable position of patients. Some are too open, some have difficulties saying no and may suffer from participating in an explorative study. It is important to prevent patients from harm in the vulnerable situation of treatment and research.

In Study 1, oral and written information on the aims of the study was provided. An information letter regarding interviews was sent at the end of the treatment period. Written consent was obtained for the use of the interviews as data in the seminars.

To protect the identity of patients participating in Study 1, an external researcher carried out the interviews. The aim was twofold; to protect the integrity of patients in relation to the study and to allow informants freedom to express their inner feelings of the treatment.

Written interviews contained no details that could reveal the identity of the informants. No

records of the informants were presented and the external researcher was the only person aware of the informants identity. Patients chose not to participate in the seminars. The interview with the child was performed with the permission of the parents.

The patients in Study 2 were asked to participate in a research study and those consenting were included. One child participated in this study. Mother and child were both included as study objects and no special consent was needed. Written information was provided. All data from the research period was archived separately for research purposes.

We tried to eliminate effects from research that could harm the patients. Starting a project creates hope for change in clinical practice that may be impossible to fulfil for the individual. As a project it was limited in time. The option of physiotherapy treatment with the horse has not been available since the project was shut down. For those patients that expressed the treatment as “life saving”, the experience of the closing down of the project was damaging. This damage would not have occurred without the project. However, a redeeming aspect of the project was that we provided a period of positive experiences. Life consists of unexpected changes. All participants were aware that it was a project and thus limited in time. Handling disappointment is a part of life and not harmful in regard to treatment offered. What could be argued is that patients are always in a dependent situation and that research in clinical setting even with good intentions may be harmful to the individual.

Physical safety while riding was provided by following ordinary routine at the riding school. Participants were not listed in the riding schools list of members to protect their identities.

The rules of the riding schools were followed regarding animal welfare. A weight maximum of 100 kg for a rider was decided upon following ethical recommendations within equine assisted therapy. No back rider was relevant for these patients.

# RESULTS

All patients participating in the studies were highly motivated to participate in treatment including body awareness on horseback at a riding school. Some were experienced riders while others had never ridden but were eager to try. None weighed over 100 kg. None was coerced to participate.

## **Study 1**

1 Body awareness therapy on horseback contributed to:

- Visible and experienced positive effects on function
- Create a process of development towards increased functioning and empowerment
- Concrete dealing with the individuals fear

2 Patients, staff and therapists stressed different effects:

- *Patients* reported reduced anxiety during and after riding, increased body awareness and an increased appetite after riding. Fig 2
- *Staff* reported a visible change in the patient's posture: that they were more erect and proud-looking due to lifting of their heads. The staff also stressed an increase in coping ability of the patients such as an unexpected ability to handle situations and set limits. Carry-over effects on patients on the ward not involved in the riding event were mentioned. The riding sessions created new topics of conversation and interest in the riding situation before and after treatment and influenced the ward's weekly routines. TV programmes or newspaper articles mentioning horses were noted and discussed.
- *Therapists* stressed confronting fear as the central and common theme in treatment.

3 Body awareness training on horseback was characterized by:

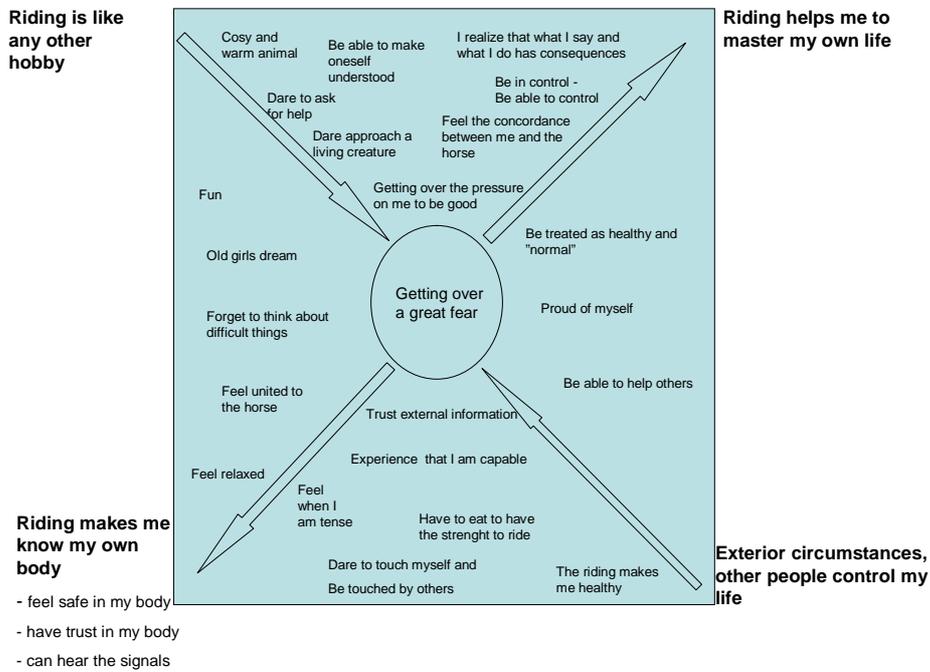
- A mutual interest in horses
- Creation of the therapeutic alliance
- The trustful relationship expressed by the informants

Patients who initially refused to participate in body awareness training therapy carried over the established trustful relationship to the institution-based treatment.

No incidents of falls, bites or kicks were reported. Some incidents of horses stepping on patients' feet were reported. However no serious injuries or bruises were reported in connection with the incidents. No incidents of residual effects of drugs or alcohol were noted during the study.

Fig 2 The dynamic process of "Body awareness on horseback". The treatment lead to a change towards the end points of the positive diagonal when fear diminish and the body as well as the mastering of the horse become evident for the rider.

Study 1



**Study 2**

The patients

Most patients had more than one medical diagnosis according to ICD10.

Many reported previous treatment periods by physiotherapists for symptoms other than neck and back pain. Some labelled themselves as "difficult patients" as their symptoms kept coming back or did not diminish after physiotherapy treatment. For some patients pain reduced their daily functional ability severely and treatment sessions were the only events away from home during the week. Others were less disabled and could partially participate in social events. The attitude towards the future differed between patients from the hope of waking up to function as before the onset of pain to a future in constant severe pain.

Table 4

Medical diagnoses besides chronic neck- and/or low back pain among 28 patients attending EAT. The comorbidity was distributed in four subgroups; neurology (N), orthopaedics (O), inflammatory diseases (I) or mental disorders (M). Some patients had more than one medical diagnosis.

<b>Neurology (6)</b>		<b>Orthopaedics (14)</b>	
Para paresis	1	Disc degeneration	1
Stroke	2	Chronic back pain	1
Cerebral palsy	1	Whiplash disorder WAD	6
Multiple Sclerosis	1	Vertebral compression	1
ADHD	1	Osteoporosis	1
		Meniscectomy	2
		Fractured pelvis	1
		Spondylolisthesis	1
 <b>Inflammatory diseases (10)</b>		 <b>Mental disorders (3)</b>	
Inflammatory musc. pain	1	Dysthymia	1
Rheumatoid arthritis	2	Anxiety	2
Psoriasis arthritis	2		
Fibromyalgia	3		
Chronic fatigue syndrome	1		
Mitochondrial myopathy	1		

Results according to symptoms and the therapy process and its influence on patient function were as follows:

Symptoms of experienced pain and anxiety (intensity and duration) varied both between patients and within patients. Self-confidence, body control and sleep improved for a majority of patients. Some patients expressed increased anxiety and a decrease in VAS pain relief scores.

Table 5

**Table 5** Results on symptoms from Visual Analogue Scale presented as difference before and after treatment. Change was noted if there was more than 10% difference on the 100 mm scale. The results are presented as increased, deteriorated or no difference.

Out of 28 patients, 18 completed forms before and after treatment period, one filled form before, one filled form after and eight did not fill in any forms.

<b>VAS-variable</b>		Increased	No difference	Decreased
Pain intensity	n=18	7	4	7
Pain duration	n=18	2	4	12
Anxiety intensity	n=14	6	2	6
Anxiety duration	n=14	6	4	4
Selfconfidence	n=18	11	3	4
Body control	n=18	10	2	6
Sleep	n=18	9	2	7

Some patients showed no changes in VAS pain relief scores, but did so for other data. All patients experienced some pain relief. No patient stated 'free from pain'.

**Table 6**

Better balance and gait, increased mobility and well-being and lowered muscle tension were other effects on symptoms.

**Table 6** Examples of reported effects on pain in 17 different representative individuals participating in therapeutic riding as physiotherapy treatment for chronic low back and/or neck pain

Patients from	Medical Diagnoses	Pain relief	Free from pain	Duration
Psychiatry	Dysthymia	Yes	No	Two weeks
	Anxiety	Yes	No	Till the next day
Neurology	MS	Yes	No	During and direct after the riding session
	ADHD	Yes	No	Don't know
Ortopedics	Disc degeneration	Yes	Don't know	Don't know
	Chronic back pain	Yes	Periodical	During treatment period
	Whiplash disorder WAD	Yes	No	Till the day after
	Vertebral Compression	Yes	No	Directly after the riding session
	WAD	Yes	No	During treatment session and a couple of hours after
	Osteoporosis	Yes	No	During treatment session and the rest of the day
Inflammatory diseases	Fractured pelvis	Yes	Don't know	During treatment session
	Mitochondriell myopatia	Yes	No	During treatment session when riding
	Inflammatory muscular pain	Yes	Yes	once a week
	Chronic Fatigue Syndrome	Yes	No	The rest of the day
	Fibromyalgia	Yes	No	1-2 days
	Fibromyalgia	Yes	Yes	Till the next day
Fibromyalgia	Yes	Yes	Till coming home after treatment	
				The rest of the day

The main finding, however was the pattern of *the transitional process from disability towards health* showed in the data. Table 7

Table 7

Dimensions of EAT.

EAT is characterized by a process of change in four dimensions. The change towards better function will promote health.

<b>Dimensions</b>	<b>Change in</b>	<b>Variables</b>
Body Awareness	Awareness	Body function Perception of self
Competence	Knowledge	Skill Strategies for action
Emotion	Feeling	Feelings of joy and happiness Altered level of consciousness
Environment	Relation	Leisure area Changing roles

Four apparently central dimensions emerged:  
the Dimensions of Body Awareness, Competence, Emotion and Environment.  
Each dimension varied in importance for the patients.

The dimension of Body Awareness was characterized by altered body function, physical capacity and self-image.

The dimension of Competence was characterized by increased skill in executing body movements and riding tasks and an increased active repertoire for dealing with one's own needs as well as the horse's. Both mental and physical plans of action were changed.

The dimension of Emotion was primarily characterized by the expression of joy, happiness, satisfaction and pride, but also by an altered level of awareness and a change in the perception of time. Some participants described riding as a "return to life".

The dimension of Environment was related to leisure time and role change. The non-traditional caring environment provided access to varying sensory input from all senses and influenced memories of previous experiences of a healthy life in touch with nature.

Association to leisure time and to roles different from the patient role influenced self-image. An adapted physical activity that could play a future role as self-management became an option.

This transitional process led to a change in coping abilities. New attitudes toward symptoms lead to a change in health. The process can be viewed as a positive effect chain initiated by the riding situation.

No incidents regarding falls, bites, kicks or horses stepping on people were reported.

## Concluding Results

The studies are compared in Table 8

Table 8

<b>The Patients</b>	Study 1	Study 2	Study 1+2 important factors	Thesis
Characteristics	Severe eating disorder Psychiatric diseases Mostly women Young	Long lasting neck- and/or backpain Both sexes Middle age	Chronicity The body an enemy or a hindrance Comorbidity Age 12-53	Longlasting physical or mental ill health in patients in need for physiotherapy
Organisational levels of treatment	In patients in psychiatry Out patients in psychiatry	Primary health care Out patients in rehabilitation clinic	Repetitive care episodes Many diagnoses over time	In and out patients Need for strategies for self-management reducing need for medical care
<b>The studies</b>				
Aim	How can we understand?	What can be beneficial for well being?	Exploring by including patients in data collection and analyse of treatment effects	How EAT contribute to physiotherapy treatment. From the patients perspectives and from the physiotherapists
	What can be seen as therapeutic beneficial factors and effects?	What are the effects?	Similar effects are reported despite the different treatment groups	How can we understand the benefits?
Results	The process of empowerment of patients	The effects on symptoms	A treatment process is reported	EAT contribute to physiotherapy treatment and offers a leisure activity beneficial to reduce the patients functional limitations
	The therapeutic alliance – influence on physiotherapy and on patients	The dimensions of body awareness competence, emotion and environment	Effects on symptoms in an empowering direction	The horse adds unique simultaneous dimensions in movement learning and therapy beneficial for neuro-motor-, body awareness- and painrelated dysfunction.
	The change of context – influence on physiotherapy		Context matters on effects and on patient-therapist relation	Enriched environment influence positively on treatment and add stress reduction
Conclusion	A treatment process towards empowerment	Treatment process towards health	Symptoms diminish Joy and pleasure raise	EAT is health promoting and have special unique beneficial components for physiotherapy

Health components of EAT included physical, mental and social stimulation which enhanced well-being and quality of life. The stable's environment was stress-reducing and health promoting. It offered a future area of leisure activity traditionally used by other patient

groups as adapted physical activity. The riding school atmosphere focused on abilities, was experiential and accessible to most people regardless of sex, race or age.

EAT as physiotherapy was characterized by its specific intervention characteristics. The Triad was introduced to treatment; the horse with its own personality, the patient and the PT. It included a specific form of physical contact for the patient where character, intensity and duration as well as the localisation of contact differed from any other physiotherapy treatment.

EAT included a rhythmical influence of contact and movement on the rider in a gait-like pattern. The horse responded immediately to the rider's behaviour regardless of whether this behaviour was intentional or not. EAT provided an awareness of the body, nonverbal communication and of experienced body control.

The mounted patients gained a superior spatial position in relation to the instructor and PT. EAT influenced the situation for patients and for physiotherapists. In Study 1 the process of empowerment became apparent. Study 2 confirms that reduced symptoms and changes in the dimensions of Body Awareness, Emotions, Competence and Environment created a process of improved function and coping strategies. In both studies the change of context was mentioned as important. Study 1 described the therapeutic alliance from both patient and PT perspectives.

EAT influenced physiotherapy treatment by A: context, B: treatment modality and C: the role of the PT.

A: Outdoor treatment away from the institution created opportunities for multisensory input and a health-related social environment. The enriched environment optimised motor learning and caused stress reduction by its nature and through the presence of the animal. Patients were introduced to a context possible to maintain as a leisure activity and for self-management.

B: EAT as physiotherapy for patients with long lasting health problems contained beneficial components regardless of PT speciality or medical diagnosis. Fig 3

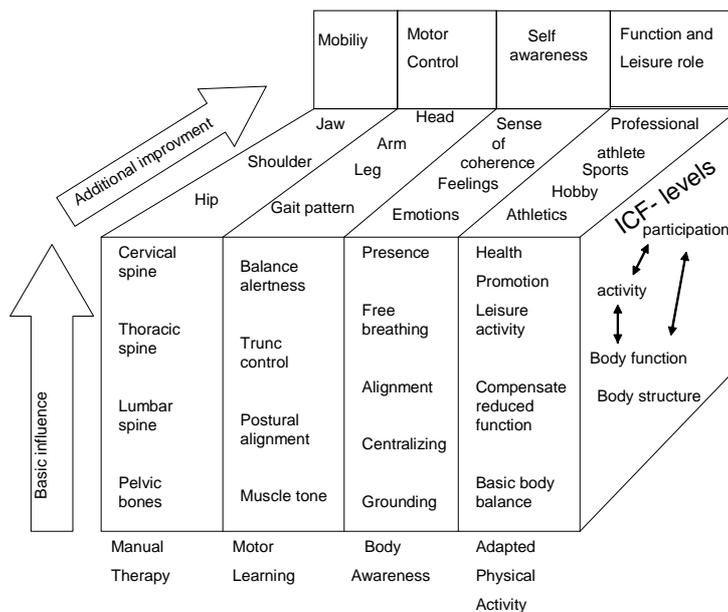
It consisted of basic influences on the rider from the perspectives of manual therapy, motor learning, body awareness and physical activity. Body movements and posture were influenced, possibly improving intestinal function. The emotional influence specifically enhanced positive feelings and motivation for continuing participation in treatment.

Meaningful tasks when successfully completed were seen to increase self-confidence thus contributing to a sense of coherence. Social skills were trained in normal social situations. Influencing mobility, motor control, self-awareness and leisure activity could be regarded a holistic treatment modality beneficial for most patients in physiotherapy regardless of

medical diagnosis. Treatment affected function, activity and participation levels according to ICF.

Fig 3

Influences on mobility, motor control, body awareness and adapted physical activity through equine assisted therapy in physiotherapy specialities



C: The role of the PT differed compared to traditional institutional treatment. Introducing the horse added the influence of a third individual to the therapeutic environment. An element of risk that could not be ignored arose not present in ordinary PT treatment. The element of unpredictability was considerably larger than for institutional settings. Skill in horse handling was needed to reduce risk factors due to the horse's behaviour.

The professional role of the PT changed whereby personal interest in a particular leisure activity strongly influenced the choice of treatment. The PT became a model for her personal preferences of leisure activity as well as for her professional role. Therapy was transformed to a more educational treatment modality. The elements of treatment consisted of learning about horses and riding as well as of the body-, movement- and activity-directed therapy.

## DISCUSSION

EAT is used by many professions worldwide. In this thesis the focus is on how EAT contributes to the profession of physiotherapy through experiences of the conducted and other studies.

Two studies of EAT involving patients suffering from long lasting health problems, describe components of the treatment from the perspective of physiotherapy. The aims of the studies were to explore health components and effects of using the horse in physiotherapy. A process of empowerment, reducing anxiety and enhancing body awareness was described for patients suffering mainly from eating disorders and anxiety. A therapeutic alliance between patient and physiotherapist was created (Study 1).

Patients with long lasting neck- and/or back pain participated in a treatment program based on the experiences from Study 1. Apart from similar effects on symptoms, influence on four dimensions, Body Awareness, Competence, Emotions and Environment were particularly beneficial for the well-being of patients and their self-image and coping ability (Study 2).

### ***Methodological considerations***

The use of a qualitative method was a natural choice as the clinical work in physiotherapy within psychiatric care already contained the characteristics of reflective practice and explorative enquiry [4]. Choosing a method for exploring effects and benefits from physiotherapy practice thus had to be equivalent to the practice in focus. It was also important that research included patient participation. Previous experience of assessment influenced that decision [15]. Qualitative research offered methods suitable to such a position [83]. Providing empowerment is one goal of physiotherapy; supporting the patient as a subject and not an object is a way to achieve this [12]. Thus, participatory research seemed appropriate.

The ambition was to conduct research with and not on patients. However, when considering the process as a whole, this was not possible. The practical design of Study 2 resulted in research *on* rather than *with* patients although. In Study 1 patients were not active in the seminars nor the analysis. Patient participation was limited, but still a vital ingredient of the research process.

Participant selection was a weakness in study 2. Invitation to participate in the study was spread among physiotherapists in primary care and rehabilitation clinics. Nowhere else in west Sweden was riding offered as treatment for these kinds of medical problems. Participant bias was thus inevitable. Only those eager to participate accepted. Whether the aim was to

ride or test the treatment was unknown. From a research perspective positive expectations may be regarded disadvantageous, but for rehabilitation purposes, beneficial. In research the clinical advantage must be superior to methodological demands, even if problematic. A proper research design can reduce these problems. In this study, action research was chosen for its character of adjusting research to practice [84].

The character of the study, exploring benefits of riding as physiotherapy, could partially reduce this selection bias. Interviews with dropouts could have added valuable data to the study.

A weakness of the data collection in Study 1 was that only patients wanting to be interviewed were interviewed. It was possible that only those positive to treatment participated. Critical voices could have added valuable viewpoints. There is a risk that what is expressed in an interview is what the patient believes the interviewer wants to hear. The design using a multiprofessional, stepwise dialogue on open data, the documented patient interviews reduced this limitation as data was expanded by observations from the staff. Still, interviews with all participants could have provided a different picture and understanding. Expanded seminars with greater opportunities for staff and therapists to participate could have added valuable information.

Focus groups [88] rather than seminars could have provided a more thorough strategy for documentation. Practical considerations such as time and money limited the options.

In Study 2, the lack of structured field notes adjusted to research was a weakness. The chosen structure was appropriate for treatment purposes but less adequate for research purposes. The novice role of researcher contributed to a lack of necessary structure. The clinical situation also limited access to necessary resources in terms of economy and research competence. Adding an outside researcher to the research team could have been beneficial for the data analysis in Study 2. An outside researcher could have noticed valuable data not noticed by “insiders” thus enriching the results.

To strive for rigour, the strategy was to use two professional perspectives, from physiotherapist and riding instructor, in analyse and to use a diversity of data collected all relevant to the aim of the study. The triangulation within the different data and with scientific studies of therapeutic riding was another part of that strategy.

### ***Aspects of the role as a researcher***

Combining the role of therapist and researcher may create complications and risks. Being too familiar with what is to be explored may be blinding to what appears obvious to an outsider. Being an outsider, on the other hand, may exclude you from the hidden curricula in the study

population and may hide data important for understanding the processes studied [89]. Another bias complication is that of remaining neutral to the data and not unconsciously interpreting it based on prejudice.

These problems were tackled by the interdisciplinary nature of the research team. The design of data collection in Study 1 gave valuable information of carry over effects and new perspectives of physiotherapy. This helped in stepping out of the “inside role” in the analytical phase as did the process of being interviewed on my own thoughts and reflections of the implications of physiotherapy using horses for these patients. I was also interviewed on my reflections on the patient interviews. This helped me verbalise and reflect upon my therapeutic work and position as researcher. The interview with the riding instructor deepened the analysis in respect to the physiotherapeutic relevance of the data. This experience was used in the analysis design in Study 2.

Study 2 was adjusted to new clinical conditions.

The same problem of bias as researcher in Study 1 occurred in this study. Using a wide diversity of data and triangulating the analysis was one strategy for avoiding the problem. Another was to search for scientific evidence regarding the horse in physiotherapy and compare it with our findings.

The studies were performed in 1996 - 2000. Since then, complementary knowledge has changed the picture of physiotherapy and of using the horse and it's advantages in treatment. By leading three focus groups on animal assisted therapy knowledge of general effects of animals on human health have been added to my body of knowledge of physiotherapy. These focus groups addressed 1) clinicians experienced in using animals in therapy, mostly horses, 2) instructors in higher education in horticultural therapy, therapeutic riding, recreation therapy and ethology and 3) researchers active in research combining animals and human health.

The knowledge gained from the focus groups [90] helped to discriminate between general effects from animals and nature and specific effects only obtainable from the horse. Studies on the influence of nature on health and studies of enriched environment have contributed to a wider understanding of the theories of health, motor learning and stress reduction. These fields of knowledge have expanded during the last decade and are important for the development of future strategies for effective lifestyle- and stress-related rehabilitation [2].

I have followed the scientific development in brain research on stress, enriched environment and rehabilitation and research on stress-related health problems and rehabilitation from the perspective of animal assisted therapy, therapeutic gardens and restorative environment. I consider this process a strong asset in the methodology of the thesis.

## ***Aspects of patient characteristics***

A common finding among the patients was comorbidity and chronicity. Despite different reasons for seeking physiotherapy, EAT seemed to address similar functional problems for the patients. The description of benefits of treatment was concordant regarding effects on symptoms and experiences of beneficial factors. EAT is often recommended for patients when “nothing else helps” and has been found beneficial to multi-handicapped persons [21, 26, 91]. Patients suffering from eating disorders, anxiety or long lasting back pain are not regarded as multi-handicapped but chronicity and comorbidity are common. Such patients are in need of interventions including educational, cognitive and lifestyle-related factors [92, 93] to return to normal activities. The use of EAT in the treatment of patients with chronicity and comorbidity may thus be beneficial. Patients may be recruited to EAT for specific functional problems rather than in relation to their medical diagnoses.

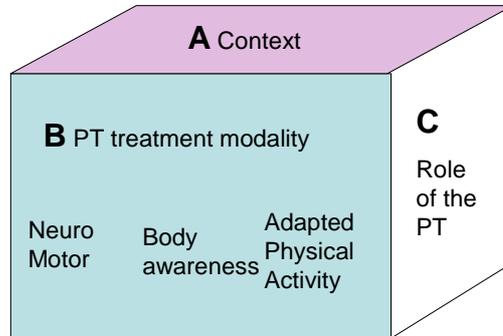
## ***Reflections of the results***

The studies provided information for understanding the effects of treatment from patient, staff and PT perspectives. They also provided an understanding of treatment effects and of how these effects were related and how they could benefit health.

In my understanding of the studies, the horse’s contribution to physiotherapy treatment could be divided into three main areas;

- context
- physiotherapy treatment modality
- role of the physiotherapist

Fig 4 Including the horse in physiotherapy treatment creates change in A,B and C towards a holistic and health promoting physiotherapy practice.



The studies gave new perspectives on the context in which physiotherapists work. Traditionally, Swedish physiotherapy is conducted indoors. Moving physiotherapy outdoors provides complementary and beneficial elements to the therapeutic setting, considering stress management and well-being. The enriched environment is of importance in rehabilitation after brain damage [39, 56, 57, 94]. The natural environment is an important contributor to stress modulation [2, 62, 63]. It also influences stress reactions both on hormonal and awareness levels [58, 59]. Rapid recovery, refined movements and coordination have been results of outdoor physiotherapy treatment [5, 20]. Adapted physical activities are physiotherapeutic strategies for well-being and prevention for most patients, now supported by massive scientific evidence [95]. Physical outdoor activity optimally combines the beneficial effects of physical exercise, enriched environment and stress reduction. Therapeutic recreation [96], equine assisted therapy and institutional physiotherapy have different influences on human movement and well-being. Table 9

Table 9 Comparison of EAT, physiotherapy at institution and nature therapy regarding some relevant aspects of treatment

		Equine assisted therapy	Physiotherapy Indoor or at institution	Nature therapy/ therapeutic recreation
Adapted physical activity		Yes	Yes	Yes
Nature contact		Yes	No	Yes
Focus on activity	Movement intensity	Yes	Yes	Yes
	Movement quality	Yes	Yes	No
Influence on movements	Voluntary	Yes	Yes	Yes
	Involuntary	Yes	Yes	No
	Simultaneous voluntary and involuntary	Yes	To certain extent	No
Communication	Between speices	Yes	No	No
	Dependent on non verbal communication	Yes	Yes	No
Body contact	Part in the normal situation	Yes	Yes	No
	Continuous body contact over large areas	Yes	No	No

Experiences of numerous physiotherapists using the horse in therapeutic work around the world confirm a strong, positive, widespread influence on patients.

There is an important impact on physiotherapy as the studies are combined. Physiotherapy is traditionally divided into different specialties, such as movement-, manual- and respiration-therapy, treatment of children, treatment of the elderly and so forth. As the body of knowledge expands specialisation is necessary. Nonetheless, there are core elements that all physiotherapists address in their treatments. Movement learning, body awareness and physical activity are essential to all treatment. These elements are simultaneously influenced while on a moving horse.

Study 1 described a process of empowerment as patients enhanced body knowledge and coping and took an active part in life. This process could be described by the dimensions Body Awareness, Competence, Emotions and Environment, according to the findings in Study 2. This process of empowerment also appeared to influence symptom presentation.

Physiotherapy treatment in EAT thus may be regarded as a holistic and health promoting intervention and relevant in several areas of specialisation.

The relationship between patient and physiotherapist was highlighted in Study 1 and the influence on the creation of the therapeutic alliance was an important finding. The common interest provided an opportunity to alter the usual hierarchy between physiotherapist and patient, as the patient may be the more skilful person in the particular interest. Moreover

utilizing patient interest in an attractive leisure activity, therapy may lead to effective preventive leisure activity for the patient, leading to a lifestyle that may prevent dependence on further health authorities. Some patients in Study 1 reported that they started riding as ordinary riders at the riding school after completed the treatment period. Norling [72] pointed out that particularly younger women (15-30) with poor health benefited from activities with animals for their well-being and that access to pets were the strongest beneficial factor for maintaining health in this group. The patients in Study 1 were from 12 to 38 years of age. In Study 2 the mean age was 37 for women and 40 for men.

### ***Physiotherapy using the horse –unique and specific values***

Comparing the findings from Study 1 and 2 with those from Debuse [22, 23, 54, 97], Hammer et al [28] Selvinen [25, 41], von Dietze [27], von Arbin [26, 91], Silfverberg and Tillberg [51] and Traetteberg [21] as well as from the seminars with physiotherapists, the specific effects of the horse, and not just any animal, are a direct result of the mounted situation and the resulting movement dialogue with the moving horse. Table 10

Any animal species may make a positive contribution to treatment through motivational, stress reducing, and environmental factors and a positive emotional influence on the patient [66]. Other species may be ridden by the patient but with different symbolic values. The horse offers specific advantages. It provides both the opportunity to cuddle, care and relate to an animal and its environment as well as the benefits from the mounted activity with its valuable movement influence.

A mechanical horse, a riding simulator, has been compared to real horses for achieving the same effects as horseback riding. However, beneficial effects on posture were seen but the effects on parasympathetic activation and thereby the stress reducing system, was increased only in contact with a real horse [98]. There are specific contributions of a live animal even if the typical movement dialogue is satisfactorily replicated. Replicating only movement cannot replace all the other beneficial qualities of treatment including a live animal. [22]. The effects of mastering a task regarded dangerous or difficult even for able-bodied persons, such as riding, despite functional limitations make the rider feel unique and special [51].

Table 10

Name	Type of work	Basic assumption	Physiotherapists prerequisites	Special emphasise on
Debuse	Thesis 2005 Articles 2005 2006 Proceedings 2006	Improvement in functional ability via motor learning via well schooled horses	Skilled in using the schooled horses movements to influence on the patients body	The schooling of the horse matters for outcome of hippotherapy treatment
Selvinen	Proceedings 2006 Article 2006	Functional ability is improved via improved self concept and sensory input	Skill in using sensory input in functional learning	How body schemas are created
Hammer	Articles 2002,2005	Influence on balance and reduction of abnormally high muscle tone in combination with learning new skills is a positive motivational factor.	Responsible for choosing the appropriate exercises also concerning intensity and sitting position, analysing effects of balance demanding tasks, endurance and riding skills.	Intensive treatment during 5 days is regarded as more efficient than once a week. Still once a week is sufficient to create improvement in the study population
Von Dietze	Book 2001	Ability to influence on the body movements follow certain rules From movement to balance , from inside to outside, from raw to fine	Ability to analyse the functional movement problem is necessary and require personal experience from riding	The knowledge and understanding of functional anatomy and neurophysiology and the combination of riding skill and skill in analyse and treatment.
Silfverberg Tillberg	Book section Report in manuscript 2008	EAT has ethical implications for rehabilitation	EAT enhance learning and recreate dignity after trauma	The combination of cognitive, physical and mental abilities activates the brain and reactivates learning abilities. The ethical aspects of optimising rehabilitation.
Larsson	Scientific Report 2006	The combined effect of an adjusted nature surrounding and riding is beneficial	Skill in adjusting the riding for the individual child	Intensive treatment twice a day during 5 days create carry over effects in daily life lasting at least 6 months later
Håkanson	Thesis 2008 Articles 1998 2007	Influence on body awareness and longlasting touch in combination with stressreducing enriched environment is the essence of EAT	Body awareness techniques added to above mentioned skills are needed for the PT in order to optimize treatment	Care and riding is included in treatment Create security and trust in the treatment session is important. The non verbal communication is ingredient in body awareness therapy

Distinguishing for EAT is the combination of physical activity, cognitive challenges, social interaction, and emotional involvement in relation to animals and nature. The stimulus of riding enhances concentration and active participation and an exciting treatment situation. These are optimal conditions for successful rehabilitation which is directly dependent on patient responsibility, involvement and interest [51].

The activities of EAT are meaningful without necessarily being visible to the observer and include riding for the sake of riding and enjoyment for the sake of enjoyment and not for any other reason. These feelings are necessary for well-being and QOL [51].

The exclusive elements of physiotherapy, according to those physiotherapists mentioned, include the skills of combining voluntary and involuntary movement and multiple relational options to the needs of the patient, within a specific treatment or in rehabilitation and prevention.

The specific contribution of the horse is the rhythmic, gait like, movement dialogue between horse and patient in combination with the constant contact of extensive, sensitive areas of the human body. Interaction with the horse also provides immediate feedback on balance and movements, emotions and reactions. In addition, the position of the patient in regard to the physiotherapist and the multi sensory stimulating environment are specific for this treatment situation. As is the relation between horse, rider and therapist.

These factors make the live horse a unique contributor to physiotherapy treatment.

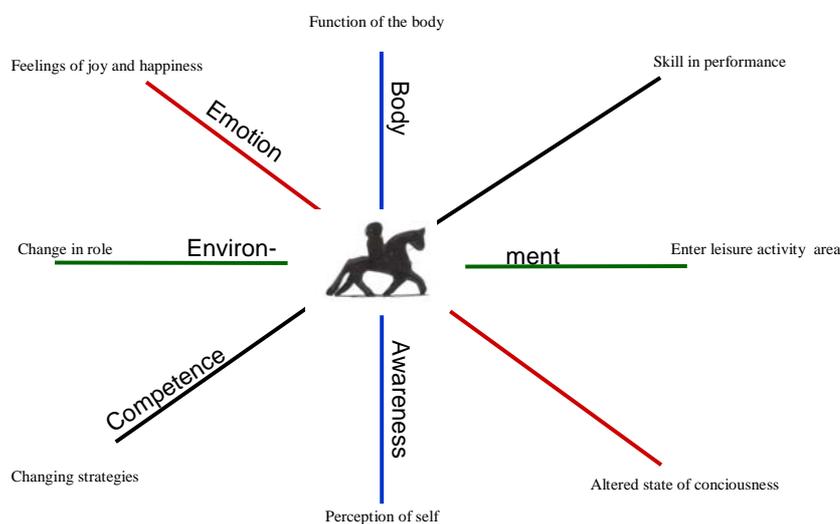
### ***Reflections on assessment***

The holistic character of EAT creates a special need for assessing and communicating effects to involved professions. The use of ICF [30] for showing influences achievements is highly recommendable. General instruments for treatment goals achieved eases communication on the effect of the therapy. There are simultaneous influences of EAT on body function and structure, activity and participation level as well as on personality factors. Thus ICF is a useful tool in communicating effects [22].

The dimensions from Study 2; Body Awareness, Competence, Emotions and Environment may serve as a guide on what to assess. These dimensions have varying significance for each patient and can be adjusted to individual needs. The Body Awareness dimension consists of the variables “body function” and “perception of self”. The Competence dimension has the variables “skill” and “strategies for action”, the Emotion dimension has the variables “feelings of joy and happiness” and “altered level of consciousness” and the dimension of Environment has the variables “leisure area” and “changing roles”. Assessment is possible

for most of these variables using existing instruments validated for the patient group and the aspect measured.

Fig 5 The dimensions of EAT in physiotherapy



### ***Clinical implications***

These studies have added information on EAT from patients and from staff involved with the patients without being directly involved in EAT programmes. This is new information and valuable in the understanding of consequences when patients are introduced to EAT.

Physiotherapists have a special interest in the use of the horse and its movement dialogue in the treatment of patients with complex and diffuse origins of symptoms. It is my sincere hope that this thesis will lead to an increased use of the horse in physiotherapy.

There is reason to believe that patients suffering from chronic back and/or neck pain as well as patients suffering from mental health problems and stress-related health problems may benefit from EAT in physiotherapy.

### ***Further research***

There is a need for further research on EAT in physiotherapy. We do as yet not know the importance of constant physical contact during riding. In hippotherapy, the rider does not use a saddle, in other treatment situations a saddle is used. The impact of the effects of varying degrees of physical contact on treatment needs to be investigated. Effects may vary

depending on the use of a saddle, blanket or bareback riding. As riding is essential in EAT in physiotherapy, the contact element is always at hand and cannot be ignored.

Assessing cost-effectiveness is another important area of interest. Many patients continue riding after treatment as a leisure activity. They thus gain a tool for self-management of symptoms and prevention through an active lifestyle. This benefits not only patients but the healthcare system as well. A thorough cost benefit analysis could help compare the costs for providing EAT with the benefits gained.

Using the horse in physiotherapy treatment may then be regarded not only as a holistic treatment but also as cost-effective. However, this has to be demonstrated in further studies.

## **CONCLUSION**

EAT in physiotherapy is health promoting

EAT provides health-promoting effects for patients suffering from long lasting anxiety and pain problems

EAT in physiotherapy has specific and unique beneficial components

# Hästunderstödd terapi - en resurs i sjukgymnastik

## Sammanfattning av ramberättelse

### Inledning

Hästar har använts i sjukgymnastisk behandling sedan ett halvt sekel. Trots detta har användningen begränsats till ett fåtal patientgrupper och kunskapen om hur kvaliteter i den sjukgymnastiska behandlingen kan kompletteras med hästars rörelseinverkan är begränsad. Över hela världen används hästen i sjukgymnastisk behandling främst för barn och ungdom, men även för personer med komplexa och mångfacetterade funktionshinder. Inte bara sjukgymnaster utan flertalet yrkesgrupper involverade i rehabilitering och inom ridsport använder idag hästar i behandlingsarbete vid olika typer av funktionshinder. Det har fått som följd att det råder oklarheter i såväl begreppsanvändning som de teorier som ligger bakom behandlingsinsatserna. Den internationella organisationen för verksamheter där hästar används i terapi och i utbildning, Federation for the Disabled International (FRDI) har sedan 1984 haft internationella vetenskapliga kongresser vart tredje år. I dagsläget står terminologi och vetenskapliga studier i fokus för det internationella samarbetet.

Inom Europa avslutades år 2005 ett EU projekt, projekt Pegasus, om harmonisering av begrepp och utbildning inom området. Equine Assisted Therapy föreslogs då som ett paraplybegrepp för verksamheter där hästen är en partner i behandlingsarbetet och där ridning/ridkunskap kan vara en konsekvens av, men inte ett mål för, behandlingen/utbildningen. I detta arbete ansluter jag mig till den av EU projektet föreslagna terminologin. Det svenska paraplybegreppet blir då Häst understödd terapi – HUT och gäller alla behandlingsverksamheter som involverar hästen i behandling och utbildning av människor med funktionshinder.

### Hästar i sjukgymnastisk behandling

Den vanligaste beteckningen av sjukgymnastik där hästar används, hippoterapi, brukades initialt vid sjukgymnastisk behandling av patienter med rörelsehinder i den tyskspråkiga delen av Europa. Där användes hästen som ett rörligt underlag och en rörelsegivare, analog med en maskin. Sjukgymnasten inverkade på ryttaren/patienten via hästens rörelser. Dessa kunde förändras genom hästens sätt att röra sig, genom att utnyttja acceleration och deceleration och genom centrifugalkraften. Hästen tömkördes dvs styrdes bakifrån på marken. Ryttaren skulle inte påverka hästen utan endast låta sig påverkas av dess rörelser.

Effekter av behandlingen tillskrevs biomekanisk, sensorisk och neuromotorisk påverkan av ryttaren/patientens bålkontroll och påverkan av balansreaktioner via vestibulära system. I det engelskspråkliga Europa var ridningen som sport och fritidsaktivitet i fokus även för sjukgymnastisk behandling av barn och ungdomar inom habiliteringsverksamhet, och den psykosociala effekten av ridning var det primära målet för "Riding for the disabled". Till skillnad från den tyska modellen, där läkare och sjukgymnaster byggde ett system för ortopedisk och neurofysiologisk behandling, så växte den engelska modellen från välgörenhet och fritidsaktivitet till fysioterapeutisk behandling. Hästen leddes av en hjälpare och sjukgymnasten gick bredvid och stimulerade ryttaren till olika rörelser samtidigt som hästen bildade ett rörligt underlag som utmanade balans och koordination. Att må väl och ha roligt var ett mål i sig, men påverkan av ryttarens fysiska funktion var primärt mål för sjukgymnastens insats. Hästen var en kompis för patienten.

I de nordiska länderna har sjukgymnaster främst använt ridning inom habilitering, för utvecklingsstörda och bland patienter inom neurologisk rehabilitering. Även i Sverige leddes hästen ofta av en medhjälpare. Även andra stödpersoner kunde gå bredvid ekipaget under behandlingen. Ridskolesystemet bildade grunden för hur hästar användes och moment från ridundervisning på olika nivåer ingick ofta i behandlingen. Att bli en självständig ryttare var ett mål med behandlingen. Kommunikationen och relationen med hästen var en viktig del. Detta medförde att ryttaren/patienten så småningom även kunde komma att delta i fritidsridning vid en ridskola.

I många studier av HUT har effekten på självförtroende påpekats. Mästringen av en aktivitet som många icke- funktionshindrade inte behärskade är en förmodad grund, djurets inverkan en annan. Alla rörelseutmaningar utfördes i ett sammanhang som upplevdes som meningsfullt och blev därför motiverande att ta sig an. Andra möjliga grunder för positiva effekter av att använda hästar i vård och behandling kunde vara att patienten introducerades i en omgivning som i sig var välgörande för hälsan, relaterad till friska personers aktiviteter och som medförde social och fysisk miljö skild från den vanliga institutionsmiljö där behandlingsarbete vanligtvis utfördes. Teorier om stressreduktion från naturen, positiva effekter av djur och positiva effekter på hjärnans återhämtning och plasticitet via en berikad miljö kan vara förklaringsmodeller för de effekter som rapporteras från HUT. Endast ett begränsat antal vetenskapliga studier har publicerats inom området.

Med ovanstående bakgrund genomfördes detta avhandlingsarbete.

Målet med arbetet är

- att utforska hälsokomponenter i HUT,
- studera HUT som behandling för patienter med psykiska sjukdomar, huvudsakligen ätstörningssjukdom samt nack- och rygg smärtor
- beskriva HUT som del i sjukgymnastisk behandling av patienter med långvariga hälso-  
-problem

I föreliggande arbete redovisas två studier där häst understödd terapi använts som sjukgymnastisk behandling för andra patientgrupper än de tidigare nämnda.

Studierna genomfördes inom Västra Götalandsregionen, inom NU-sjukvårdens upptagningsområde. Patienterna rekryterades via Psykiatriska kliniken, primärvården i Trollhättan, Vänersborg och Uddevalla samt rehabiliteringsklinikens polikliniska verksamhet. Befolkningsunderlaget är ca 225 000 invånare och området är en blandning av stad och landsbygd.

## **Studie 1**

Hästar prövades i sjukgymnastisk behandling med fokus på ökad kroppskänedom för patienter med ätstörningssjukdom och med andra psykiatriska diagnoser vid ett tillfälle i veckan. Dessa vårdades huvudsakligen i sluten psykiatrisk vård. Målet med studien var att utvärdera effekter av projektet ”Kroppskänedomsträning till häst”.

Utvärderingen genomfördes genom ett utforskande partnerskap. En extern forskare anlätades, erfaren med metod och med att utvärdera verksamheter i praxis. Data insamlades via intervjuer (60-120 min) och seminarier (90-120 min). Patienter, avdelningspersonal vid de vårdavdelningar där patienterna vårdades, andra terapeuter som patienterna regelbundet mötte, ridinstruktör, behandlande sjukgymnast samt forskande sjukgymnaster var informanter, sammanlagt 35 individer. I successiva seminarier samlades och analyserades data. Den externa forskaren och sjukgymnasten genomförde gemensamt slutanalysen. Resultatet var flerfaldigt. Symtomreduktion rapporterades, särskilt nämndes ångestreduktion. Såväl patienter som personal beskrev positiva effekter av ridningen även utanför behandlingstillfället. Dessa var delvis både rapporterade och observerade. Patienterna beskrev symtomreduktion. Personal beskrev beteendeförändring och förändrad coping-förmåga. Terapeuter beskrev en inverkan på den terapeutiska processen. En terapeutisk allians formades mellan sjukgymnast och patient vilken understödde behandlingsarbetet på institutionen. Patienterna genomgick en förändringsprocess från att vara ur stånd att styra sin kropp och sin situation mot en ökad förmåga att hantera såväl kropp som livssituation. Att möta sin rädsla var centralt i denna process.

## **Studie 2**

En annan klinisk verksamhet utvärderades i en aktionsforskningsstudie. Den praktiska sjukgymnastiska behandlingen byggde på det tidigare genomförda projektet, men anpassat till en patientgrupp med långvariga nack- och ryggsmärtor. Målet med studien var att utvärdera

sjukgymnastisk behandling i form av ridning med fokus på ökat kroppsmedvetande för denna patientgrupp samt att beskriva eventuella hälsofrämjande effekter av behandlingsformen.

I studien deltog 28 patienter rekryterade från primärvård och rehabiliteringskliniken.

Patienter på väntelista för sjukgymnastisk behandling för återkommande nack- och/eller ryggbesvär och med tidigare erfarenhet av sjukgymnastisk behandling för dessa besvär inkluderades i studien. Fyra patienter avbröt behandlingen, 24 fullföljde. Patienterna var 13-53 år, 18 kvinnor, 6 män. Ett rid tillfälle i veckan vid ridskola erbjöds.

Data samlades in enligt etnografisk metod och bestod av fältanteckningar, mätresultat, öppna enkätfrågor, videofilm, journalanteckningar, brev och noteringar. Data samlades kontinuerligt under projektet. Patienterna uppmanades att delta med iakttagelser av effekter och erfarenheter från behandlingen vilken förändrades i samklang med ökad kunskap och erfarenhet.

Data analyserades stegvis, kodades, tematiserades och kategoriserades. Via triangulering validerades data. Data jämfördes med tidigare studier avseende effekter, med studier om effekter av att använda djur i vård i allmänhet, rehabilitering i natur samt kroppskännedomshandling i ordinarie institutionsmiljö.

Resultat av studien var dels redovisade effekter på symptom, dels en utveckling av en behandlingsprocess karakteriserad av fyra dimensioner vilka var och en förändrades individuellt för varje patient. Dimensionen för Kroppsmedvetande påverkar den fysiska funktionen, upplevelsen av fysisk förmåga och självbild.

Dimensionen för Kompetens karakteriseras av ökad skicklighet i att använda kroppen inklusive att hantera hästen, men också av en ökad skicklighet i att tillgodose behov hos sig själv och hos andra. Både fysisk och mental handlingsförmåga omfattas.

Dimensionen av Emotion karakteriseras av utveckling av förmåga att njuta och att uppleva stunder av glädje och stolthet över sig själv. I denna dimension ligger även förmåga att ändra medvetandenivå – att vila i nuet och därmed påverka tidsupplevelsen.

Dimensionen av Omgivning/Miljö är relaterad till fritid och rollförändring. Många återvände till en tidigare livssituation från när de var friska och kunde återta en förlorad roll som ryttare alt träda in i en fritidsmiljö där rollen som ryttare/hästitresserad dominerade – och därmed kunde patientrollen förminsкас. Ett möjligt framtida fritidsintresse och en anpassad fysisk aktivitet blev en reell möjlighet.

Den häst understödda terapin ledde till en förändring hos deltagarna i riktning mot hälsa och hälsofrämjande aktiviteter.

## **HUT i sjukgymnastik – sammanfattande beskrivning**

De två studierna sammanförda med andra studier som beskriver sjukgymnastisk behandling med HUT ger en delvis ny bild av de specifika möjligheter som hästen tillför den

sjukgymnastiska behandlingen. Tidigare studier har utgått från neurofysiologiska och biomekaniska grunder för att nyttja hästen i sjukgymnastisk behandling. I denna studie tillkommer perspektivet från kroppsmedvetande, den anpassade fysiska aktiviteten och den fysiska miljöns möjliga påverkan på rehabiliteringens innehåll. Den sjukgymnastiska behandlingen med hästen som partner fokuserar på det rörelsemässiga samspelet i samband med att ryttaren befinner sig på hästens rygg. Därmed skiljer den sig från annan terapi med djur och från häst understödd terapi där patienten endast möter hästen från marken.

Sammantaget innebär HUT i sjukgymnastisk behandling specifika förutsättningar i tre avseenden; A *kontexten* för behandling – utomhus/i ridhus, B behandlingens *samtidiga inverkan* på motorisk kontroll, motorisk inläring, rörlighet, kroppsmedvetande och fysisk aktivitet, och C den förändrade behandlingssituationen med en *treparsituation* bestående av tre individer inblandade –patienten, terapeuten och hästen. Situationen innebär moment av oförutsägbarhet som inte ingår i ordinarie behandlingssituationer mellan patient och sjukgymnast.

Konsekvensen av ovanstående är bland annat att, för att kunna utnyttja behandlingssituationen optimalt krävs en kunskap om hästars rörelsepåverkan på människans rörelser samt om hästar. Denna kunskap är specifik och bör ses som ett specialistområde inom sjukgymnastiken.

I det sjukgymnastiska behandlingsarbetet är beröring, rörelser och interaktion i fokus. Framtida studier behövs och bör inriktas mot grundläggande kunskap om den fysiska kontakten mellan ryttare och häst, som är unik i sin intensitet och duration samt i sin karaktär och omfattning av kontaktyta. I viss sjukgymnastisk behandling används sadel, i annan rider man barbacka. De stressreducerande systemen är av särskilt intresse i detta sammanhang. Det saknas även väl designade effektstudier samt hälsoekonomiska studier i området.

## **Konklusion**

Hästar som partners i sjukgymnastisk behandling medför införande av hälsofrämjande komponenter i behandlingen.

HUT tillför hälsofrämjande komponenter i behandlingen av patienter med långvariga ångest- och smärt problem

HUT tillför specifika och unika komponenter till sjukgymnastisk behandling.

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## **Paper 1**

Paper 1  
English version

# Body awareness therapy on horseback

## - exploratory partnership in therapeutic treatment and evaluation

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### **Abstract**

Therapeutic riding has not previously been described as contributing to treatment in psychiatric care in Sweden. Few scientific articles are found regarding psychiatric care, physiotherapy and therapeutic riding. This article describes a treatment model based on Body Awareness Therapy applied to riding. The patients who participated in this project mainly suffered from eating disorders. Most of the patients were treated during a period as in-patients at the psychiatric hospital, however, some patients were out-patients.

The treatment effects were assessed by participatory research. The assessment is based on interviews with the patients, seminars with the project leader, the riding instructor and the staff from the wards. Seminars in order to gain a theoretical understanding were also held with physiotherapists interested in theoretical aspects of physiotherapy.

Effects reported by the patients were decreased anxiety, increased body awareness and increased appetite after the riding sessions. Effects reported by the staff were a change in posture and in an unexpected ability to handle situations.

The advantages of using therapeutic riding in psychiatric care are discussed as well as the advantage of using the assessment method chosen in clinical settings.

Key words: anxiety, body awareness therapy, eating disorder, phenomenology, learned non use, participatory research, psychiatry, physiotherapy, self-confidence, therapeutic riding.

### **INTRODUCTION**

In Sweden, therapeutic riding is an accepted form of physiotherapeutic treatment of neurological conditions, a form of treatment, however, which has not been utilised within

Swedish psychiatric care.

Internationally, therapeutic riding is classified into three different groups: Psychotherapeutic riding, Hippotherapy and Educational riding.

Psychotherapeutic riding is considered to promote body awareness and self-confidence. The interaction between horse and rider as well as the rider's responsibility for the care of the horse are all contributory aspects of the therapy.

Hippotherapy focuses on the horse as a moving support, not as a communication and relation partner. Hippotherapy has also been used as a means of accepting and getting to know one's body after a crisis.

Educational riding focuses on the development of the rider's cognitive, emotional and social skills and utilises the riding situation as a pedagogical instrument in the development of strategies for improved function in daily life.

In Sweden, therapeutic riding or leisure riding are the most commonly used concepts. Von Arbin (1) has given a detailed description of riding as seen from the perspective of physiotherapy.

The scientific documentation of therapeutic riding is sparse and mainly focused upon children with neurological functional disorders and adults with a stroke or MS diagnosis. A small number of studies within the psychiatric field have been published. A randomised study of therapeutic riding applied to schizophrenic patients (2) underlines the non-verbal communication level. Positive effects of the therapy with regard to fear, disturbed thoughts, animosity and attention were reported. Riding is described as strengthening the self and opening up to verbal therapy.

Schultz (3) emphasised the importance of the sitting posture on horseback for straightening up the body posture and for the ability to look around as fundamental in the treatment of autistic children. She considered the riding situation, being carried by the horse, as a means to experience balance and contact with the body as a whole. The moving rhythm of the horse influences the rider at the senso-motor level. For the autistic child with a tendency towards stereotype movement patterns, the horse's rhythmical movements give impulses to a living rhythmic dialogue.

Reported effects of riding in children with minor motor disturbances are: positive influence on the ability of sensor integration, cognitive functions and control of impulses, social ability,

communication ability, and the horse's ability to arouse emotional reactions (4).

Mental well-being related to therapeutic riding has been described in several studies focusing on therapeutic riding in Sweden (5,6,7,8,9).

No scientific documentation of the influence of riding on patients with disturbed body awareness, eating disorders or anxiety has been found.

### *Body awareness therapy on horseback*

During the years 1994-1996 "body awareness therapy on horseback" was one form of treatment used at the Physiotherapy department of the Psychiatric clinic in Vänersborg. The aim of the riding therapy was to gain practical experience of this form of riding based on the patient's needs irrespective of medical diagnosis.

The assumption that riding has a therapeutic effect was based on own experiences of the positive effects of riding on the body as well as on riding generating a sense of well-being, in combination with experiences from treatment of patients suffering from anxiety and pain. Tension, fear and anxiety can be viewed as different levels of intensity of the same physiological reaction (10). To overcome a well-founded fear, i.e. in the riding situation, can increase self-confidence, have a beneficial influence on the rider as well as reduce tensions in the long term. There was also the experience that several patients diagnosed with eating disorders were former active riders. The hypothesis was that riding had given them a positive perception of the own body and that re-establishing this positive experience was one way of changing their disturbed attitudes to the own body, which is one of the diagnosis criteria of anorexia nervosa and bulimia nervosa as well as in many cases providing an indication of the need for treatment to the physiotherapist working with patients with eating disorders. A third model of thinking was that patients diagnosed with eating disorders were not very good at allowing themselves to feel pleasure - but for those who really wanted to ride, it was an opportunity both to receive treatment and to train the ability to enjoy the own body and the riding situation at the same time. Finally, there was the hypothesis that riding was a way for patients who had suffered sexual abuse to learn to accept the lower abdomen and thighs by becoming aware of their bodies while sitting on the horse.

The first part of the project was implemented autumn 1994 - spring 1995. Ten patients in psychiatric institutional care diagnosed with eating disorders according to DSM III-R were included, some of whom with the additional diagnosis of personality disorder.

Questionnaires including specific questions regarding the influence of anxiety, eating

behaviour and side-effects/negative effects were answered by the patients and their nursing personnel after completed treatment period.

Quantifiable scales used were BAS (Body Awareness Scale) and VAS (Visual Analogue Scale). Measurements using these scales were made before, during and after completed therapeutic treatment. The responses to the questionnaires showed a positive effect on anxiety level and meals. The BAS and VAS scales gave information about possible effects, which information however could be interpreted in many different ways. Some variables were changed in a positive direction and others in a negative direction but the findings could not be related to effects of riding therapy.

The riding therapy was extended for one year in order to gain more experience, the therapeutic treatment model was developed, and patients diagnosed with psychoses and depressions but with no eating disorders were invited to take part. The treatment seemed clinically relevant also for patients within these groups with manifest anxiety.

#### *The content of riding therapy*

The treatment intervention called riding therapy comprised a process which included several elements. First, the activities in the stable including grooming, saddling and braiding as well as helping less knowledgeable co-riders, or alternatively asking for assistance with tasks one cannot handle oneself. Then followed the activity of leading the horse into the indoor arena, mounting and the riding session focusing on how the body is perceived during different riding activities. Many of the activities on horseback were performed with eyes shut for the purpose of strengthening the sensory experience and to achieve a sense of security and trust in the situation. The patients' perceptions of their own body and ability were subject to feedback from the riding instructor and physiotherapist. After the riding session, activities included leading the horse to the stall, saddling and unbraiding as well as generally looking after the horse. The efforts of all involved (riders, co-patients, nursing personnel accompanying the patients to the stable, stable personnel, riding instructor and physiotherapist) contributed to increasing the patients' knowledge about themselves, their capacity and their own body functions.

Groups at three different levels of riding competence were offered: beginners, riders who had tried galloping, and experienced riders. The group therapy was given once a week, lasting 30-45 minutes.

#### *The aim, design and method of the evaluation*

The aim of the evaluation was to gain a deeper understanding of the factors in the riding activities that have a therapeutic effect and thereby to get a better picture of any such effects of riding therapy on body perception, anxiety and eating disorder. The aim was thus at this stage neither to compare different therapeutic treatments nor to be able to identify the magnitude of any effects.

The therapeutic effects which we wish to elucidate arise in the interaction between rider, riding instructor, horse and physiotherapist as well as with all other persons who take a more peripheral part in the riding activity. A sufficiently varied description of this type of therapeutic processes demands active participation in the research process both from the riders, who can tell what their participation in the project has meant to them and from the other actors involved, who can describe which judgements and choices have been of importance for the design of the activities as well as for their efforts and response to the riders' actions. The more narratives we obtain from the participants, the more aspects can be elucidated. The participants in this process are important partly because they have access to different parts of the amount of data that needs to be described and partly because they improve the interpretation possibilities by contributing their different perspectives on, as well as positions in, the process to be described. The more the information is reflected upon in terms of the way in which the different actors view their participation and the more the therapeutic intervention is reflected upon, the easier it will be to understand how the riding activities could be used with a therapeutic purpose in different contexts.

Consequently, the data needed to detect, describe and understand the core elements of a dynamic process presupposes a high level of commitment to elucidating the issue also on the part of the informants. Those who take part in the exploration have to devote time to reflecting over their experiences and to make efforts to formulate them in such a way as to make them meaningful to others. Therefore, the evaluation has been designed as a so-called exploratory partnership (11,12) where the fundamental idea is that the research is carried out together with the participants, that is, not performed on the patients as objects. The research method has its roots in the human-scientific tradition, the main proponents being Paolo Freire and Kurt Lewin (13,14). With this mode of working, the evaluation becomes analogous with the fundamental values of equality, respect and value which characterise the work at the Physiotherapy department, and thereby also an integrated part of its continuous therapeutic work.

The data required can thus not be captured through simple external observations or as answers to questions formulated by the researcher in a questionnaire or in an interview. Instead, the data have to be formulated in conversations where experiences and observations are articulated in the interaction between the researcher and the participants. Through

listening to the observations and experiences made by the other participants, attention is directed towards aspects which one may not have thought of in the first place, but which complement the picture of the activity one has taken part in. Through linking assumptions and hypotheses behind the interventions made by the professional actors to observations which are confirmed by the participants, a picture of the actual process emerges. Observed chains of events acquire credibility and generalisability through being grounded in other scientific studies as well as in established theory in the field.

The exploratory process used could be compared to the process of framing a picture. The different forms of decoration on the frame highlight different details in the picture. The basic data - the picture itself - consists of the narratives of the chain of events which important actors contribute. The narratives are transcribed verbatim in a basic report and are available to all those who participate in the analysis and the interpretation phase. The corresponding descriptions of the chain of events, made by the different professional actors, form a 'layer upon layer' in the frame, making the observer - the reader of the basic data - aware of certain common features in the narratives. Finally, like an outer golden edge of the frame - also other researchers and other theoretically well-versed colleagues are invited to take part in the analysis process. The intention behind this is that they, using their experience, should observe, comment upon and firmly establish the descriptions obtained. The method of analysis and the manner of compiling and describing the result do not in any way deviate from a conventional qualitative research approach with theory generation based on empirical data (15,16).

The great difference between conventional research and our evaluation lies in the fact that *the exploration starts in practice* as well as in the ambition to make 'good successful common practice' understandable at a deeper level and thereby possible to communicate to other actors in the field. An additional difference is the demand on participation in order to obtain relevant and valid data.

A number of practical circumstances impose restrictions on the implementation of both the therapeutic riding activity and the evaluation. One such restriction is that the whole evaluation process including interviews and reporting should be accommodated within a budget corresponding to ten working days for the consultant psychologist Monica Hane.

### *Procedure*

Twenty-seven patients, 21 women and 6 men, participated in the therapeutic riding. Some participated during all four treatment periods, while one patient participated only on one occasion. Participation was on a voluntary basis. Participation was offered those patients who

could be expected to benefit from this form of therapy. The number of available places was limited, but efforts were made to successively fill places in the groups which became vacant due to patients moving or discontinuing the therapy because they no longer wished to, or could not, participate.

All patients who had taken part in the riding activities on some occasion were invited to participate in the evaluation. Twelve patients declared themselves willing to participate. One of them moved to another municipality and could not be reached for the interview. Of the remaining eleven patients, ten had been diagnosed with an eating disorder and one patient with psychosis. Both the oldest (38 years old) and the youngest rider (12 years old) participated in the evaluation as well as the patient with the most (75 times) and the patient with the least (1 time) number of riding occasions.

The spontaneous narratives of these eleven riders - told during private conversations lasting between 30 and 120 minutes with the psychologist Monica Hane - constitute our basic data. The narratives were then transcribed and handed to the interviewees for correction. Statements and assertions from the narratives were sorted into clusters and themes, which were then structured in accordance with the overall basic assumptions and hypotheses about anxiety and fear, self-confidence and body perception, which formed the basis for the design of the riding activities.

The basic data material was presented in seminars, held together with the personnel from the Physiotherapy department who had observed the therapeutic sessions. Confirming and/or diverging views on aspects of the course of events and effects of the therapeutic treatment were worked through during the seminars, complementing the picture outlined.

Physiotherapists with competence in physiotherapeutic theory formation as well as psychiatric personnel from other professional groups (doctors, psychologists, social welfare officers, occupational therapists, dieticians etc.) employed at the Psychiatric clinic were invited to take part in the theory-generating seminars.

The validity of the compilations made is guaranteed through all participants taking responsibility for only those statements being formulated which are consistent with their own observations. The basic data and the map of the content which gradually emerged were, throughout the process, open and accessible to the participants in the research process, allowing alternative interpretations of the basic material to be presented at any time.

## RESULTS

The eleven narratives can not be easily summarised. Despite the fact the participants have been present at the same time and taken part in similar exercises, the riding has meant very different things to the different participants. However, some basic lines of thinking can be discerned and presented like a picture (Fig. 1). The picture shows a dynamic process, where the positively slanted diagonal connects the end points "riding makes me know my own body" and "riding helps me to master my own life", and the negatively slanted diagonal has the end points "riding is like any other hobby" respectively "exterior circumstances, other people control my life".

The interviews reveal a process related to the riding situation where the focus has shifted from the negative diagonal via the central point of fear towards the two end points of the positive diagonal.

*"Previously I just thought of it as a fun thing to do, lovely to be riding outdoors, a way of escaping from ordinary life, etc. But when I had taken part for some time I realised that it was beneficial for me on a deeper level. It was important for my self-confidence that I could overcome the fear."*

*I was very doubtful - I was afraid it would feel as if I deserted my old horse but I started to ride again, and thanks to an incredibly clever riding instructor I regained my self-confidence. I realised that I could like new horses without liking my old horse less ..... At the same time it was very hard work to ride. Riding means that one uses all one's senses, and feelings which have been turned off re-emerge when one doesn't brace oneself. I often feel like a pressure cooker... I didn't dare tell anyone about all the violent feelings that erupted or how I felt. For a long time I didn't understand my violent feelings. Now I'm beginning to see connections and to gradually understand. For many years I shut off all feelings completely. My body and thoughts were also completely separated. My body was there but didn't belong to me.... I continued to ride in an ordinary evening group. It was great fun to feel that I exist, that I could manage to handle my body and all my emotions at the same time."*

*"My zest for life returned"*.

Recurring themes in the narratives were comments about:

\* responsibility and control.

*I train my body to be in control. I have the responsibility to control. I can decide."*

\* the perception of the body and levels of tension

*"The thing is that it is in fact not possible to ride and be tensed up. Most of the time I brace my body very much. This I'm usually not aware of but when riding the horse I could feel the tension in my body"*

*"It was just marvellous to be riding again. The best type of relaxation possible - the*

*movements of the horse - the instructor's voice - you switch off everything else"*

*\* changed eating behaviour*

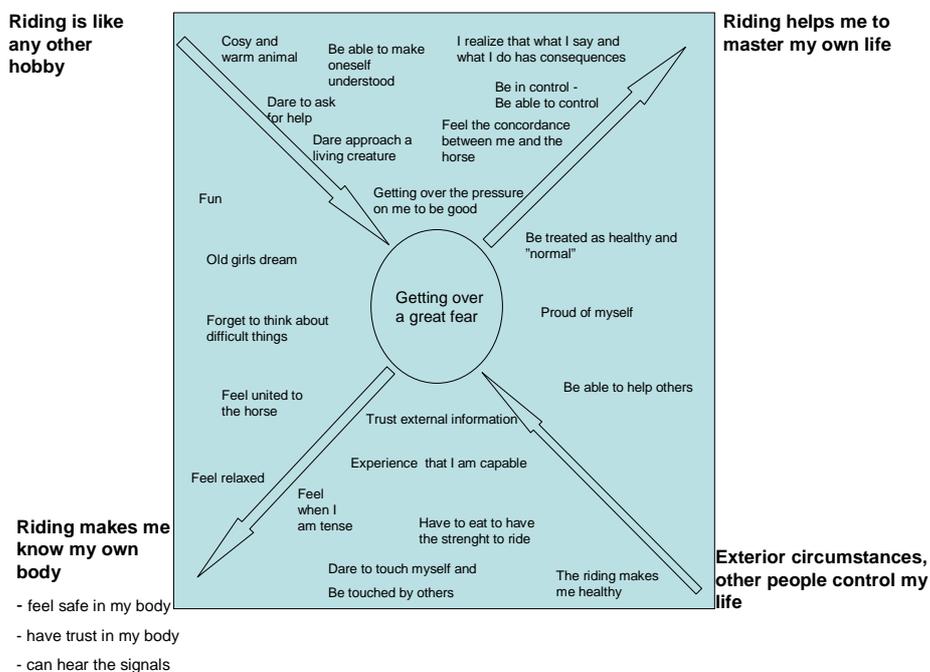
*"The interaction with the horse is an experience and one practises one's ability to be firm with someone. In order to have the strength to ride I must eat. Then it feels right to eat"*

*"It was also a bit easier to eat after a riding session"*

The statement which was supplemented by the personnel to the picture containing the basic line of argument underlines the fact that this process was also possible to observe.

*"We could see how the riders grew, that they straightened up, raised their heads, looked ahead. Many could also "handle situations" in a way which we had not anticipated considering the picture we had formed earlier of these patients." "We have also observed that the riding has helped some of the patients to find their limitations"*

**Study 1**



**Figure 1.** *The dynamic process in "Body awareness therapy on horseback". The therapeutic treatment entails a change of direction towards the end points of the positive diagonal when the fear diminishes and the body, as well as the ability to influence the horse, becomes apparent.*

The physiotherapist and the riding instructor are important people; they are not only functions.

*"The riding instructor is very good and is able to see the capability of each individual... praised us in a positive way". "It was important to me that a physiotherapist was present who could help me with my deficient body awareness". "It also gives a sense of security to*

*know that both "Maggan" and the riding instructor know what is good for me, can see my progress and praise me in the right way."*

A working partnership between patient, physiotherapist and riding instructor had been created. Factors of importance for such a partnership to come about are:

- \* treatment - both physiotherapist and riding instructor show consistency in their acts - they do what they say and as people they are clear and predictable. They treat their riders as capable, responsible and not disabled in the riding situation.
- \* the activity - the riding which is stimulating from a holistic perspective, through the body, in a social situation, with perceptible effects both emotionally and cognitively.
- the willingness to volunteer - a desired activity which can be used, in a meaningful way, as a rehabilitation activity
- \* the environment - outside the hospital environment which stimulates behaviours and actions adequate in a sound environment.

## DISCUSSION

A qualitative approach was chosen for this study. In order to study the interaction between the actors in the riding activities, a process oriented method is required. One of the goals of the therapeutic treatment was participation and responsibility on the part of all actors involved. It then remained to choose an evaluation method which was congruent with the treatment goals.

The method chosen gives the possibility, also during the evaluation phase, of interacting in genuine relations, which according to Skårderud (17) is a prerequisite for a therapeutic partnership and good treatment results. Treatment and evaluation become part of the patient's care. The method assumes that the participants are actively interested. In this way those who have experienced positive effects contribute to making the possibilities of riding visible. During the research process, a quantity of knowledge is growing which is completely new and which can be understood in the light of already known theories. This type of research uses no control groups, nor does it seek to be valued based on the criteria of health care research. The care reality is that patients are sometimes positive, sometimes do not participate, that they are different and that the perspectives of the patients and the person providing the treatment are different. The evaluation aims to generate knowledge about common experiences of a given situation, the riding occasions, and strives to give one picture of how this can be understood and used with a view to improving the care provided. One strength of the method is that it mirrors a reality, not an experiment. One difficulty is the multi-dimensionality and richness in detail of the basic data obtained.

The purpose of the evaluation was to gain an increased knowledge and understanding of

therapeutically active factors and possible effects of therapeutic riding with regard to body perception, anxiety and eating disorder.

A disturbed body perception and anxiety have many conceivable points in common, one of them being fear, its manifestation in the body and its effects.

Common to all interviews is the comments about fear. Fear and anxiety are one and the same physiological process but with different levels of intensity (10). Awareness of the manifestations of fear in reactions of the body, the discovery that it varies in intensity and that it can be influenced give the possibility to discover that "I can influence myself". The patient suffering from anxiety is characterised by avoidance behaviours. "Learned non use" is a phenomenon observed in stroke patients (18,19). It is characterised by avoidance of motor actions due to having to learn a different mobility behaviour. Paralysis is then an effect of the difficulty of acting, not the result of an actual neurological damage. A state of anxiety which has become chronic, where the anxiety of anxiety restricts the scope for action can be regarded as a paralysis, analogous with the functional impairment in the paretic arm of the stroke patient.

Respiration is the bridge between body and emotion. The respiratory function is essential in anxiety and fear. A relaxed respiratory function is sought in body awareness exercises which are performed in order to influence a deficient body perception. Buncan (20), Roxendal (21) and Dropsy (22) have pointed to the role of respiration as central to the harmonious body. A comparison of the two investigating instruments BAS and ROK shows that disturbed respiratory pattern was the only co-correlating variable in patients diagnosed with an eating disorder (23). The ideal sitting posture, on the horseback, allows relaxed and functional activity in the diaphragm, thereby influencing the respiration. The sitting posture also facilitates the postural control (1). Hirschfeldt (24) emphasised the division of postural control into "postural adjustment" and "postural orientation". Individuals with grave neurological diseases usually have problems with "postural orientation" rather than with "postural adjustment" (Hirschfeldt, personal communication). The function of "postural orientation" is to stabilise the body in the room by providing weight support for the body, give information about internal alignment of the different body parts as well as about equilibrium in the body. The term "postural orientation" has many similarities with the central concepts of centring and grounding within psychiatric physiotherapy. Riding optimises the body's prerequisites for the neurological processes governing the postural control in the rider's torso as well as for grounding, centring and respiration.

*Anxiety as a perceptual chaos*

The physiotherapists' statements about the effects of riding on the patients often include comments about the posture as "being more free" and "they raised their heads high". These body changes were parallel with a greater ease of eating as well as with reduced anxiety, as both reported by the patients and noted by the personnel.

Thelen (25) argues that "People perceive in order to move and move in order to perceive. What then is movement but a form of perception, a way of knowing the world as well as acting on it?". Perceptions of the own body are recurring in the riders' narratives: "*I noticed how tense I was*". "*One feels relaxed afterwards*". "*I brace my body a great deal. I'm not often aware of myself but on the horse during the riding I could feel the difference*". In my view, fear and anxiety can be described as perceptual chaos. In the riding situation, a sensor integration is stimulated and manifested both at body level and at cognitive and emotional levels. The situation gives rich opportunities for experiencing meaningfulness, manageability and intelligibility, criteria of quality of life formulated by Antonovsky (26). The increasing self-confidence described in the interviews can be regarded as an effect of the sense of coherence generated by the riding experience. This can be understood as a consequence of the changed perception of fear and as a development of the body's ability to communicate with the horse using verbal and non-verbal signals.

## CONCLUSIONS

Intensified use of all the inherent possibilities of riding therapy can lead to further quality development of the care not only within psychiatry but also in all places where rehabilitation measures are required in order to give the patients the possibility to increase their functional level and to become masters of their own lives.

## Paper 2