

# Horse Assisted Therapy and Self-esteem

*The impact of Horse Assisted Therapy on  
self-esteem: A study involving youth in  
treatment for substance use disorder*

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Master thesis

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# Abstract

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Title: Horse Assisted Therapy and Self-esteem

- *The impact of Horse Assisted Therapy on self-esteem: A study involving youth in treatment for substance use disorder*

**Background:** There are many claims in the horse therapy related literature of the beneficial effect of horse assisted therapy. I wanted to examine one of the most frequent claims, namely improved self-esteem. This study, therefore aimed to investigate whether a Horse Assisted Therapy intervention had any influence on the level of self-esteem in young patients undergoing treatment for substance use disorder in Norway.

**Design, setting and participants** This is a quantitative study which used baseline scores on Rosenberg Self-esteem scale (RSES) collected from Youth Addiction Treatment Evaluation Project (YATEP) database over a period of three years (2011-2013) from all the patients who had completed RSES once or more times ( $n = 119$ ). A pretest – posttest design was used to analyze the scores of participants who had answered RSES more than once ( $n=54$ ). To test the possible impact of horse assisted therapy on self-esteem, participants were divided in two groups for comparison: the intervention group ( $n=34$ ) which undertook treatment as usual plus horse assisted therapy, and a control group ( $n=20$ ) which undertook only treatment as usual. Additional data were extracted from the stable's schedules used for detailed registration of participation in the horse assisted therapy program, and from an electronic patient journal system which was used for validating results of treatment outcome.

**Findings** The participants had lower self-esteem scores when compared to average scores in the general population. They were however, comparable with score for a similar group of substance use disorder patients in the USA. There was no significant difference in baseline self-esteem ( $n=119$ ) for the intervention group and the control group ( $p=0.066$ ). Both groups displayed a low level of self-esteem compared to a normal Norwegian population. There was no significant increase of self-esteem in either groups during the study. I found no significant difference arising from horse assisted therapy between the intervention group and the control group. While I found no empirical evidence of self-esteem being a predictor of treatment

outcome as a whole, I did find, post hoc, that higher self-esteem was a predictor of positive treatment outcome for males but not females.

**Conclusion** I found no evidence to support claims that horse assisted therapy facilitates improved self-esteem. There was, however, a possible indication that horse assisted therapy may provide a means of attracting young addicts, particularly females, with a low self-esteem into therapeutic treatment. This requires further investigation.

**Keywords** Horse Assisted Therapy, HAT, Self-esteem, Addiction, Substance use disorder, Treatment outcome, Rosenberg self-esteem scale, RSES

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## List of Abbreviations

AAT:	Animal Assisted Therapy
AUA:	Avdeling Avhengighetsbehandling Ung – Department of Addiction Treatment Young
DIPS:	(Distribuert Informasjons og Pasientdatasystem i Sykehus): Electronic patient journal system used at AUA.
EAGALA:	Equine Assisted Growth and Learning Association
EAL:	Equine Assisted Learning
EAT:	Equine Assisted Therapy
EFL:	Equine Facilitated Learning
EFP:	Equine Facilitated Psychotherapy
HAT:	Horse Assisted Therapy
PATH:	Professional Association of Therapeutic Horsemanship International
RCT:	Randomized controlled trial
YATEP:	Youth Addiction Treatment Evaluation Project



## **1. Introduction**

The issue of substance use disorder amongst young people, and its associated problems, is increasing worldwide with associated health, social and economic consequences for the individuals, their families and the society in which they live.

Norway is no exception to this international trend. Treatment for substance use disorder in 2012 cost approximately NOK 4 billion (Helsedirektoratet, 2012). Drug related crime constituted 15 percent of all reported crimes in Norway and 70 per cent of crime committed by people in their twenties are drug related (Stene, 2012). The challenges to society presented by substance use disorder, including the increased crime, need for treatment and lost contribution to society through poor education and work performance call for treatment not only for society here and now but also to prevent the suffering continuing for generations.

Children of persons with a substance use disorder are growing up with less security and predictability, poorer education, the likelihood of lower employment rates, higher crime rate, shorter life expectancies and poorer physical and mental health compared with children growing up within a healthy family setting. In addition, they are at greater risk of developing drug use dependence themselves (Sartor, Lynskey, Heath, Jacob, & True, 2007).

While there is a considerable volume of research on substance use disorder and the personal traits of people with an substance use disorder, there is far less research on the treatment forms (Brorson, Ajo Arnevik, Rand-Hendriksen, & Duckert, 2013)

Substance use disorder is considered to be a chronic illness with a high rate of relapse (Gossop, Stewart, Browne, & Marsden, 2002). Quality of treatment is usually validated by reduced relapse, a decreased use of drugs after a period of abstinence and longer period of less substance use (Nordfjærn, 2011). Even though the empiric knowledge concerning treatment for substance use dependence is growing (Sellman, 2010) there is nonetheless need for innovative approaches. In substance use disorder treatment, as in other areas of psychiatric treatment there has been growing interest in alternative or complementary therapies. Horse assisted therapy, or Equine Assisted Therapy (EAT) as it is often called, is a complementary therapy used increasingly in much of the Western world. The innovative use of horse assisted therapy in substance use disorder treatment is still limited but is growing and the interest in outcome is growing accordingly (Horton, 2013). Self-esteem is a frequent issue in substance

use disorder (Corrigan, 2007; Richter, 1991) and the horse literature claims that self esteem responds to work with horses (Hallberg, 2008).

In this study I have attempted to bring the 3 issues of horse assisted therapy, drug use dependency and self-esteem together and provide quantitative evidence to support or refute the growing claims in respect of the “power of the herd” (Kohanov, 2013).

## **Background**

I have always been fascinated by horses. When working as a Physiotherapist I experienced the positive impact therapeutic riding had on the physical functioning and psychological well being for many patients. When starting on this Master degree in psychosocial work, specializing on drug use dependence and substance use disorder, I wondered about the possibilities of using horses in the line of psychotherapy, especially for people struggling with drug use dependence.

Avhengighetsbehandling Avdeling Ung (AUA) offers horse assisted therapy as part of their treatment program for young adults with a primary diagnosis of substance use disorder. The psychiatric clinic on the old Gaustad complex where AUA is situated has used horses as a part of their treatment program since mid 1970's (Henvisningsbrosjyre, 2012). This program assumes that work with horses has a positive impact on the therapeutic treatment of their patients. Kern-Godal found a significant association in her preliminary study (n=126 cases) over 18 months, between working with horses and retention in treatment at AUA. She found that those who attended horse assisted therapy in addition to treatment as usual had a significantly better chance of a positive treatment outcome than the patients who did not attend horse assisted therapy (Kern-Godal, 2013). This PhD researcher sought master students to work with her in the context of multi-method study of the impact of different prospects of horse assisted therapy in substance use disorder treatment outcome.

In relation to substance use disorder treatment, I wanted to explore the correlation between self-esteem and treatment outcome. Since low self-esteem is associated with reduced efficacy of treatment outcome (Corrigan, 2007). It seemed important to find evidence based means for strengthening and maintain a healthy level self-esteem for young patients with a drug use dependency to provide better coping strategies and prevent relapses after treatment (Richter, 1991). There has been a massive research project at AUA going on since the end of 2010. This project is based on, amongst other things several self-report measurements that gives the

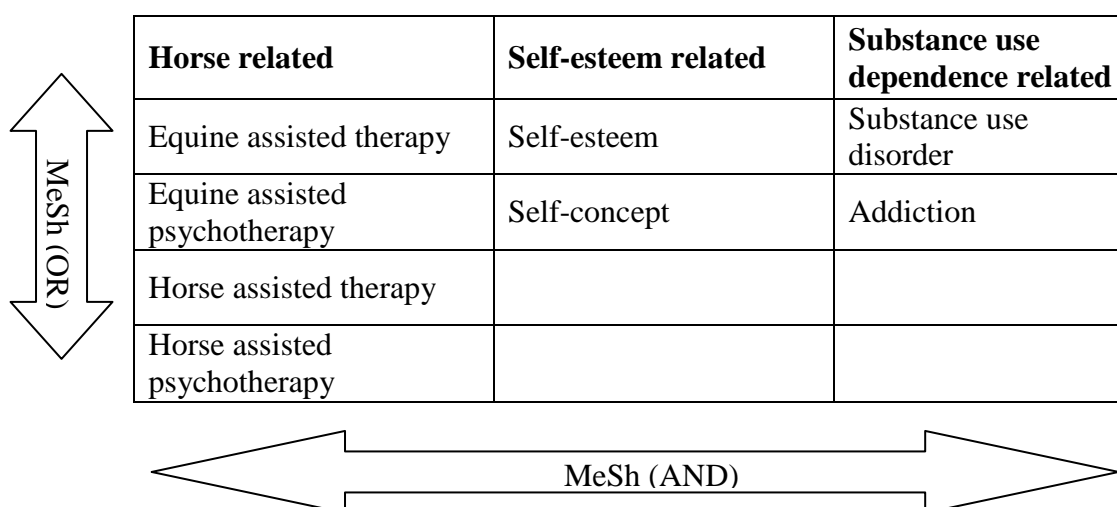


patients an opportunity to evaluate their treatment and describe their perceived situation. The measurement for self-esteem on which I base this study is one of these.

I will in this study research the relationship of a three factor-interface, between the addiction, self-esteem and horse assisted therapy. In this context I will assess whether the effect of horse assisted therapy influences self-esteem, as the horse literature claims (Hallberg, 2008), and whether self-esteem can be a predictor of positive treatment outcome in substance use disorder treatment. The need for increased knowledge involving horse assisted therapy as an intervention in treatment for substance use disorder, has given me a unique possibility to contribute to the field. As part of an ongoing larger study of the impact of horse assisted therapy on addiction treatment outcomes, this study is going to be bringing new knowledge of horse assisted therapy in substance abuse and strengthen a field where there is currently little evidence available (A. Selby, 2009).

### Research and Literature review

This section of the thesis will make use of existing literature to present a picture of the field as it appears today. A search was done in PubMed, Chochrane and MEDLINE. The search history and results can be seen in Appendix 1. Terms used in relation to horse assisted therapy, self-esteem and substance use disorder were used in different combinations to look for literature where all the three components were included. Both Medical Subject Headings (MeSh) and keywords were applied. None of the databases gave any results including the three components horse assisted therapy, self-esteem and substance use disorder, but several hits returned included two components and provided interesting reading.



<b>Horse related</b>	<b>Self-esteem related</b>	<b>Substance use dependence related</b>
Equine assisted therapy	Self-esteem	Substance use disorder
Equine assisted psychotherapy	Self-concept	Addiction
Horse assisted therapy		
Horse assisted psychotherapy		

**Table 1:** *Literature search*

I also searched Google scholar and Bibsys when looking into the grey literature and when searching for specific articles picked up from reference lists in books or articles. Due to the pronounced lack of valid research of the correspondence between horse assisted therapy, self-esteem and substance use disorder, these aspects are highlighted in the background of this study to make a case for the claimed effectiveness of horse assisted therapy and the wide acceptance of this type of therapy in the field of substance use disorder treatment. The literature concerning the three areas was widely reviewed to add value to the overall study, but did not include a Systematic Review of substance use disorder, horse assisted therapy and self-esteem.

### **What is animal assisted therapy?**

It has long been assumed that animals are beneficial tools for improving physical, social, mental and psychiatric problems, as well as educational or welfare issues (Kamioka et al., 2014). The father of psychoanalysis, Sigmund Freud believed that dogs had a relaxing effect on the mind, and his dog was often present during the consultations. He is reported to have experienced that not only was his own mind calmer, but also his patients seemed more relaxed and easier in opening up about difficult subjects when his dog were present. This applied especially for his younger patients (Fine, 2010).

Expansion in this field has been accompanied by an escalating variety in terms of the animals used and the problems to be addressed (Fine, 2010). Animal Assisted Activities (AAA), Animal Assisted Therapy (AAT) and Service Animal Programs (SAP) are all varieties of terms within the fast growing field of animal related therapies. animal assisted therapy the most commonly used title is defined as “*a specified interaction (involving an animal), implemented by a trained human health, welfare of education professional to meet explicit participant-specific goals*” (Fine, 2010, p. 112 - cited from Delta Society, 1996) Although cats, dogs and horses are the most popular choices, dolphins, rabbits , guinea pigs and even goldfish are used in facilities varying from classrooms to senior centers to initiate better health and create a sense of responsibility and harmony (Fine, 2010). There is a lot of literature on the subject of animal assisted therapy (Copeland, 2012; Marino, 2012; Wilson & Netting, 2012). There is however still little supporting evidence of the beneficial effects of such interventions. Marino (2012) included 2 meta-analyses and 28 studies in her review of the importance of the animal in animal assisted therapy. She found that there were considerable methodological weaknesses in the literature, and she did not find any evidence of a live animal to be necessary for a therapeutic effect.

A more recent systematic review of animal assisted therapy which focused on the clinical trials “gold standard” of Randomized controlled trials (RCT) reported in the scientific literature found only 11 studies, of which 7 related to “mental or behavioral” issues, which met their inclusion criteria. They found no horse assisted therapy RCT despite the fact that this is a rapidly growing and reported area of alternative therapy. They reported on design issues in virtually all the studies they reviewed. They commented that the overwhelming bias to positive research results was possibly due to the fact that people who have allergies or do not care for animals reject the animal assisted therapy intervention in the first place, consequently excluding themselves from research (Kamioka et al., 2014).

### **What is horse assisted therapy?**

Horses have been an important part of human history and development, and have undertaken many different roles throughout the last 6000 years. Horses has been defined as working animals in agriculture, transportation, war animals and in modern days, a hobby and leisure animal (A. Selby, 2009). The horse is a prey animal. It is mutually dependent on the other herd members for survival and hence is a naturally social being with interactive skills (Kohanov, 2013). It therefore has a lot to offer when it comes to working on human social and relational skills (Fine, 2010). These capacities, combined with the animals’ size and beauty are considered by many to make them useful in therapeutic settings (Fry, 2013; Hallberg, 2008; Karol, 2007; Shambo, 2012.).

Horse assisted therapy is a form of animal based therapeutic intervention. It is assumed that horse interventions are influencing people with different illnesses in a positive way. By being a source of physical contact with a neutral living being, and by facilitating the means for experiencing mastering and self-efficacy and self-confidence (Hauge, Kvalem, Berget, Enders-Slegers, & Braastad, 2013; Koren & Træen, 2003).

Horse assisted therapy is a form of animal based therapeutic intervention which assumes that selected interventions involving an appropriately trained and willing horse can positively influence people with different physical, mental and psychological illnesses or social, developmental and learning difficulties. As an emerging therapeutic process its theoretical base is still ill defined with a growing number of often competing schools of thought and associated terminology (Lentini & Knox, 2008).

The largest international professional body PATH Intl. defines EAT as follows:

*“Equine assisted therapy is treatment that incorporates equine activities and/or the equine environment. Rehabilitative goals are related to the patient’s needs and the medical professional’s standards of practice.”*

Reported benefits of working with horses date from antiquity (Kelekna, 2009). Since the 1950’s there has been an increasing interest in using horses as an active participant in therapy for humans with somatic and more recently development/learning and psychological difficulties. There has however not been a consistent theoretical or knowledge base supporting the practitioners work, but rather what has been described as an execution of therapy based on each practitioners individual point of view (Bachi, Terkel, & Teichman, 2012). Since the 1990s scientific literature concerning use of horses in more structured therapeutic programs has emerge (Bachi et al., 2012) These report on a variety of horses activities used in different forms of therapies – while there is much debate about the terminology, theory and practice of different “schools,” horse assisted therapies can generally be grouped into three broad categories, namely those related to facilitating 1) physical, 2) developmental/learning, and 3) psychological health and wellbeing. I will briefly describe each of the three, and for my theoretical base I will draw on the definitions of the Professional Association of Therapeutic Horsemanship International (PATH, 2014) PATH Intl which was established in the USA in the 1970s (then known as NARHA) for the North American market. In 2010, the name was changed in recognition of its growing international membership. It is now generally considered to be a key international professional and training organization as well as a useful reference source for practical application of horse assisted therapy.

#### 1) Physical - Hippotherapy/Therapeutic riding

Hippotherapy, or therapeutic riding as it is known in Norway, is a treatment form that is primary geared towards promoting physical health. It is the oldest and most professionally recognized form of horse assisted therapy.

PATH Intl. defines hippotherapy as follows:

*“a physical, occupational or speech therapy treatment strategy that utilizes equine movement. The word hippotherapy derives from the Greek word hippos, meaning horse. The term hippotherapy refers to the use of the movement of the horse as a treatment strategy by physical therapists, occupational therapists and*

*speech/language pathologists to address impairments, functional limitations and disabilities in patients with neuromotor and sensory dysfunction. This treatment strategy is used as part of an integrated treatment program to achieve functional goals”*

Hippotherapy utilizes equine movement, and it refers to a passive form of “riding” on horseback in which the client profits from the horses’ movement, but he/she does not control the animal. It is administered commonly by a physiotherapist who has specialized training in horses as a mean for treating patients with movement dysfunction. It can be used with very severely disabled individuals. The treatment mechanism is primarily selected movements of the horse chosen to influence specific parts or movement of the patient. The treatment is adjusted constantly by the therapist who analyzes how the patient adapts to the horse’s movement (American hippotherapy Association, 2010) In hippotherapy the movement of the horse has been used to improve speech/language systems, sensory processing, balance, motor coordination, muscle tone, fine motor skills and flexibility of the patient (Herrero et al., 2010)

In contrast to horse assisted psychotherapy and horse assisted development/learning, hippotherapy makes no use of patient influence on, or control of the horse as part of therapeutic process.

## 2) Development/Learning (often referred to as Equine Assisted Learning EAL, or Equine Facilitated Learning EFL)

PATH Intl has a lengthy descriptive definition of this “*experiential approach to teaching and learning, with the help of horses for the purpose of promoting human growth and development*” which needs little elaboration.

*“In equine-facilitated experiential learning, participants interact with the environment, with one another, with their instructors and with the animals. Goals of the interaction may be increased knowledge on a wide range of topics and/or self-discovery by participants. Instructors may be credentialed teachers, licensed therapists, equine specialists, horse trainers, veterinarians ...,*  
*In EFL, participants come to the learning without labels. They do not have (or do not share) a psychological or medical diagnosis, as they would in Equine-Facilitated Psychotherapy or Hippotherapy. Instead, participants come to an EFL session with a specific learning goal. That goal might include personal growth through reflection or*

*meditation; socio-emotional progress; overcoming academic challenges; enhancement of intuition; improvement in horse-handling and riding skills; knowledge about horses; and/or all of the above. The learning may take place in a single session or workshop, or over a longer period, via multiple sessions.*

*The attitude and training of instructors is a critical factor in EFL. Through carefully planned interaction with willing equine co-facilitators, human instructors assist the learners in reaching their goals...*

*Examples of EFL (activities) include journaling; autobiographical writing; examination of the hero's journey as it applies to the learner's life; exploration of one's life goals; discovery of energy fields surrounding horses and humans; reading comprehension enhancement; art; study of horse and human anatomy; self-discovery through inquiry; trail riding for observation enhancement and partnering with a horse; even preparation for showing horses. In every case, participants learn about themselves, about the horses, and build skills they carry from an EFL session into their lives".*

3) Psychological – often referred to as Equine Assisted therapy (EAP) or Equine Facilitated Psychotherapy (EFP)

*PATH Intl defines Equine Facilitated Psychotherapy as “a form of experiential psychotherapy that includes equine(s). It may include, but is not limited to, a number of mutually beneficial equine activities such as handling, grooming, longeing, riding, driving, and vaulting. Equine Facilitated Psychotherapy is a treatment approach within the classification of Equine Assisted Therapy that provides the client with opportunities to enhance self-awareness and re-pattern maladaptive behaviors, feelings and attitudes.*

*Equine Facilitated Psychotherapy both promotes personal exploration of feelings and behaviors, and allows for clinical interpretation of feelings and behaviors. EFP denotes an ongoing therapeutic relationship with clearly established treatment goals and objectives developed by the therapist in conjunction with the client. The therapist must be an appropriately credentialed mental health professional to legally practice psychotherapy who has additional training in EFP.*

*Equine Facilitated Psychotherapy may be used for people with psycho-social issues*

*and mental health needs that result in any significant variation in cognition, mood, judgment, insight, anxiety level, perception, social skills, communication, behavior, or learning. Examples include but are not limited to:*

- *Anxiety Disorders*
- *Psychotic Disorders*
- *Mood Disorders*
- *Behavioral Difficulties*
- *Other Mental Illness, such as Schizophrenia, Attention Deficit Hyperactivity Disorder, Autism, Receptive or Expressive Language Disorders, Personality Disorders, Depression, Post Traumatic Stress Disorder, etc.*
- *Major Life Changes such as environmental trauma, divorce, grief and loss, etc”.*

There is obvious overlap between the three types of horse assisted therapy described above and in particular between the development and psychological therapies. Each of the three includes to varying degrees aspects of physical, developmental and psychological health and wellbeing, for example each involves contact with the animal, a degree of physical activity and mental activity when one is working with horses. Only the emphasis between the three differs. So for example, some hippotherapy studies refer to the added value of the horse in motivating the patient and contributing to overall improved wellbeing. As Barbara Rector (2005), widely regarded as the initiator of EFP in the USA, reports it was these reported indirect gains from physical therapy which prompted the development of psychological therapy involving horses.

I have detailed the three areas because I believe it is likely that they are all involved when horse assisted therapy is included in substance use disorder treatment (even though this is generally categorized as a form of equine assisted psychotherapy).

### **Psychotherapeutic treatment involving horses**

The use of horses in psychotherapeutic settings is the most recent and rapidly evolving area of horse assisted therapy. Horses with their specific utilities in therapy have been used and are still used in a variety of different settings and for treatment of different diagnoses (Fry, 2013; Hallberg, 2008; Karol, 2007; Shambo, 2012.). Many terms are used to describe the therapeutic process and the horses' role or function as a facilitator in a psychotherapeutic

treatment. The distinction between therapeutic development, learning and psychotherapy is not always clear and often seems to depend more upon the human therapists' qualifications than on the actual activities. Hallberg (2008) lists 7 variations (Appendix 2) including Equine Facilitated Psychotherapy (EFP), Equine Assisted Psychotherapy (EAP), Equine Facilitated Counseling (EFC), Equine Facilitated Brief Interventions (EFBI) Equine Facilitated Learning (EFL) Equine Assisted Experimental Education (EAEE) Equine Facilitated Professional Coaching (EFPC) and Equine Facilitated Human Development (Hallberg, 2008).

Practitioners generally choose a term based on personal preference and the equine-assisted mental health training they have received. (Fry, 2013). The fastest growing international organization in the area of psychotherapy is called the Equine Assisted Growth and Learning Association (EAGALA). Established in 1999 it has practicing members in more than 40 countries (EAGALA, 2014). It is "*a unique approach to equine assisted psychotherapy and leaning which is based firmly on sound professional principles in horsemanship, psychotherapy and pedagogy*" (Thomas, 2011). It is a theoretically based training and member support organization with specific sanctioned methodology and guidelines and a policy of exclusivity from other equine therapy. EAGALA therapists work only on the ground (no mounted work) and emphasize that clients make their own connections without any direction or intervention of the instructor. (See details in appendix 3) One of EAGALA's attractions is the easy of obtaining certification provided the applicant has the appropriate health, welfare or pedagogic professional qualifications, participates actively in the EAGALA part 1 and 2 training courses and the annual professional membership renewal processes. The adequacy of this credentialing, together with safety issues and appropriateness of this type of therapy for severely ill patients have been questioned. Therefore, while many practitioners, including in Norway, undergo EAGALA training and include some EAGALA provisions in their practice they do not subscribe to the strict EAGALA practice model.

In Norway, the organization Hest og Helse (2014) is working to promote the professional use of horses in therapy. It organizes a range of courses with national and international instructors, for health professionals who want to include work with a horse in their profession practice. However, despite progress over recent years with the exception of hippotherapy, there is still no official credentialing or professional recognition of horse assisted therapy qualifications in Norway. This is partly due to the scarcity of large scale, well designed studies in Norway or elsewhere, which are needed to convince the professional bodies to take action.



In summary horse assisted therapy can be defined as psychotherapy that involves horses in one way or another, no matter what the theoretical framework or philosophy consists of. In horse assisted therapy, the focus of the treatment is primarily on the patients' psychological health, although physical movement is important in some cases to facilitate the patients' psychological recourses (Lysell, 2011). The goal of treatment is behavioral change and facilitates resolving emotional problems, and a goal of learning how to ride is often low-graded or not present at all. (Keino et al., 2009; Roberts, Bradberry, & Williams, 2004) In psychotherapy, in addition to positive benefits recognized from the animal assisted therapy in general, practitioners think that horse assisted therapy may also contribute to develop a good cooperation between patient and therapist (A. Selby, 2009), and that the horses bring an extended dimension to therapy (Hallberg, 2008). If the patient also has an interest in the horse, it may be an important motivational factor for therapy (Karol, 2007).

### **Research on psychotherapy involving horses**

The majority of research in the field of equine assisted therapy is considered to involve too few participants, lack of randomized trials and standardized measurement-tools. The lack the methodical standard required to be taken seriously by health administrators (Smith-Osborne & Selby, 2010). The research is often anecdotic and descriptive and does not hold the standard to be published in peer-reviewed journals. There are however a number of published reviews on Equine Assisted Therapy, but only one systematic review of Selby (2009) are methodological sound. After extraction of 103 studies from peer-reviewed journals, grey literature and white papers, she reviewed 14 peer-reviewed articles using PICO (Population, Intervention, Comparison and Outcome) and GRADE (Grades of Recommendation, Assessment, Development and Evaluation) methodology. She found only two to have a moderate level of evidence for effectiveness.

In spite of this, there are a growing number of treatment facilities and treatment programs involving horses that claim that the horses' contribution is positive and are offering horse assisted therapy (Lavender, 2006). One of the aspects these sites claim to improve by this intervention is self-esteem (Frame, 2006; Hayden, 2005)

Research in the field of horse assisted therapy is evolving, and the knowledge about how and why horse assisted therapy seems to have a positive effect is increasing (Alison Selby & Smith-Osborne, 2013).

## **Horse Assisted Therapy in Substance Abuse Treatment**

When it comes to horse assisted therapy used as an intervention of substance abuse treatment, there is a lack of valid documentation. None of the studies included in the systematic review by Selby (2009) had any participants with a diagnosed drug use dependency. In my search I found only a few studies relating horse assisted therapy directly to substance use disorder. They all indicate a positive effect of horse assisted therapy in relation to substance use dependency on an individual basis, but did not provide any substantial evidence due to low methodological standards.

Mallow, Mattel & Broas (2011) did a study on women with substance use disorder with a history of abuse engaging in a program caring for abused horses. The program emphasized mutual healing of trauma through caretaking activities. Strausfeld (2001) used horse assisted therapy as a part of therapy aimed to increase the bonding between children and mothers struggling with drug use dependence. This was done by applying specific exercises, which were based on the principle that the horse could serve the basic human need of warmth, closeness and being carried, while leading to a better physical self-awareness. Dell described in 2008 (Dell, Chalmers, Dell, Sauve, & MacKinnon, 2008) EAL for improving resilience for First Nations youth who were at a based treatment in Canada for solvents abuse. Some years later they (Dell et al., 2011) did another study where they found EAL be cultural-relevant to facilitate healing for Inuit-youth who had been inhaling solvents and were undergoing residential treatment. The only study mentioning increased self-esteem as a positive effect was Pollack (2009) who did a qualitative study included 10 interviews of women residing in an inpatient long term substance use disorder treatment center. There was no control group included.

## **Diagnosing and defining Substance use disorder**

There are different perspectives and different models that have been developed to explain the mystery of substance use disorder (Bramness, 2011). The general understanding is that substance use disorder problems occur in individuals who are vulnerable from biological, psychological or social factors. Both legal prescribed and over the counter drugs, as well as illegal drugs are known to cause substance use disorder.

The International Classification of Diseases and Health Problems (ICD-10) is used by Norwegian practitioners to define substance dependency. Dependency is only to be set if three of the following criteria has co-occurred some time during the last year (WHO, 2014):

- “(a) a strong desire or sense of compulsion to take the substance;*
- (b) difficulties in controlling substance taking behaviour in terms of its onset, termination, or levels of use;*
- (c) a physiological withdrawal state when substance use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms;*
- (d) evidence of tolerance, such that increased doses of the psychoactive substances are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol and opiate dependent individuals who may take daily doses sufficient to incapacitate or kill nontolerant users);*
- (e) progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects;*
- (f) persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm”*

This definition is similar to the DSM IV which is the diagnostic manual often used and referred to in scientific research. The DSM IV consists of 11 symptoms and depending on how many symptoms are identified; the severity of substance use disorder is established (Grant et al., 2004).

These definitions are both based on a medical approach. As such they say nothing of the nature and mechanisms that occur in substance use disorder, and which add to its complexity and those of its treatment.

### **Substance use disorder is a disease**

The growing consensus in the field of substance use disorder to think of it as a disease A complex genetic disease, with numerous genetic and environmental factors, interacting with one another. Animal studies have strengthened the theory of substance use disorder as a

genetically influenced disorder. The estimates for heritability for drugs varies from 40-60% and are set as an established fact (Goldman, Oroszi, & Ducci, 2005), but the anticipation of finding a clear correlation within a small group of genes turned out to be a compounding genetic complexity with hundreds of genes (Ducci & Goldman, 2008). Genes and environment are no longer seen as separate entities, but as an unified continuum.

Human beings as other animals have the possibility to develop a compulsive relationship with different addictive things which give us pleasure and can be abused if we do not take care. Junkfood, pornography, slot machines, alcohol and drugs are all examples of things that can make an individual go gradually from having a normal decision-making process to an out of control compulsive behavior (Kenny, 2007). A person who is addicted continues to use drugs despite the negative physical and psychological consequences. This addictive lifestyle is mediated by the “compulsive circuit” which consists of nucleus accumbens, ventral pallidum, thalamus and orbitofrontal cortex (Koob, 2006). This system appears to operate outside the person’s conscious mind by targeting the primitive parts of the brain. The nucleus accumbens is rooted in the limbic structures and sets the compulsive drug-seeking behavior into motion (Kaplan & Hammer, 2008). In a non-dependent brain, the nucleus accumbens is also activated, but the consequence is initialized about half a second later by the orbitofrontal cortex. This means that we live with a conscious delay of half-second on what the brain already has decided (Schoenbaum & Shaham, 2008). For a person with substance use disorder problems however this system is compromised. For them initialization of drug-seeking sets a pattern of learned compulsive behavior; there is an overriding of conscious decisions and awareness of the negative consequences (Koob, 2006). Based on this knowledge the theory of people “choosing to use drugs” is getting quite outdated.

### **Treatment of Substance use disorder**

The complexity of drug use dependence makes treatment a challenge. One of the most challenging issues of treating drug use dependence is the co-occurrences of psychological illnesses. In Scandinavia the prevalence of psychological co-morbidities is 75-85% for those using alcohol and 75-90% for those who had a drug problem (Evjen, Øiern, & Kielland, 2003). In addition to co-morbidities, there is often a history of trauma, bad financial situation, criminal history and poor somatic health. Due to the nature of the complexity there is yet to be found a treatment for drug dependency based on effective models which is accessible and applicable to the most severe and complicated patients (Evjen et al., 2003). This section will briefly present the most common therapies used today.

Different eras have had different theories concerning appropriate substance use disorder treatment forms and approaches. In the last few decades a common treatment method has been confrontational and a top-down approach, but attitudes towards patients with a substance use disorder are now changing in the treatment society. The thinking and practice that patients should be rejected from treatment until they had reached rock bottom or had overcome their motivational struggles is on its way out (Miller & Carroll, 2011). A fundamental shift in approaching drug use dependency in treatment came with introduction of Motivational Interview (MI) in the early 1990s. This therapeutic counseling approach recognizes that people struggling with a substance use disorder might seek help at different levels of readiness to change their behavior. Through MI the therapist is working with a ground base of empathic and respectful relation with their patients and must be able to ask open questions, provide affirmations, practice reflective listening and periodically provide summary statements to the client. By practicing these skills, their patients can strengthening their inner motivation which is necessary for the client in order to change behavior (Hettema, Steele, & Miller, 2005; Levensky, Forcehimes, O'Donohue, & Beitz, 2007). Not all therapists are born with natural developed skill of empathy, but much can be learned through practicing and rehearsal. Qualities of the therapist being warm and interested in combination with flexibility and thrust wordy is important for being able to build a strong alliance with this patient group (Ackerman & Hilsenroth, 2003).

Mentalization-based treatment (MBT) was originally developed as a therapeutic method for severe borderline personality disorder and is a form of psychodynamic psychotherapy (Söderström & Skårderud, 2009) where the treatment often is alternating between individual treatment and group treatment. Mentalization is the concept of thinking and feeling about one's own and other's thoughts and feelings, with a consciousness that one can be mistaken (Fonagy & Bateman, 2006). The goal for MBT is for the patients to improve their mentalization capacity by improving behavioral control, increased affect regulation, pursuing life goals and developing more intimate and gratifying relationships. These treatment goals are believed to be accomplishable through increasing the patient's capacity for mentalization by stabilizing the client's sense of self and to enhance stability and safety in emotions and relationships (Fonagy & Bateman, 2006). There is not a large amount of published literature concerning MBT in treatment for substance use disorder (Söderström & Skårderud, 2009) but the implications for applying this method is to give the patients an opportunity to feel what they have possibly worked hard to avoid by abusing drugs (Karterud & Arefjord, 2010)

Pharmacology has played in the role of treatment for substance use disorder according to what kind of drug the patient have been struggling with. For both smoking and alcohol there has been well documented pharmacological remedies, nicotine substitutes (chewing gum, patches and moth spray), e-cigarettes or prescribed medication (varenicline og bupropion) for smoking and antabus or Naltrexone for alcohol dependency. These remedies are helping to prevent relapse and reduce withdrawal symptoms in the detoxifying process (Miller & Carroll, 2011). For opioid dependency – usual with heroin as the dominant drug the pharmacological treatment has existed for a while. The first (Legeassistert Rehabilitering – medication assisted rehabilitation) LAR centre opened in Norway for the first time in 1998 (Waal, Clausen, Håseth, & Lillevold, 2009). Since then, there has been a change in the preferred drug administrated. Methadone has largely been replaced with Subutex and Subuxone, and the prerequisite of being accepted into treatment has lowered. In relation to marijuana there is no available pharmacological treatment that are considered to have enough benefits to counterweight the disadvantages (Miller & Carroll, 2011).

About two thirds who is suffering from substance use disorder experiences relapses during their treatment period, and only ten percent will be able to maintain abstinence over a long period of time (Vaillant, 1988). The majority will experience frequent relapse but with periods of stability and improvement for many. Even though this relapse pattern is the reality and consistent with chronic disease patterns, many expect extraordinary results from substance use disorder treatment. These expectations are not only from politicians and the general public, but also from the many professionals working in the substance use disorder field. When comparing substance use disorder to other chronic life-style related disorders the similarities are much the same. Also in patients with life-style induced chronic conditions, less than 30% follow their clinicians prescribed treatment pattern. However, the negative humanitarian attitudes and expectations towards this patient group are much lower (McLellan, Lewis, O'Brien, & Kleber, 2000).

Another issue of substance use disorder treatment, especially treatment for young drug dependent people, is the high rates of treatment drop-out (Brorson et al., 2013). Since completion of treatment is one of the most consistent factors of a successful treatment (Dalsbø et al., 2010), it is important to implement in practice what we know. Bronson et. al (2013) in their Systematic Review of 122 peer-review articles about risk-factors for drop-out, found alliance with therapists, influence on own therapy and individually adjusted treatment, to be of great importance for the completion of substance use disorder treatment. For the people

affected or involved in the treatment process it is important to keep in mind that treatment and recovery from a drug use dependency takes time. It takes a long-term commitment to change the way of living, and creating new behavior patterns for a person to be able to stay abstinent in a long-term perspective (Gossop, Marsden, Stewart, & Kidd, 2003; Simpson, Joe, & Brown, 1997).

### **The self as a concept**

The conceptualization of Self- concept is the presence of domains of the mind to which people has little access and control over. This is not a new theory, as the concept of self in the western part of the world extends its roots back to ancient Greek and its Roman philosophers (Hetts & Pelham, 2001). There are a variety of definitions on self-concept in the scientific literature. But just what the self-concept is and how it develops is vague and differs depending on which theory it is placed under. Because of the different views it is difficult to define the term. The concept of the self is now a part of personality psychology and divide mainly in a phenomenological and sociological tradition. In the phenomenological tradition is it the person's subjective perception of reality and not reality itself that is in focus. It emphasizes that the self can only be observed through interpreting human behavior (Combs & Snygg, 1959; Rogers, 1951). In a sociological tradition the self consists of person's global evaluation of his or hers overall worthiness (M Rosenberg, 1979). Rosenberg divided the self in three dimensions to define the concept ; the existing self that is how the individual sees himself , the desired self that is how the individual wants to see itself, and the presented the self that is how the individual turns out to others. Another sociological perspective on the self is the perception of the formation through others' perceptions of us - Mead goes to this extent and claims that the self fundamentally cannot exist in isolation (Mead, 1934). Although there is disagreement about what the self is and how it is developed within the various traditions, at least there is a consensus that it exists. It is also understood that the self develops in relation to other people

### **The difference between self-confidence, self-esteem and self-efficacy**

Over the past forty years the concept of self-esteem has played an important role in the field of psychotherapy and there is a consensus in the research field of psychology that our behavior is likely to be influenced by what we think about ourselves (Campbell, 1990). The concepts of self-confidence and self-esteem are used interchangeably both in everyday speech and in literature, and the definition of self-esteem remains contentious.

Rosenberg (1979) described self-confidence as the anticipation of successfully mastering challenges or overcoming obstacles or, more generally, to the belief that one can make things happen according to with inner wishes. This means that a person's self-confidence is tied to performance, and the belief that one can achieve what they want.

When doing a search for literature in different databases, I found in PubMed 85 960 articles and in Google Scholar 320 000 including the term “self-esteem”. An important issue in the literature of self-esteem is the question whether self-esteem should be considered to be a trait or a state.

Rosenberg (1979) had a unidirectional approach to self-esteem and considered this to be stable and global - an ‘individual’s positive or negative attitude toward the self as a totality’ It is a general feeling of self-worth, or global self-esteem. Among the many devices for assessing global self-esteem, the self-report version of the Rosenberg Self-Esteem Scale (Morris Rosenberg, 1965) has been the most common conceptualization in research literature today (Morris Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995; Schmitt & Allik, 2005). Rosenberg relates this to self-acceptance, self-respect and a sense of self-worth. In other words, a positive or negative sense directed against self. An individual with high self-esteem is pleased to be the person she/he is, even if she/he has flaws and sees potential for improvement.

In the last decade however, there has been an increased amount of literature stressing the importance of multi-dimensional aspects of self esteem. Campbell (1990) lay a premise in her theoretical exploration of self-esteem that it is shaped by both an evaluative related component and a knowledge related component. The evaluative component she conceptualizes as “trait” self-esteem, and the knowledge based as a “state” self-esteem. The “Trait” self-esteem is seen as a global self-reflective attitude describing how someone feels about their self when they evaluate it. This feeling of value can vary due to role, time and situation, and different roles in a person’s life may vary in importance and affect self-regard. This conceptualization also recognizes that it is important to distinguish the temporary feelings of self-regard “trait” self-esteem from the more constant “state” self-esteem.

Self-efficacy is the ability of persistence and the ability to succeed with a given task (Judge, Erez, Bono, & Thoresen, 2002). High or low self-efficacy determines whether or not someone



will choose to take on a challenging task or write it off as impossible, for example how long will a person repeat trying to master a new horse-related challenge.

### **Leary's sociometer theory**

In the last years a new perspective in self-esteem has evolved from Leary (1995) called the sociometer theory. This theory addresses the concept of self-esteem in a different way. The "state" self-esteem is significant for this theory. It claims that self-esteem is an internal monitor for social acceptance and quality of people's relationship with one another and works to prevent social rejection or exclusion. This theory is attempting to explain the emotional and motivational driven aspects of self-esteem, assuming that early human beings belonging in groups had a greater chance of survival and reproduction than those who did not (M. R. Leary, 1995). In relation to the psychological problems (teen pregnancy, substance abuse, academic failure et cetera) usually linked to low self-esteem, the sociometer theory states that these problems are not caused by low self-esteem but rather to a history of low relational evaluation and interpersonal rejection. Self-esteem is consequently considered to be a co-effect rather than a cause (Mark R. Leary, 1999; Mark R. Leary & Baumeister, 2000).

### **The Big Five and the Development of self-esteem**

The Five-Factor Model, Big Five Model or The Five Major designation on key personality traits was made by a number of independent sets of researchers (Digman, 1990). These researchers began studying known human personality traits and then factor-analyzing hundreds of measures of these traits in order to find the underlying factors of personality. The five domains this project accumulated to were extroversion, agreeableness, conscientiousness, neuroticism and openness. The model is validated in many countries with different cultures and has been central in personality psychology (Eriksen & Nordvik, 2008; Nordvik, 2005).

Each of the Big Five personality traits contains two separate, but correlated, aspects reflecting a level of personality below the broad domains but above the many facet scales that also comprise the Big Five. The aspects are labeled as follows: Enthusiasm and Assertiveness for Extraversion, Compassion and Politeness for Agreeableness, Industriousness and Orderliness for Conscientiousness, Volatility and Withdrawal for Neuroticism and Intellect and Openness for Openness/Intellect (Soto, John, Gosling, & Potter, 2011).

Although there is uncertainties evolving the development of self-esteem, it is assumed that there is a correlation between the Big Five personality traits and self-esteem (R. W. Robins, H. M. Hendin, & K. H. Trzesniewski, 2001; Robins, Tracy, Trzesniewski, Potter, & Gosling,

2001; Watson, Suls, & Haig, 2002) Erol and Orth (2011) found in their study the importance of adolescence as a possible critical period for self-esteem development. Emotionally stable, extroverted and conscientious participants experienced higher self-esteem than the adolescents with more neurotic personality traits. They also established that self-esteem increases moderately throughout adolescence and in a slower rate when reaching young adulthood.

### **Consequences of having a low Self esteem**

There are different beliefs about what consequences of low self-esteem might lead to.

Researchers have not found the same results and their conclusion differs. This may be due to usage of different measurement-tools, and the fact that self-esteem is generally difficult to measure. Causality can also be a problem in this type of research. For instance there is a link between a woman's self-esteem and whether she had a teenage pregnancy, but the interesting question is how those factors relate to each other and to what extent.

The consequences of having a low self-esteem are not scientific established (Campbell et al., 1996; N. Emler, 2003). Emler (2003) claims that young people with low self-esteem are not more involved in crime or more racist, nor do they have a higher risk of alcohol abuse. He found however that low self esteem is a risk factor that can lead to substance abuse, poor school performance, teenage pregnancy, suicidal thoughts and actions and the development of eating disorders. He emphasize that young people with low self-esteem tend to hurt themselves, but do not hurt others. He also found that people with low self -esteem have an elevated risk of becoming victims of mistreatment of others. Huskins (2003) on the other hand argues that low self-esteem have no correlation with suicidal actions or eating disorders, but that young people with low self-esteem tend to be more violent.

Juul (1996) agrees with Huskins that people who has a low self-esteem tend to be more violent. He is adding that they also have a higher risk for eating disorders and drug-, pill- and alcohol abuse. Jerome et al. (2002) found that low self-esteem can cause school failure, depression, social anxiety, violence, substance abuse and chronic dependence on welfare. This is supported by Harter (1993), and she also found people with low self-esteem to be more vulnerable to suicidal acts.

Low self-esteem is only one of many different risk factors, and the results of research on correlation with other issues is uncertain, and that low self-esteem can both arise as a consequence and a cause (Baumeister, 1993; N. Emler, 2003; Huskins, 2003).

Despite disagreements about the importance of what self-esteem is, and what a low self-esteem can lead to, I can probably conclude that the development of a good self-esteem is important because a normal self-esteem is a facilitator for a greater quality of life and low self-esteem are associated with less capability to implement adequate coping strategies when problems arise (N. Emler, 2003; Juul, 1996). Individuals with a high self-esteem tend to display an active coping style focused on problems, while individuals with low self-esteem will to a greater extent display a passive-avoidant coping style focused on emotions, and are less capable of handling stress (Dumont & Provost, 1999)

### **Self-esteem and substance use disorder**

The association between self-esteem and drug use is weak (Erol & Orth, 2011; Mark R. Leary, 1999). Even though low self-esteem can be considered a risk factor for development of substance abuse, it is also possible that substance abuse can affect self-esteem in a negative direction (Erol & Orth, 2011). There are also low indications that low self-esteem is a cause, direct or otherwise of drug use, or drug abuse (N. Emler, 2002). However could lowered self-esteem emerge from loss of self-control associated with substance use disorder, and in that case low self-esteem is the result rather than cause of a substance use disorder (N. Emler, 2001). Furnham and Lowick (1984) presented a theory for why someone develops drug abuse based on low self-esteem. There were two reasons for their assumption; firstly it is based on the foundation that drug abuse is considered to be a health risk, and low self-esteem is associated with greater risk taking. Secondly that people using illegal drugs have a deprived opinion of themselves, and have nothing to lose from being publicly criticized as morally deviant. Research evidence provides little support for these views. Self-esteem seems to be linked to coping with difficult domains in life on a more generic level rather than specifically related to substance use disorder (Richter, 1991). In relation to substance use disorder treatment outcome, Richter (1991) found in her research an indication of self-esteem as being an important factor in teenage recovery from substance use disorder. High self-esteem was associated with reduction of relapses, easier transition to a sober lifestyle after completed treatment program and better coping strategies being abstinent. These findings are supported by Corrigan (2007) who found low self-esteem to be linked to the reduced efficacy of treatment of substance use disorder.

### **Self esteem and Horse assisted Therapy**

There are many claims but little scientific evidence to support or disprove those claims that horse assisted therapy has a beneficial impact on self-esteem Increase of self-esteem is

nevertheless considered to be a common benefit of horse assisted therapy (Hallberg, 2008) and a lot of horse literature make reference to self-esteem. I found more than 900 references to horse assisted psychotherapy, equine assisted psychotherapy and self-esteem while doing a Google scholar search, but not one study with adequate empirical evidence supporting this claim. The large amount of anecdotal evidence supports the theory that horse assisted therapy may help people to gain self-esteem if it is properly facilitated (Hallberg, 2008). Studies which found horse assisted therapy increasing self-esteem also found increased self-esteem in the control group or used nonequivalent comparison groups (Bachi et al., 2012; Iannone, 2003). Cawley, Cawley & Retter (1994) also found increased self-esteem in adolescents who received horse assisted therapy, but this research project had no control group included. Other studies find no relationship with horse assisted therapy and increased self-esteem (Ewing, MacDonald, Taylor, & Bowers, 2007; Greenwald, 2001; Hauge, 2013; Holmes et al., 2011; Kaiser, Smith, Heleski, & Spence, 2006; Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Others, such as Karol (2007) and McCormick (1997) claim feeling of achievement and capability is important for self-esteem, and suggest these feelings may occur when mastering skills related to handling and interaction with a large animal.

Hauge (2013) found in her study involving youth in equine-assisted activities that self-esteem did not increase during the intervention. Self-esteem did not influence how the adolescence mastered the horse related tasks. She considers that measurement of global self-worth used in this study might be too broad to detect changes directly related to self-esteem, as it covers a general feeling of self. The adolescents were more willing to try a task in the end of her intervention period, but no correlation to persistence or experiences of mastering horse related tasks was detected for self-esteem.

Hallberg (2008) cautions that horse assisted therapy can give a negative impact on self-esteem if the patients are failing at the assigned tasks, and the therapist are not able to turn the situation into something positive. This is consistent with the findings of Hemenway (2006) who also mention in her PhD thesis some negative effects on self-esteem for 10 non-clinical adolescent girls participating in horseback riding.

## **Goal**

In this study I will examine whether self-esteem in patients who received horse assisted therapy develops in a more positive direction than for those who only received treatment as usual, or if the results would be the same. I will also look into whether higher reported scores

on self-esteem is a predictor for successful completion of treatment. To achieve this I will in this study make use of a pretest – posttest study design based on the Rosenberg self-esteem scale in YATEP data base and the patient schedules for horse assisted therapy at the stables at AUA. Due to the low level of methodological standards in prior studies there is a knowledge gap today concerning the specific outcomes of horse assisted therapy.

My main goal is to determine whether horse assisted therapy is associated with increased self-esteem scores in a drug dependence treatment facility, and whether this predicts treatment outcome. More precisely I will test the following three part Hypothesis in respect of young patients in treatment for substance use disorder:

*Hypothesis 1:*

The level of self-esteem predicts participation in horse assisted therapy

*Hypothesis 2:*

Horse assisted therapy does not change the self-esteem of young patients in treatment for a substance use disorder

*Hypothesis 3:*

The level of self-esteem does not predict treatment outcome of substance use disorder treatment.

## **2. Methodology**

In this section of the study there are justifications and descriptions of the choices made in order to answer the research hypothesis, and the methods applied.

Scientific methods can be defined by those techniques or procedures used for answering the scientific questions. The choosing of method depends on what kind of questions are to be answered (Bordens & Abbott, 2002). In qualitative method a phenomenon is studied in closeness to the informants. The aim for this type of research is to understand and interpret a phenomenon through the eyes of the informant. An often used form in this method is interview where the scientist is trying to accomplish an understanding of a phenomenon in depth. By the use of quantitative method, the researcher strives to achieve greater objectivity to the phenomenon she wants to examine, and there is a larger group or population being investigated. Furthermore this implicates a thorough and systematic collection of data, that can be statistical analyzed afterwards (Bordens & Abbott, 2002)

Due to the nature of the hypothesis formulated for this study a quantitative research method was chosen. To answer the question about the influence horse assisted therapy has on self-esteem, two sets of self reported Rosenberg self-esteem scale data from anonymous patient completed instruments recorded and stored in the YATEP database were extracted. To answer the question concerning treatment outcome in relation to self-esteem, reason for exit codes were also extracted for the same patients from YATEP. To fulfill the inclusion criteria for participation in horse assisted therapy the schedules from the stable personnel recording therapy sessions were applied.

In the methodology section information on the study site and research organization at this site will be presented. Then the methodology used in this study describing choice of design, population, material, data collection, operation, treatment program and the ethical considerations of the project will be presented.

### **The study site**

This study took place between January 2011 and December 2013 at the Gaustad complex of Oslo University Hospital at the then named Department of Addiction Treatment Youth: Rus og Avhengighetsbehandling Avdeling Ung (AUA). In the initial phase that Department included a long term in-patient unit, a short-term in-patient unit and a day treatment unit. In mid 2012 administrative and organizational changes were introduced. These eventually resulted in the organizational structure presented in Appendices 4 and 5.

The physical premises remained unchanged with all the housing facilities situated nearby the stables and where the horses are visible. Patients from all the units are offered horse assisted therapy as an integral part of the usual treatment.

From mid-2012 until 2014 the organizational units were as follows (Henvisningsbrosjyre, 2012):

*The in-patient unit* have a capacity for 16 patients. The unit includes both social and health related perspectives and uses mentalization-based treatment approach, family- and network strengthening. This department has a special focus point on increasing the ability to function well with others.

*The assessment/intermediate unit* have a capacity for 12 patients. The assessment unit work on screening patients to ensure they will receive an individual adjusted treatment. Most of the

patients in the in-patient unit have been at the assessment unit prior to admittance. The intermediate unit is a short-term unit for those who have gone through detoxification, but are not ready for treatment, or as a temporary shielding to other patient due to a relapse. Duration for stay here is 1-3 days.

*The day treatment unit* have been offering policlinic follow-up to patients either in individual sessions or in groups. The focus has been on relapsprevention and could be combined with school or work.

The patient target groups for all units are 16-26 years old, both genders with a primary diagnose of substance use dependence. Additional issues of minor mental disorders are accepted.

The impact of the organizational change on patient treatment and outcome has not been assessed. Although it had no direct effect on the horse assisted therapy activities, there may have been some indirect adverse impact arising from for example uncertainty and or stress amongst staff as the change was implemented.

### **YATEP: The Youth Addiction Treatment Evaluation Project ,**

The Youth Addiction Treatment Evaluation Project, established in late 2010, has an approved data base (generally referred to as the YATEP database) which contains basic information and psychological tests administered at key points of the treatment/follow up process for all consenting patients. It will eventually include data for 5000 patients which will be stored and can be used for approved research for 30 years. In collaboration with CheckWare a/s, YATEP has developed an electronic platform for test administration. This makes it possible to monitor the collection of large amounts of data, and follow up measures not completed in time.

YATEP is collecting detailed assessment of patients admitted to AUA that have signed informed consent to research participation (Appendix 6 ). Data is collected primarily by self-reported questionnaires. There is minimal administrative and patient particulars recorded in YATEP. Such data when required is retrived from other sources, such as the patient journal system and administrative records. The YATEP questionnaires are normally filled out by the patients using iPads, but any medium with internet connection can be used.

The following measurement-tools are included in the YATEP database today:

*OQ: Outcome Questionnaire 45:* repeated measurement of client progress through the course of therapy

*CMR: The Circumstances, Motivation, and Readiness scale:* Motivation scale for substance abuse treatment

*RSES: Rosenberg's Self Esteem Scale:* Self-esteem measurement

*HSCL-25: The Hopkins Symptom Checklist:* Depression and anxiety measurement

*EQ-5D: EuroQol Group 5-Dimension Self-Report Questionnaire:* Physical problems

*SIPP-118: Severity Indices of Personality Problems:* overs core components of (mal)adaptive personality functioning

*IPDS: Iowa Personality Disorder Screen:* Screening for Personality disorder

*WAI-S: Working Alliance Inventory – Short:* Measure the working alliance between counselors and their clients during therapy sessions.

*GAF: Global Assessment of Functioning Scale:* Measuring level of functioning

Day 1	Week 1	Week 2	Week 3	Week 4	Week 11	Week 12	Week 13
-Consent form signed  -Patient registered	OQ* CMR <b>RSES</b> HSCL-25 EQ-5D GAF	OQ* SIPP-118 IPDS	OQ*	OQ* CMR WAI-S HSCL-25 EQ-5D GAF	OQ* <b>RSES</b>	OQ* SIPP-118 WAI-S HSCL-25 EQ-5D GAF	OQ* HSCL-25^ EQ-5D^ GAF^

\*Every week. ^Every 8. Week after week 13

**Table 2:** *Research flow on YATEP*

The questionnaires are administered by the clinicians working at AUA, and the response data from the patients is safely stored and automatically scored. Data with clinical relevance is immediately made available to the clinicians, and YATEP is continuously educating the AUA employees on how to use this information to improve treatment. The aim is for YATEP researchers to use relatively little time collecting data, access high quality data, and enjoy the synergic effects given by a common test battery. In the longer term the electronic platform is expected to improve the response rate on planned collection of follow-up data, because the participants can choose to complete the questionnaires electronically and receive compensation without face-to-face interaction.



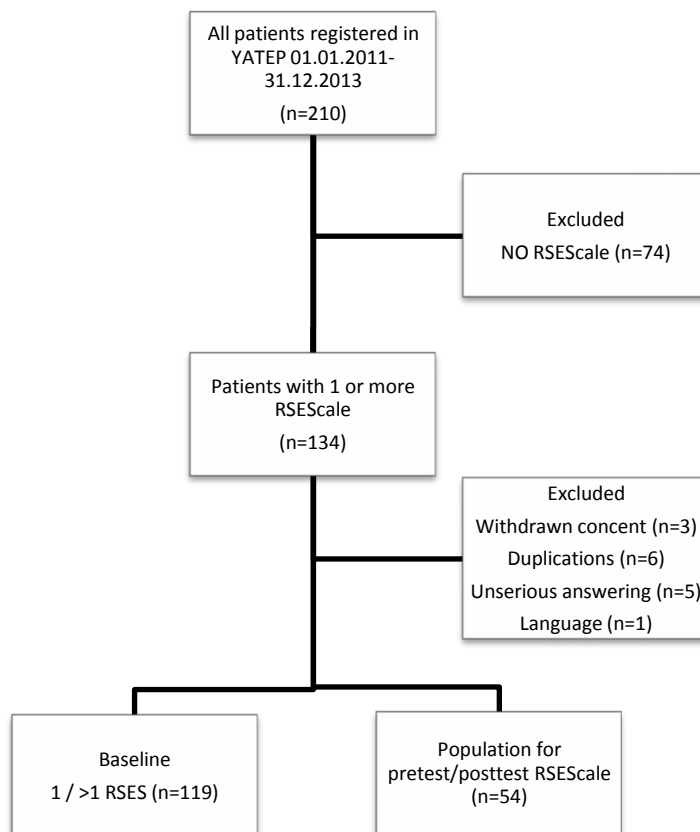
## Choice of Design for this study

The incentive for this thesis was to look at the influence horse assisted therapy intervention might have for the self-esteem for patients in treatment for substance use disorder, a measurement tool for self-esteem provided twice to all of the patients made the foundation on which this study was based on. Information of horse assisted therapy participation and treatment outcome was also collected.

This study has a pretest-posttest study design. According to the validating process necessary to maintain internal validity in a pretest-posttest study as described by Borden and Abbott (2002), a control group were included.

## Population

All the participants in this study were patients at AUA referred by the primary health care unit, the social service or another hospital unit due to a primary diagnosis of substance use disorder ICD-10; F10-F19.



**Figure 1:** Exclusion of participants for this study

The main inclusion criteria were patients who agreed to participate in the YATEP program and had answered Rosenberg self-esteem (RSE) scale at least once in the period from 01.01.2011 – 31.12.2013. Some patients were still in active treatment by the end of 2013, and were included provided they had completed the RSE scale at least once. At baseline participants included 75 males and 44 females; ages ranged from 17-32 years with an average age of 24.1 years.

Theoretical population is the number of participants the researcher would like to have included in the study (Bordens & Abbott, 2002). For this study, that would be all 210 patients admitted to AUA from January 2011 to December 2012.

Both the intervention group and the control group participated in treatment as usual during the study period. 64 participants had answered the self-esteem scale twice. 10 participants had attended horse assisted therapy prior to the first RSE measurement, or had less than 2 sessions of horse assisted therapy. These were also excluded from this study.

## **Material**

All the patients admitted at AUA are offered horse assisted therapy as an integral part of treatment. This study has been looking into the impact of horse-assisted therapy in relation to changes in reported self-esteem. To do this, material has been gathered both for the patients who participated in the horse assisted therapy intervention and the patients who did not. The patients who did not, were the control group in this study. All the patients at AUA who is participating in the YATEP project is aimed to answer RSES twice. The first test (T1) is presented the first week of admittance and the second test (T2) is presented 10 weeks later. In some cases however, due to short periods of drop-outs from treatment the time interval could exceed the preset time. Decreased motivational drive for answering measurement tools for a while could also cause a delay in the self-reporting. The levels of reported self-esteem before the intervention of horse assisted therapy, and self-esteem reported after the introduction of horse assisted therapy is collected and analyzed.

In cases where the same patient has been admitted more than once, the first measurement from the first admittance has been included in this study. If the same patient has been re-admitted and has answered the measurement tool concerning self-esteem again, I have excluded this reporting from this study. In this way, the results in this study are based on individuals and not cases.

### **Gathering and extraction of data for this study**

Data for measuring self-esteem, gender and treatment outcome was collected through the YATEP database as the patients had registered their answers. The RSES is based on self-reporting, and the patients fill out the measurement tool on their own unless they need assistance due to reading difficulties or other special circumstances.

Since the measurements of self-esteem are based on self-reporting it was not possible to establish if any of the participants may have answered the RSES under the influence of drugs, but clinicians managing the iPads had considered the reporting to be meaningful at the time. When screening the data for inclusion criteria 5 responses that appeared to be not serious were removed. This would typically be answers where all the questions on the RSES were answered with 1.

The treatment outcome data extracted from YATEP was verified against DIPS, the electronic patient journal system and where there was an unexplained difference the DIPS data replaced the YATEP data. The dates for when patients attended horse assisted therapy were gathered from the time schedule at the stable at AUA. In these schedules, stable personnel continuously wrote down every session for every patient receiving horse assisted therapy.

### **Operationalization of Self-Esteem**

Self-esteem was measured in this project by using the Rosenberg (1965) Self-Esteem scale (RSES) (Appendix 7). RSES is considered to be a reliable and valid measuring tool for self-esteem, and is translated into several languages (Denissen, Penke, Schmitt, & van Aken, 2008; Schmitt & Allik, 2005). Using longitudinal data, Robins, Hendin, et al. (2001) estimated the overall reliability of the RSES to be .88. This strong validity sustained for women and men, different ethnical groups, occupational status, and for individuals ranging in age from 21-61 years. There is also reasonable to assume that indifferent answers are possible to detect to a certain extent in RSES since the questions are divided into positive and negative terms.

Ten statements that reflect self-worth and self-acceptance are included in the self-report measure. A four-point likert type scale ranging from “strongly agree” to “strongly disagree” gives a total range of score from 10-40. Scores between 25 and 35 are within normal range, while scores below 25 suggest a low self-esteem.

The RSES has been used in several research projects in Norway. However the use have not been systematic. There has been used several different translations and the psychometric entities has been discussed. The Norwegian version used at AUA is the version made in the setting of WHO/EURO Multicenter Study on Parasuicide. This version is considered to hold a high degree of validity and reliability (Schmitt & Allik, 2005; Tilmann von Soest, 2005).

When calculating the scores on the RSES each item score should be interpreted from 1-4 in order to make it possible to analyze the outcome. When implementing the RSES in the YATEP database the computer programmers coded the scores from 0-3 by mistake. The YATEP manager recommended that this be adjusted in the results for this study by adding +1 to all the items in ©IBM SPSS Statistics (0 is 1, 1 is 2 and so on) so the results are comparable to the validated version. This has been done.

### **Operasjonalization of Treatment Outcome**

When a patient at AUA exits the treatment, the therapist in charge registers the discharge into one of four exit codes, namely treatment completed, referred to another treatment unit, dropped out of treatment, expelled from treatment. This is done both in the patient journal system and in YATEP database.

The exit codes have been validated by the system administrator who has been crosschecking the registered exit codes in YATEP with the patient journal system. For this study the different exit codes has been merged into two categories for treatment outcome: Positive (treatment completed/referred) or Negative (drop-out/expelled). Approximately 50% of all AUA patients drop out of treatment at least once. They can remain out for varying periods and then return. AUA has no specified period to determine what period of absence constitutes the end of a treatment period. In this study, the treatment period is defined as not being absent for more than 3 months.

### **Horse assisted therapy intervention at AUA**

Horse assisted therapy horse assisted therapy was a well integrated part of the treatment program for substance use disorder at AUA. It had an established horse assisted therapy program, based on the principle of Body dynamics, -movement as a facilitator for reaching the patients inner resources (Lysell, 2011). The program is conducted by professionally qualified physiotherapists and psychotherapists who were also Norwegian Level 1 Riding Instructors. The 5 horses (2 cold bloods & 3 warm bloods) are especially selected and found appropriate for this kind of work. They are owned by Oslo and Slemdal Lions Clubs, and live

on the hospital grounds. Since summer 2012, the horses had been kept outdoors in a large area with easy access to good shelter. Their daily care, exercise and training were undertaken by qualified staff working at the stables. The therapeutic program conducted consisted of 12 sessions, each lasting for 90 minutes. Sessions are thoroughly planned and are held by two qualified therapists who also have degrees as riding instructors Level 1. horse assisted therapy was administrated throughout the year with the exception of 4 weeks during summer. The program was directed structurally toward group sessions with a maximum of four participants at the time, but it could easily be adjusted to individual sessions when required.

Ground work is used for:	Mounted work is used for:
Contact/Boundaries Aggression Anxiety/trust Communication Connection/Mastering	Body awareness Balance/Centering Co-ordination Posture Rhythm/regulation Anxiety/Mastering

**Table 3:** *Horse assisted therapy intervention at AUA (Kern-Godal, 2014)*

The activities included observation of herd-dynamics, stable work, grooming, riding and driving. The first four lessons had knowledge of horses as a focus point on heard-behavior, basic handling and safety. After hours and during the weekends patients, under staff supervision, were responsible for feeding and watering the horses. On a weekly basis, an average of 20 sessions with horse assisted therapy was conducted. The horse assisted therapy therapists had access to the patients' clinical journals and could get in touch with primary clinician if necessary. A patient attending horse assisted therapy had to participate at the sessions. They were encouraged to participate as much as possible but patients could choose not to participate in certain activities. The therapists reported what the patient had achieved, to what level and the patient's response to the activity. In addition to the sessions, the patients were encouraged to write a reflective note after each session and rated how they felt.

## **Ethics**

This study is a part of a broader PhD project which has received all necessary ethics approvals from the Regional Committees for Medical Research Ethics (regional Etisk Komité (REK)) and the OUS Protection Officer. Agreement for the current study was sought and obtained by

AUA (as is the custom for each Master level study undertaken within the context of the broader horse assisted therapy project) See details in Appendix 8.

Information used in this study is unidentified and secured in the database at the OUS's secure servers. Personal patient identification was replaced by anonymous identification numbers. I have only had access to data files with identification numbers, and have not been able to identify the patients.

The patients who participated in this study, as with all YATEP research received both oral and written information about the YATEP project and were invited to sign a consent form to research participation. They were free to exclude themselves from the project at any given time, and assured that this would in no way interfere with their treatment opportunities at AUA. A written consent form is signed by all the participants in the study (Appendix 6).

### **Statistical analysis**

To test the hypothesis that self-esteem predict participation in horse assisted therapy, the baseline RSES for the patients that received treatment as usual and horse assisted therapy were compared to the patients that that only received treatment as usual (the control group). An independent sample t-test were used to see if the groups were statistically different on baseline RSES. To test the hypothesis that self-esteem predict outcome of substance use disorder treatment, the baseline RSES for the patients that received treatment as usual and horse assisted therapy were compared to the patients that that only received treatment as usual (the control group), using an independent sample t-test. To test hypothesis that horse assisted therapy does not affect self-esteem amongst young patients in treatment for substance use disorder, it was necessary to look at the change from the baseline RSES before horse assisted therapy (T1) to the RSES after horse assisted therapy participation (T2). Delta ( $\Delta$ ) variables were calculated subtracting RSES T1 from RSES T2 ( $T2 - T1 = \Delta$ ) for the patients that received treatment as usual and horse assisted therapy, and for the patients that that only received treatment as usual (the control group) using an equivalent time period from T1 to T2. The  $\Delta$  RSES for the horse assisted therapy intervention group and the control group were compared using an independent sample t-test. The level of statistical significance was set at  $P < 0.05$  (two-tailed). The statistical data program ©IBM SPSS Statistics for Windows version 21.0 were used to analyze the data and obtain the information presented in the tables.

### 3. Results

All the variables presented in this study represent information collected through YATEP and stored in the YATEP database, time schedules from the stables and the electronic patient journal system. Scores on the RSES scale are referred to as self-esteem in the results. In the tables and figure the abbreviation HAT is used for horse assisted therapy.

#### Self-esteem at baseline

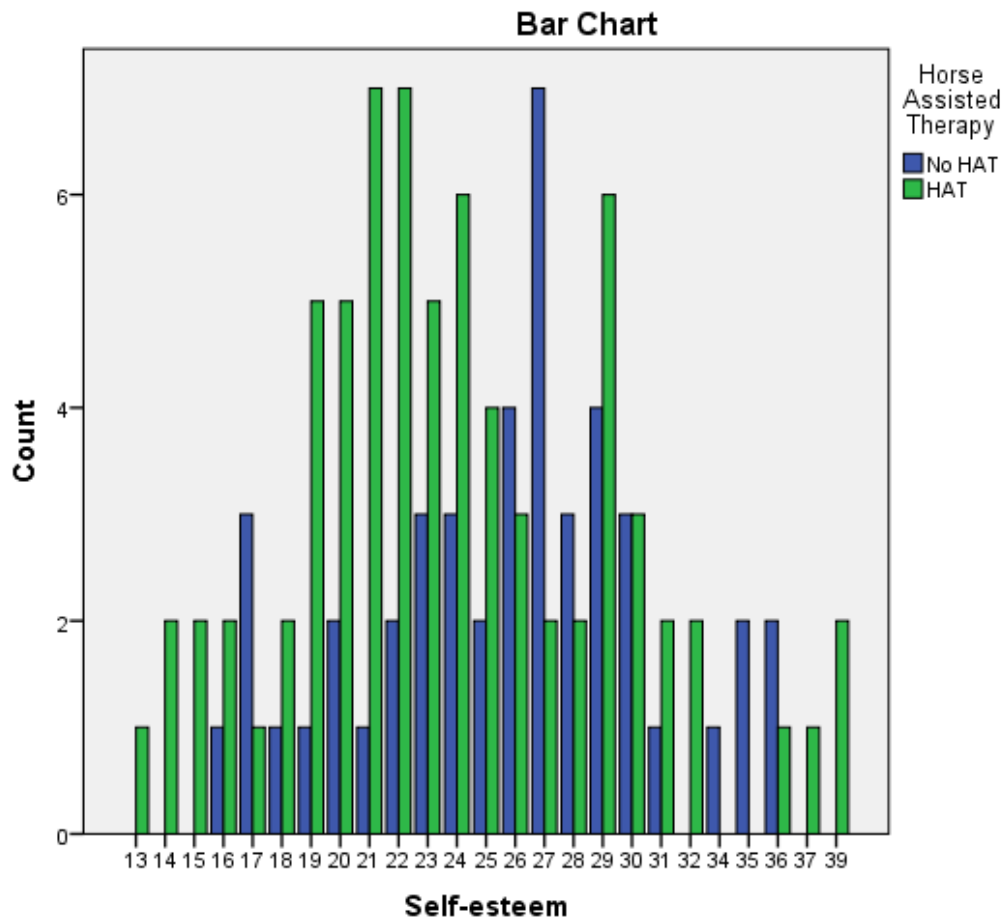
Table 1 shows the baseline of self-esteem amongst all participants (N=119) who were recorded in the YATEP database as having completed at least one RSES. The table shows the mean scores of self-esteem and standard deviations for the patients that only received treatment as usual (control group) and patients that received treatment as usual and horse assisted therapy (HAT intervention group). The baseline self-esteem was lower for the intervention group compared to the control group, but it did not reach the p-value set for statistical significance ( $t_{117}=1.85$ ,  $p=0.066$ ).

The baseline data for group by gender is also given in table 1. There was a significant difference in the baseline of self-esteem between male (Mean=25.76) and female (Mean=22.68) participants ( $t_{117}=3.02$ ,  $p=0.003$ ). In the female population, the baseline self-esteem was significantly lower for the intervention group compared to the control group ( $t_{42}=2.31$ ,  $p=0.026$ ). This was not the case for males.

Baseline RSES	N	Mean	SD
All participants	119	24.62	5.55
HAT intervention	75	23.91	5.65
Control group	44	25.84	5.23
Male			
HAT intervention	38	25.79	5.89
Control group	37	25.73	5.42
Female			
HAT intervention	37	21.97	4.72
Control group	7	26.43	4.39

**Table 4:** Baseline (T1) self-esteem.

The histogram in Figure 1 is showing the distribution of baseline score for self-esteem (x-axis) and the frequencies (y-axis). There is an approximately normal distribution of scores on reported self-esteem in the population.



**Figure 2:** *Frequencies of RSES for baseline self-esteem.*

### **Effect of horse assisted therapy on self-esteem**

Table 2 presents the mean of self-esteem at T1, T2 and the change ( $\Delta$ ) from T1 to T2 for the intervention group and the control group. A paired sample t-test was used to investigate changes from T1 to T2 for all the participants, for the horse assisted therapy (HAT) intervention group, and for the control group. There was minimal increase in both groups' average self-esteem but this was not significant for either group nor between the two groups..

The change in RSES (T2 – T1) was calculated into a Delta ( $\Delta$ ) variable for all the n=54 participants who had completed two scores of self-esteem during the time-period for this study. Group differences were analyzed using an independent sample t-test. No statistical significant difference between the horse assisted therapy intervention group and the control group on change in self-esteem were found. ( $p>0.05$ )



<b>RSES</b>	<b>T1</b>	<b>T2</b>	<b>ΔT2-T1</b>	<b>P-value</b>
	Mean (SD)	Mean(SD)	Mean(SD)	
All participants (N=54)	24.06 (5.79)	24.72 (5.99)		0.315
HAT intervention (N=34)	23.62 (6.35)	24.12 (7.00)	0.50(5.10)	0.571
Control group (N=20)	24.80 (4.75)	25.75 (3.65)	0.95(4.45)	0.352
Intervention / Control group T2-T1				0.745

**Table 5:** Means and standard deviations for T1, T2 and the change ( $\Delta$ ) from T1 to T2.

## Outcome

The table shows the mean and standard deviation of the self-esteem at T2 for the group with positive treatment outcome and the group with negative treatment outcome. The group differences were analyzed using an independent sample t-test. P-value represents the statistical significance for group difference. No significant differences were found except for the male group where those with a positive treatment outcome had significantly higher self-esteem than those with a negative treatment outcome ( $p < 0.05$ ). With the exception of the male sub-group, self-esteem does not predict treatment outcome.

<b>Outcome</b>	<b>RSES</b>			
	N	Mean	SD	P-value
<i>All participants</i>	54			0.117
Positive	34	25.71	5.89	
Negative	20	23.05	5.93	
<i>HAT intervention</i>				0.095
Positive	25	20.78	6.73	
Negative	9	25.33	7.01	
<i>Control group</i>				0.266
Positive	9	26.78	2.39	
Negative	11	24.91	4.37	
<i>Male</i>				0.045
Positive	21	27.71	4.95	
Negative	14	24.21	4.76	
<i>Female</i>				0.523
Positive	13	22.46	6.01	
Negative	6	20.33	7.90	

**Table 6:** Treatment outcome and average self-esteem between different groups.

## Summary of findings

<p><i>Hypothesis 1:</i> The level of self-esteem predicts participation in horse assisted therapy</p>	<ul style="list-style-type: none"> <li>• No significant difference in baseline self-esteem for HAT intervention group and control group</li> <li>• Female participants in HAT intervention group had significantly lower self-esteem than female participants in the control group. *</li> <li>• Female participants had significantly lower self-esteem than male participants.*</li> </ul>
<p><i>Hypothesis 2:</i> Horse assisted therapy does not change the self-esteem of young patients in treatment for a substance use disorder</p>	<ul style="list-style-type: none"> <li>• No significant change of self-esteem in the HAT intervention group or in the control group</li> <li>• No significant difference between the HAT intervention group and the control group in relation to changes in self-esteem.</li> </ul>
<p><i>Hypothesis 3:</i> The level of self-esteem does not predict treatment outcome of substance use disorder treatment.</p>	<ul style="list-style-type: none"> <li>• No significant differences in self-esteem between the intervention and control patient groups with a positive treatment outcome and negative treatment outcome.</li> <li>• Male participants with a positive treatment outcome had significantly higher self-esteem scores than males with a negative treatment outcome. *</li> </ul>

**Table 7:** Findings based on the statistical analysis

\*Significant:  $p < 0.05$

In summary, the present study set out to investigate if horse assisted therapy influences the self-esteem scores in youth undergoing treatment for substance use disorder at AUA, and whether reported self-esteem predicts treatment outcome. More specifically, the study aimed at testing three hypothesis, namely that: the level of self-esteem influences participation in horse assisted therapy; self-esteem amongst young patients with a substance use disorder in treatment is not affected by horse assisted therapy; the level of self-esteem has an effect on substance use disorder treatment outcome. I found no empirical evidence to support the common claim in horse literature that horse assisted therapy can result in improved self-esteem. According to the results I found there was no significant difference between the

intervention group who participated in treatment as usual plus horse assisted therapy and the control group that received treatment as usual. This was in accordance with my expectations prior to this study. Neither did I find that self-esteem was a predictor of treatment outcome, except for males with higher self-esteem scores

#### **4. Discussion**

In the following discussion I will attempt to relate my findings to the views and findings in relevant literature, giving where possible my thoughts on the reasons for the similarities and the differences.

##### **Level of self-esteem for young patients attending drug treatment**

The reported level of self-esteem in the young substance use disorder treatment population I studied was low by comparison with global and Nordic RSES score for normal populations. The participants in my study had an average score of self-esteem measured at baseline of 24.62. Schmitt and Allik's study (2005) collected 16.998 RSES measurements from 53 nations from around the world at the same time. They concluded that overall, positive self-esteem was a universal phenomenon. They found the global average self-esteem score to be 30.85 with a standard deviation at 4.82. Finland was the only Nordic country represented in their study. It had an average RSES of 31.76 and a standard deviation of 4.09. (Schmitt & Allik, 2005).

While Norway and Finland are comparable in many respects this is not necessarily the case when it comes to reported levels of self-esteem. There was however a Norwegian study in 2004 of self-esteem amongst Norwegian females aged 22-55 years which found an average self-esteem of 31.3 measured by RSES with a standard deviation of 4.6 (T. Von Soest, Kvalem, Roald, & Skolleborg, 2009). Furthermore, Schmitt and Allik (2005) found in their study that cultures with a high degree of gender equality (such as Norway) had higher general average RSES than cultures without gender equality. In both scenarios, they found that the males population reported higher self-esteem than the females (Schmitt & Allik, 2005). So, since it is common in normal populations to find higher self reported level of self-esteem in male populations than in females I think I can assume, that the general level of Norwegian self-esteem is at least 31.3 and close to the Finnish results..

The self-esteem level in my study was low by comparison with the normal population. In contrast, a female patient group in USA with diagnosed substance abuse disorder had a

remarkably similar average RSES of 24.9 with a standard deviation of 6 to what I found. (Dodge & Potocky, 2000) This supports my findings and contributes to the theory that patients undergoing treatment for substance use disorder have on average lower self reported self-esteem than the normal population, with greater variance within the patient group.

A possible explanation of why the patient group in my study reports a low level of self-esteem is their youth and early involvement with drugs leading to drug use dependency. Early age according to Erol and Orth (2011) is a very important stage in the development of self-esteem.

In relation to Leary's sociometer theory (Leary & Baumeister, 2000) this would mean that patients with low "trait" self-esteem would get increasingly stronger negative feedback on their self-esteem due to social exclusion, and other factors related to drugs and eventually influence the "state" self-esteem in a negative direction. This could explain the difference in self esteem scores between the patients in my study and the normal population. According to Erol and Orth (2011) the level of self-esteem changes during the years of adolescence and young adulthood. AUA patients are young, so given Erol and Orth's theory there would seem to be potential at AUA to undertake specific work aimed at improving self-esteem. I found amongst males that those with higher self esteem are more likely to have a successful treatment outcome. This is consistent with Corrigan's finding that low self-esteem is linked to reduced treatment efficacy (Corrigan, 2007) It therefore seems reasonable to assume that treatment programs aimed at substance use disorder would benefit from enhanced measures aimed at improving self-esteem and evaluating whether this improves treatment outcomes and reduces relapse rates as has been suggested by Richter (1991).

### **Self-esteem and participation in horse assisted therapy**

Although, the baseline self-esteem was lower amongst the participants in the intervention group than the control group, the difference was not significant. ( $p=0.066$ ). I did however find a significant lower self-esteem in the female intervention group compared to the female control group ( $p=0.026$ ). 37% of all the participants in my study were female. If the population had been equally distributed in relation to gender, one can imagine that the total population might also reach a level of significance.

I would expect that the patient group with the higher self-esteem would be more positive towards attending horse assisted therapy as part of their treatment. It was not an expected result in my study to find a trend leaning towards that the patient group with lower reported

self-esteem would be attending horse assisted therapy as part of their treatment, rather than the patient group with the higher reported self-esteem.

It can be speculated that the culture amongst patients within a treatment facility may play an important role in influencing the take up of specific therapeutic activities such as participation in horse assisted therapy. If patients with a high degree of popularity and charisma promote horse assisted therapy as a positive thing to attend, there is greater chance of others joining as well, creating a culture. From this line of thought it might be a connection with the emotionally based passive-avoidant coping style associated with having a low-self esteem (Dumont & Provost, 1999) and giving in for peer-pressure. Of course this is widely based on the presumption that there is a general culture in AUA for attending horse assisted therapy. When looking at the total number of patients attending horse assisted therapy (n=75) and the total numbers not attending horse assisted therapy (n=44) it seems like this might be the case within the timeframe for this study.

Another possible explanation for the lower reported self-esteem amongst the horse assisted therapy participants could be specific characteristics of the horse that appear positive in a non-threatening way to the patients with low self-esteem. It is assumed that horses have unique assets such as being in the presence, non-judgmental and responsive which engenders a calming effect (Fry, 2013; Hallberg, 2008). One can imagine that a patient group which struggles with handling stress (Dumont & Provost, 1999) would find it good to have a break from the expectations met during the admission at a treatment facility, or in tight programs involving group meetings, individual plans to work on and self-reports to fill out. This is also supported by the indications of another Master student (Brenna, 2013) who did a qualitative study based on the same patient group. The patients described the presence of the horses as being a general positive and motivating focal point in the treatment setting.

I have not been able to find any literature concerning self-esteem and motivation in relation to participation in horse assisting therapy. This finding however might indicate that horse assisted therapy is a good therapeutic intervention for reaching the patients who initially struggles with a very low self-esteem. This could be supported by the findings of McCormick and McCormick (1997) who made multiple observations of adolescents with different issues at their treatment facility and experienced that initially unresponsive, nonverbal adolescents became involved with staff and their peers after they had developed a relationship with a horse.

### **Horse assisted therapy as a facilitator for increased self-esteem**

I found no significant changes in the reported level of self-esteem between the first and second measurement in the intervention group or the control group. Although this is contrary to many claims in the horse literature well summarized by Hallberg (2008) and Lentini & Knox (2008) it was consistent with my original hypothesis that horse assisted therapy would not influence the level of self-esteem for young people in a drug dependency treatment program.

My negative hypothesis was based on the premise that the available material documenting the influence of horse assisted therapy on self-esteem (Fry, 2013; Hallberg, 2008; PATH, 2014) is weak and unsubstantiated. Even though the horse literature claims beneficial effect on self-esteem I found no empirical evidence supporting this claim. Furthermore, I was aware that Hauge (2013) had not found a change in self esteem in her study of Norwegian adolescents in her PhD which was primarily looking at self-efficacy in adolescents doing horse assisted activities. She did not find a correlation between working with horses and increased self-esteem.

Another reason underlying my negative hypothesis was that even though it is unclear if self esteem is a cause or outcome of academic failure, depression, social anxiety, violence, substance abuse and suicide, there is established that this patient group has a lower reported self-esteem in comparison with the normal population. Setting this finding in relation to what I know about self-esteem, it should be possible in a treatment setting, according to Campbell (1990), to influence the “trait” self-esteem (the more temporary feelings of self-regard that may vary over situations, roles, feedback, events, and with appraisals by others). It would be more difficult to change the “state” (global self-esteem) in a treatment setting since these are much more resistant to change (Epstein, 1994).

To expect horses to make the difference in a relatively short period of time seemed to me to be unrealistic.

Even given that the patient group attending horse assisted therapy had a somewhat lower reported self-esteem, especially the females, where one could have expected the room for improvement was greatest I did not find a significant increase. One would think that this would lay a good premise for improvement of self-esteem in this patient group. However this did not appear to be the case.

It is possible that the measuring tool used in this study proved to be too specific aimed towards self-esteem, and that the use of this tool compromised the chances for significant findings in relation of change. Due to the fact that self-esteem is considered to be fairly constant and takes a long time to change it is also possible that the results might have been more positive if the measurements had been taken further apart than ten weeks. It might be more interesting in the light of the searching for effects from horse assisted therapy to do a study of self-confidence that is traditionally more closely linked to feelings of mastery and well being (M Rosenberg, 1979).

Since the literature claims that horses can promote self-esteem and other positive changes (Fry, 2013; Hallberg, 2008; PATH, 2014) are of generally of low methodological standard it is difficult to explore reasons why such claims differ from my findings. Possibilities include different types of horse assisted therapy and activities, differences in other environmental and social conditions surrounding the therapy programs, different forms of measurement of self esteem, different definitions of illness, differences in the seriousness of the illness and different diagnoses.

Taking all the above into consideration it is important to undertake further research in to self-esteem and working with horses, including horse assisted therapy.

### **Self-esteem and treatment outcome**

I found no significant relationship between the reported level of self-esteem and treatment outcome ( $p=0.117$ ). The patient group with positive treatment outcome had 25.71 in average self-esteem, and the patient group with negative treatment outcome had an average self-esteem of 23.05.

It is possible that there would be found a closer relationship between self-esteem and positive treatment outcome if I had a bigger group or had investigated the gender differences in greater detail. The reason for this assumption is that the standard deviation is high for both groups, and the p-values close to indicating significance.

### **Post Hoc result discussion.**

I found a significant ( $p=0.003$ ) difference in the baseline measurement of self-esteem between male and female participants in this study when analyzing the result of my data collection. These findings are not taking horse assisted therapy into consideration. Males had an average

score on self-esteem of 25.76 and the female participants had an average score of 22.68. The male participants had also in this study a higher self esteem than the females. This corresponds with prior research that males have a higher self reported self-esteem than women (Kling, Hyde, Showers, & Buswell, 1999).

My most surprising finding when analyzing the outcome results was the obvious difference in self-esteem regarding positive or negative treatment outcome within the horse assisted therapy intervention group ( $n = 54$ ). The participants in this group with a positive treatment outcome had an average self-esteem score of 20.78. The participants with a negative treatment outcome ( $n=9$ ) had an average of 25.33. In comparison the control group with positive treatment outcomes ( $n=9$ ) had an average of 26.78 while the participants with negative treatment outcome ( $n=11$ ) had an average score of self-esteem of 24.91. The difference here were not significant ( $p=0.266$ ). Even though these numbers are small and not significant ( $p=0.095$ ), it could indicate that they simply reflect that horse assisted therapy is a useful intervention for retention in treatment and prevention of drop-outs. Against this background I speculate that maybe some of the items in Rosenberg self-esteem score could be more correlated to drop-out than others.

What I did find was that within the male subgroup, participants with a positive treatment outcome 27.71 had a significantly ( $p=0.045$ ) higher self-esteem than males with a negative treatment outcome 24.21. The underlying reasons are not clear but worthy of further study. They may indicate that there would be value in more rigorous assessment of self esteem at entrance to therapy followed by treatment which is aimed at strengthening self esteem throughout the therapeutic process.

### **Limitations**

There are several considerations to take into account when assessing the quality of the measurement tool used for self esteem. Factors including use of terms, factors involving the client and administration of the measurement tool can each lead to a systematic bias in the study. These biases can potentially implicate the credibility's of the findings (Bordens & Abbott, 2002). This study has had a pretest-posttest design with an intervention group and a control group. The measurement tool used twice for measuring self-esteem was the Rosenberg self-esteem scale, a validated and standardized Norwegian version (Tilman von Soest, 2005). Patients filled out the RSES on their own and this makes it difficult to be sure



whether they have done so without being influenced by drugs and if they have answered the measurement tool in a serious manner.

In evaluating responses on the RSES scale the following considerations must be taken into account. Firstly it might be a possibility that patients filling out the first measurement tool just after arrival at AUA were “in a happy place” or feeling relieved at entering a new treatment facility or “safe” place. This could lead to an overly positive response reflecting on the measurement tool, and in this way not reflect the actual level of perceived self-esteem at baseline. It is also possible to imagine that being a newcomer increases the incentive to please, and on the base of that give a higher score. Another possible scenario is that participants who have a high self-esteem find it easier to report self-esteem on a rating scale than the participants with low self-esteem. This would in that case lead to a higher mean score in the participating group compared with the whole patient population, and would hence weaken the validity. I consider this unlikely for this study since there are no indications that participants with a low self-esteem answer negatively formulated questions in a different way to persons with a high self-esteem. I assume in this study that the baseline for self-esteem collected is plausible, is lower than the normal population and corresponds with equivalent patient groups. Due to the fact that there are 10 weeks minimum between the two tests, the patients who drops out after a short time will be automatically excluded for the measurement of change of self-esteem. It is possible that the young patient group who has a greater chance for an early drop-out (Brorson et al., 2013) is a general difficult group do measurements over a long period of time.

As with any within-subjects designs, carryover effects may confound the effect of manipulation. Giving the participants the pretest may change the way they reflect about self-esteem by possibly drawing their attention towards their self-esteem, and providing practice on the RSES.

Although I checked the dates for the horse assisted therapy against the YATEP database to make sure the dates corresponded. These are two different schedules, and as the horse therapy data is recorded by hand by different stable-personnel in a hectic work day there could be a possible bias due to recording errors. I did not in this study examine issues such as seasonal differences and holidays. It is possible that patients attending horse assisted therapy in the summertime may have a more positive experience than those attending horse assisted therapy in the winter, or that the holidays often traditionally associated with emotionally harder times

for patients, would influence the effect of horse assisted therapy and treatment drop out. I have assumed in this thesis that overall intervention throughout the year will equalize out those differences that might or might not be present.

It would be useful to have more knowledge of the participants' prior experience with horses, and to determine within the horse assisted therapy group which types of patients respond and benefit from the therapy. It seems reasonable to assume that patients who have experienced horses in a positive way earlier in life would be more prone to attend horse assisted therapy as part of their treatment. There is also a possibility that some patients at least apply for treatment at AUA because of the horse assisted therapy program. In addition to past horse experience and interest, it seems important to study different levels of active participation with the horses amongst the participants. The level of involvement might influence the effect of horse assisted therapy.

The above are all issues which could usefully be explored with a larger population. The aim would be to look in more detail at the number of horse therapy sessions actually attended by the participants and whether factors such as weather, other competing activities, previous experience with horses, etc influence attendance with implications for self esteem. I did not examine these issues but note that such variables could possibly have influenced the results.

#### Reflexivity:

My whole life I have had a fascination and interest for horses. From experience both in my personal life with horses and as a Physiotherapist in settings with therapeutic riding I have experienced the positive influences of horses. I have seen many faces of joy lighting up in the stables and seen the pride when mastering new tasks. I assumed some of this pride and mastering would influence the self-esteem in a positive way in any patient group presented. During the literature search however it became more unclear what part self-esteem played in the field of addiction treatment and horse assisted therapy. In a field where there is little empiric evidence, it would be possible that my initial positive attitude towards horses might influence this study. I have tried to keep my own enthusiasm locked away, and looked at the results from this study with a critical eye.

#### **Implications for practice:**

Given the paucity of evidence, one needs to question whether horse assisted therapy should be used as a therapeutic means of increasing self-esteem. It is afterall, a costly form of therapy

which is provided to a usually vulnerable population group. However, I would suggest that more rigorous study is required before such a decision is taken.

It is possible that the protocol measuring self-esteem will meet some challenges in the future: Self-esteem is considered as a fairly constant state which takes time to change. So on one side it would be better to have measurements further apart, but on the other hand there are high rates of drop-out in treatment facilities for this patient group. A suggestion for future practice would be to have measurements on a more regular basis for self-esteem, during the whole treatment period.

In addition, information and training could be given to clinicians to make better use of the initial self esteem assessment. The aim would be to then incorporate methods to strengthen and raise patients' self esteem as an integral part of the therapeutic process, including with the horses.

It has been suggested that people actively interacting with animals during animal assisted therapy had a greater benefit from the therapy than those who passively participated (Kamioka et al., 2014). Inclusion of data on how patients actually interact with the horses during sessions could usefully be collected to provide greater insight and enable prediction of which patients might benefit more from horse assisted therapy in the future.

### **Implications for research**

There are no comparable horse studies to my study available at present. Replication and elaboration of this work would enable future research to better assess the effect of horse assisted therapy on self-esteem and on treatment outcome in a broader view.

While I found a lot of interesting literature while doing the review for this study, I were not able to get any conclusive evidence of the efficacy of horse assisted therapy. The terminology, methods and theories holds a great deal of variety. A need for standardized and controlled studies with a common language is desirable.

My findings indicate that gender differences in participation in horse assisted therapy, in self esteem at different points in the treatment process and in relation to treatment outcome are required, but preferably with a larger population.

Based on the findings in this study I could not see an increase in self-esteem for the horse assisted therapy intervention group or the control group, only in the male subgroup. The

results on which these numbers are based upon are fairly small, and the variances of reported scores are high. In this study I have only considered the sum score of the Rosenberg self-esteem score when analyzing the results. Investigation of how the different items on the RSES might vary as a response to horse assisted therapy intervention could be worthwhile.

As an implication after the post-hoc results where I found the lowest average score in self-esteem in the horse assisted therapy group with positive treatment outcome it would also be an interesting study to see if some of the items in Rosenberg self-esteem score would have a higher correlation with drop-out than others.

## **5. Conclusion**

The reason for doing this study was to examine a common claim in the horse literature that horse assisted therapy improved self-esteem, and to examine whether the level of self-esteem influenced treatment outcome for young adults undergoing treatment for substance use disorder at AUA. I searched relevant literature and collected patients' self-reporting on the Rosenberg self-esteem scale. The scores were analyzed in order to answer my hypotheses. I found that the patients had generally lower self-esteem than the normal population in Norway. I hypothesized that self-esteem would predict participation of horse assisted therapy. Even though the results are leaning toward a trend where it seems like the patients with the lowest reported self-esteem are the ones attending horse assisted therapy, the findings were not significant. Lack of empirical supporting evidence in other studies led me to hypothesized that horse assisted therapy would not have an effect on the reported level of self esteem amongst young patients undergoing treatment for substance use disorder. The negative outcome was confirmed with no significant findings relating this intervention to improvement of self-esteem. I also hypothesized that the level of self-esteem would not predict treatment outcome. I found that it did, but only for males.

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## Appendix 1: Literature search

Pubmed	
Horse assisted therapy OR Equine assisted therapy	275
Horse assisted psychotherapy OR Equine assisted psychotherapy	74
Horse assisted psychotherapy OR Equine assisted psychotherapy AND substance use disorder OR addiction	2
Horse assisted therapy OR Equine assisted therapy AND substance use disorder OR addiction	2
Horse assisted psychotherapy OR Equine assisted psychotherapy AND self-esteem	9
Horse assisted therapy OR Equine assisted therapy AND self-esteem	9
Substance use disorder OR addiction	42976
Self-esteem	85960
Self-esteem AND substance use disorder OR addiction	1028
Horse assisted therapy AND self-esteem AND addiction	0
Equine assisted therapy AND self-esteem AND substance use disorder	0
Horse assisted psychotherapy AND self-esteem AND addiction	0
Equine assisted psychotherapy AND self-esteem AND substance use disorder	0
Cochrane	
Horse assisted therapy OR Equine assisted therapy	2
Horse assisted psychotherapy OR Equine assisted psychotherapy	1
Horse assisted psychotherapy OR Equine assisted psychotherapy AND substance use disorder OR addiction	1
Horse assisted therapy OR Equine assisted therapy AND	2

substance use disorder OR addiction	
Horse assisted psychotherapy OR Equine assisted psychotherapy AND self-esteem	1
Horse assisted therapy OR Equine assisted therapy AND self-esteem	2
Substance use disorder OR addiction	87
Self-esteem	29
Self-esteem AND substance use disorder OR addiction	2
Horse assisted therapy AND self-esteem AND addiction	0
Equine assisted therapy AND self-esteem AND substance use disorder	0
Horse assisted psychotherapy AND self-esteem AND addiction	0
Equine assisted psychotherapy AND self-esteem AND substance use disorder	0
MEDLINE	
Horse assisted therapy OR Equine assisted therapy	63
Horse assisted psychotherapy OR Equine assisted psychotherapy	3
Horse assisted psychotherapy OR Equine assisted psychotherapy AND substance use disorder OR addiction	0
Horse assisted therapy OR Equine assisted therapy AND substance use disorder OR addiction	0
Horse assisted psychotherapy OR Equine assisted psychotherapy AND self-esteem	1
Horse assisted psychotherapy OR Equine assisted psychotherapy AND self-esteem	1
Substance use disorder OR addiction	81851
Self-esteem	41405
Self-esteem AND substance use disorder OR addiction	89
Horse assisted therapy AND self-esteem AND addiction	0
Equine assisted therapy AND self-esteem AND substance use disorder	0

Horse assisted psychotherapy AND self-esteem AND addiction	0
Equine assisted psychotherapy AND self-esteem AND substance use disorder	0

## Appendix 2: Leif Hallberg's classifications of EFMHS Methods

Table of EFMH/ES Methods

Method	Category	Facilitator Qualifications	EFM/ES Trainings/Memberships Recommended	Key Concepts
Equine Facilitated Psychotherapy (EFP)	EFMHS	Psychotherapist Counselor Psychologist Social Worker Other mental health professional w/ appropriate education/licensure training/ supervision	EFMHA Member Epona/ALA/Esperanza Three Eagles Ranch Trainings Prescott College -Masters Program Carroll College – Continuing Education Courses	Insight-Based Psychotherapy Reflective Feedback Psychodrama Holistic Approach Horse as Co-Facilitator or Facilitator
Equine Facilitated Counseling (EFC)	EFMHS	Psychotherapist Counselor Psychologist Social Worker Other mental health professional w/ appropriate education/licensure training/ supervision	EFMHA and EAGALA Member Esperanza Training Prescott College- Masters Program Carroll College – Continuing Education Courses	Present and Future Focused Counseling Life Skills Focused Health and Wellness Orientation Horse as Co-facilitator or Employee
Equine Assisted Experiential Therapy (EAET)	EFMHS	Psychotherapist Counselor Psychologist Social Worker Other mental health professional w/ appropriate education/licensure training/ supervision	EAGALA Member EAGALA Level Two or Three Certification Prescott College – Masters Program	Experiential Therapy Activities Based Challenge By Choice Group Oriented Horse as Tool or Employee
Equine Facilitated Brief Interventions (EFBI)	EFMHS	Psychotherapist Counselor Psychologist Social Worker Other mental health professional w/ appropriate education/licensure training/ supervision	EFMHA and EAGALA Member Epona/ALA/Esperanza EAGALA Three Eagles Ranch Trainings Prescott College- Masters Program Carroll College – Continuing Education Courses	Brief Psychotherapy Collaborative Services Integrative Approach

**Table of EFMH/ES Methods**

<b>Method</b>	<b>Category</b>	<b>Facilitator Qualifications</b>	<b>EFMH/ES Trainings/Membership, Recommended</b>	<b>Key Concepts</b>
Equine Facilitated Learning (EFL)	EFL	Masters Degree in Education Experiential Educator Special Education Teacher Counselor or other Mental Health Professional w/Additional Training/Experience in Experiential Education	EFMHA Member Horse Power Training Program AIA Training Program Carroll College – Human/Animal Bonding Program Prescott College – Experiential Education Program	Serves Special Needs Populations Life Skills, Social Skills, and Communication Skills Based Work Ethic Training Experiential Learning
Equine Facilitated Professional Coaching (EFPC)	EFL	Masters Degree in any of the following: Counseling/Psychology Social Work Human Development Organizational Management Business Management Training and Certification from the IAC or other nationally-recognized coaching organizations.	Equine Guided Education Association (EGEA) Member Leadership Outfitters Training Rolling Horse Ranch Training	Professional Coaching Services Leadership Development Personal Development Team Development
Equine Assisted Experiential Education (EAE)	EFL	Masters Degree in Education Counselor or other Mental Health Professional w/Additional Training/Experience in Experiential Education. Teacher or College Professor w/Additional Training/Experience in Experiential Education	EAGALA, EFMHA, and EGEA Member Prescott College- Experiential Education Program Prescott College – Centaur Leadership Courses Carroll College – Continuing Education Courses AIA Training Program	Experiential Education Serving Fully Functional School, College, and University Populations Teamwork and Cohesion Building Facilitation Skills Training Leadership Skills Training Therapeutic Skills Training

## **Appendix 3: The EAGALA model**

### **THE EAGALA MODEL**

The EAGALA Model provides a standard and structure for providing Equine Assisted Psychotherapy and Equine Assisted Learning sessions. Practicing within a model establishes a foundation of key values and beliefs, and provides a basis of good practice and professionalism. The EAGALA Model provides a framework of practice, but within that framework, there are infinite opportunities for creativity and adaptability to various therapeutic and facilitating styles.

#### **The EAGALA Model**

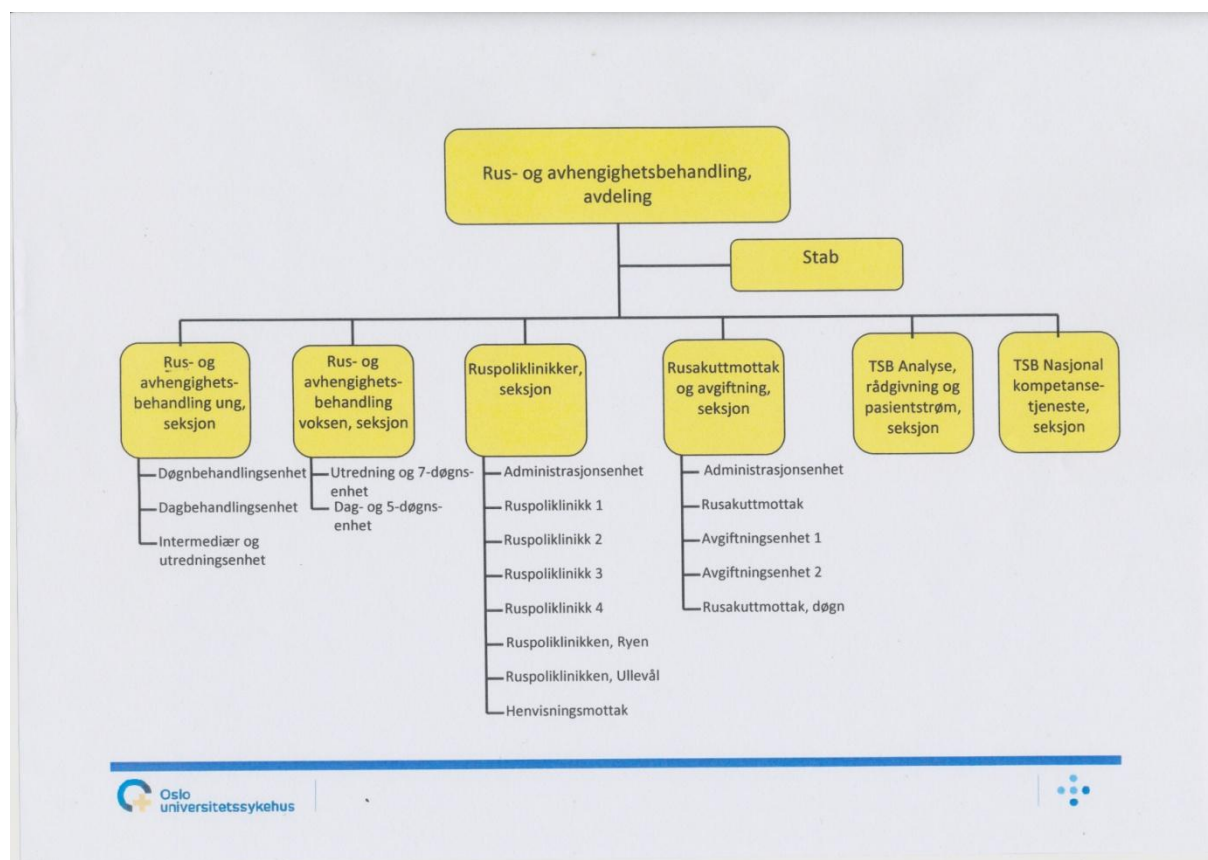
- The Team Approach – An Equine Specialist, a Mental Health professional, and horses work together with clients in all EAGALA sessions.
- Focus on the ground – No horseback riding is involved. Instead, effective and deliberate techniques are utilized where the horses are metaphors in specific ground-based experiences.
- Solution-Oriented – The basis of the EAGALA Model is a belief that all clients have the best solutions for themselves when given the opportunity to discover them. Rather than instructing or directing solutions, we allow our clients to experiment, problem-solve, take risks, employ creativity, and find their own solutions that work best for them.
- Code of Ethics - EAGALA has high standards of practice and ethics and an ethics committee and protocol for upholding these standards, ensuring best practices and the highest level of care.

#### **The EAGALA Team**

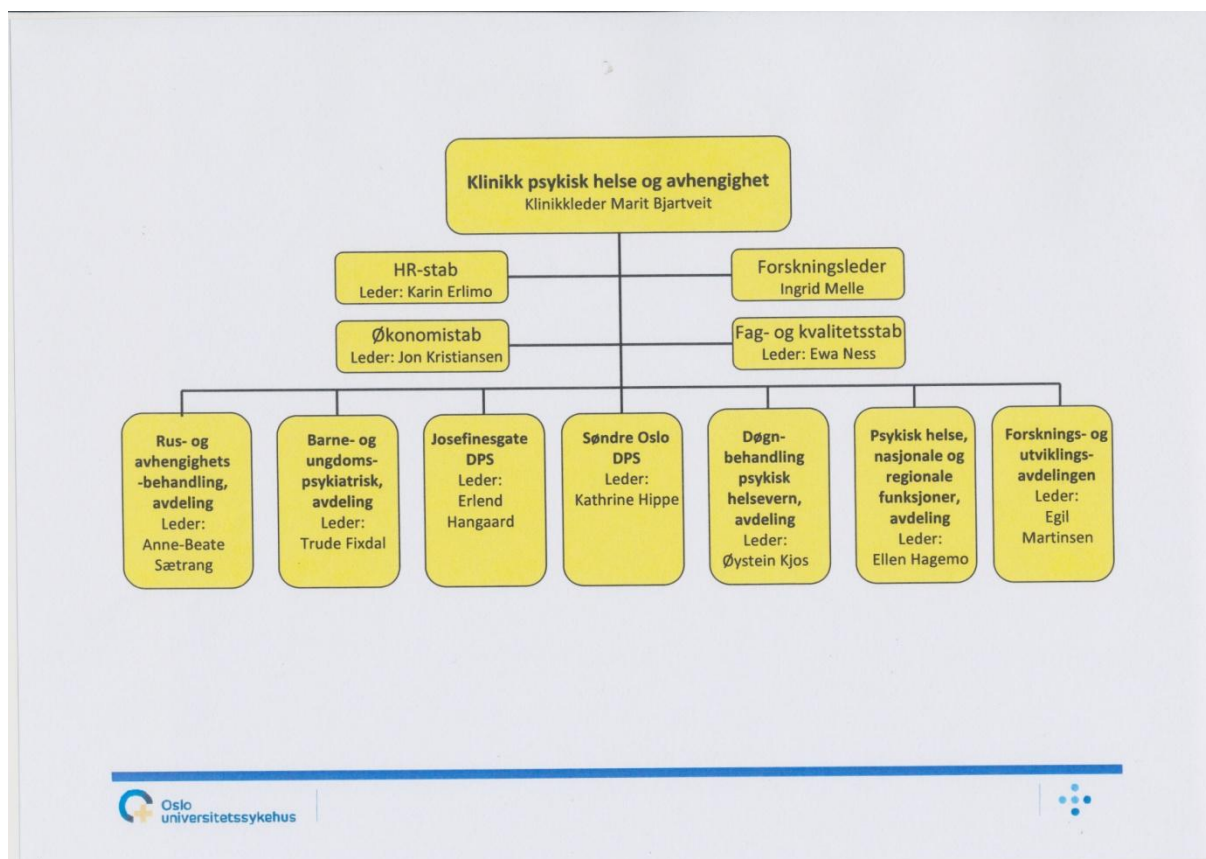
- **The Horse:** Horses have many characteristics which lend them to being effective agents of change, including honesty, awareness, and ability with nonverbal communication. The role of the horses in an EAGALA session is to be themselves.
- **The Equine Specialist (ES):** The ES chooses the horses to be used in sessions, works with the MH to structure sessions, keeps an equine log to document horse behaviors in sessions, stays aware of safety and welfare of clients, horses, and team, and makes observations of horse SPUD's (an EAGALA-developed observation framework taught in the certification training program) which can bring in potential metaphors.
- **The Mental Health Professional (MH):** The MH is responsible for treatment planning, documentation of clients, and ensuring ethical practice. The MH builds on the ES's horse observations, bringing in the metaphoric and therapeutic/learning relevance of the session.



## Appendix 4: Organization chart Rus- og avhengighetsbehandling



## Appendix 5: Organization chart Klinikk psykisk helse og avhengighet



## FORESPØRSEL OM DELTAGELSE I FORSKNINGSREGISTERET

### ”The Youth Addiction Treatment Evaluation Project”

#### Bakgrunn og hensikt

Dette er et spørsmål til deg om du godtar at opplysninger du gir gjennom spørreskjema og intervjuer blir registrert og brukt til forskning. Formålet med forskningen er å måle effekt og nytte av behandlingen som gis ved avdelingen. Vi ønsker å kunne trekke lærdom av den behandling du og andre pasienter har fått, for på den måten å kunne forbedre behandlingstilbudet i fremtiden. I tillegg ønsker vi å undersøke bakgrunnen for utvikling av avhengighet, om det kan være en sammenheng med andre lidelser og hvordan utviklingen er etter behandling hos oss. Ansvarlig for registeret er Avdeling Avhengighetsbehandling Unge ved Oslo Universitetssykehus HF.

Hva innebærer det å delta?

Hvis du sier ja til å delta, innebærer det at du blir stilt noen flere spørsmål enn det som er vanlig i behandlingen, for eksempel om du har vært straffedømt tidligere. Hvis du vil vite hva de ekstra spørsmålene er, kan du spørre personalet på avdelingen. I tillegg ber vi om lov til å kontakte deg en tid etter utskrivning for å undersøke hvordan det har gått med deg etter at behandlingen er ferdig som planlagt, eller etter behandlingsavbrudd. Deltagelse innebærer også at vi vil bruke relevante opplysninger fra din journal ved sykehuset, og evt. dødsårsaksregisteret. Informasjonen om deg vil bli brukt i flere delstudier ved sykehuset. Delstudiene vil ha som mål å forbedre forståelsen og behandlingen av avhengighet.

#### Mulige fordeler og ulemper

Erfaringer fra studien vil kunne hjelpe andre med samme type problemer som deg selv. Utfylling av spørreskjema og intervjuer tar noe lenger tid enn vanlige undersøkelser. Dette kan oppleves som en ulempe. Du vil imidlertid få tilbakemeldinger fra undersøkelsene, noe som kan oppleves meningsfullt i forhold til din behandling.

#### Sikkerhet: Hva skjer med informasjonen om deg?

Alle opplysninger du gir fra deg vil bli registrert uten navn, fødselsnummer eller andre direkte gjenkjenner opplysninger og lagret i et forskningsregister. En kode knytter deg til dine opplysninger gjennom en navneliste. Det er kun autorisert personell knyttet til forskningsregisteret som har adgang til navnelisten og kan finne tilbake til deg. Hvis du sier ja til å delta har du rett til å få innsyn i hvilke opplysninger som er registrert om deg, til å få korrigert eventuelle feil i disse opplysningene og til å kreve at opplysningene slettes.

I noen delstudier kan det være nødvendig at kopier av dine opplysninger behandles av forskere ved andre sykehus. Dette vil kun gjelde aidentifiserte opplysninger. Dersom du ønsker å vite mer om hvilke delstudier opplysningene dine blir brukt i og hvor de oppbevares, kan du når som helst henvende deg til avdelingen. Alle opplysninger vil slettes senest i 2030.

#### Frivillig deltakelse

Det er frivillig å delta. Dersom du ikke ønsker å delta i forskningsregisteret, vil du uansett motta behandling som vanlig. Du kan når som helst og uten å oppgi noen grunn, trekke ditt samtykke til å avgi opplysninger til registeret. Det får heller ingen konsekvenser for behandlingen du får ved sykehuset om du trekker deg. Dersom du sier ja, undertegner du samtykkeerklæringen på neste side. Dersom du senere ønsker å trekke deg eller har spørsmål til registeret, kan du kontakte avdelingsleder Espen Arnevik på telefon 22029302.

## Samtykke til deltakelse i forskningsregisteret

”The Youth Addiction Treatment Evaluation Project”

Jeg er villig til å delta i forskningsregisteret

-----  
(Navn med blokkbokstaver)  
(dag/mnd/år)

-----  
Fødselsdato

-----  
(Signert av prosjektdeltaker)

-----  
Dagens dato

Jeg bekrefter å ha gitt informasjon om forskningsregisteret

-----  
(Signert, rolle i prosjektet, dato)

## Appendix 7: Rosenberg self-esteem scale

Rosenberg Selvfølelsesskala består av følgende 10 ledd. Utsagnene skal besvares med svarene Helt enig, delvis enig, delvis uenig og helt uenig.

1. Jeg er stort sett fornøyd med meg selv.
2. Noen ganger synes jeg at jeg ikke er god for noen ting. (*negativ - skåre snus*)
3. Jeg synes at jeg har flere gode kvaliteter.
4. Jeg er i stand til å gjøre ting like godt som folk flest.
5. Jeg føler at jeg ikke har mye å være stolt av. (*negativ - skåre snus*)
6. Til tider føler jeg meg ubrukelig. (*negativ - skåre snus*)
7. Jeg føler at jeg er en verdifull person, i det minste på samme nivå som andre.
8. Jeg skulle ønske at jeg hadde mer respekt for meg selv. (*negativ - skåre snus*)
9. Alt i alt er jeg tilbøyelig til å føle meg mislykket. (*negativ - skåre snus*)
10. Jeg har en positiv innstilling til meg selv.

## Appendix 8: REK Approval



<b>Region:</b>	<b>Saksbehandler:</b>	<b>Telefon:</b>	<b>Vår dato:</b>	<b>Vår referanse:</b>
REK sør-øst	Gjoril Bergva	22845529	14.05.2013	2011/1642/REK sør-øst D
			<b>Deres dato:</b>	<b>Deres referanse:</b>
			23.04.2013	

Vår referanse må oppgis ved alle henvendelser

Til: Espen Arnevik

### 2011/1642 Hesteassistert terapi for unge rusavhengige (HAT)

**Forskningsansvarlig:** Oslo Universitetssykehus

**Prosjektleder:** Espen Arnevik

Vi viser til søknad om prosjektendring datert 23.04.2013 for ovennevnte forskningsprosjekt. Søknaden er behandlet av leder for REK sør-øst på fullmakt, med hjemmel i helseforskningsloven § 11.

#### Prosjektendringen innebærer:

Det skal knyttes to nye masterstudenter til prosjektet. Disse skal undersøke skjema som allerede er innsamlet.

#### Komiteens vurdering

Komiteen tolker det slik at masterstudentene skal benytte data som allerede er samlet inn. Endringen innebærer ingen ny kontakt med deltagerne. Under denne forutsetning godkjenner REK prosjektendringen.

#### Vedtak

REK godkjenner prosjektet slik det nå foreligger, jfr. helseforskningsloven § 11, annet ledd.

Tillatelsen er gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknaden, endringssøknad, oppdatert protokoll og de bestemmelser som følger av helseforskningsloven med forskrifter.

REKs vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jfr. helseforskningsloven § 10, 3 ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst. Klagefristen er tre uker fra mottak av dette brevet, jfr. forvaltningsloven § 29.

Vi ber om at alle henvendelser sendes inn med korrekt skjema via vår saksportal:

<http://helseforskning.etikkom.no>. Dersom det ikke finnes passende skjema kan henvendelsen rettes på e-post til: [post@helseforskning.etikkom.no](mailto:post@helseforskning.etikkom.no).

Vennligst oppgi vårt referansenummer i korrespondansen.

Med vennlig hilsen

Stein A. Evensen  
Professor dr.med.  
Leder

**Besøksadresse:**  
Gullhaugveien 1-3, 0484 Oslo

**Telefon:** 22845511  
**E-post:** [post@helseforskning.etikkom.no](mailto:post@helseforskning.etikkom.no)  
**Web:** <http://helseforskning.etikkom.no/>

All post og e-post som inngår i saksbehandlingen, bes adressert til REK sør-øst og ikke til enkelte personer

Kindly address all mail and e-mails to the Regional Ethics Committee, REK sør-øst, not to individual staff

## **Appendix 9: Tables and figure**

Table 1: Literature search

Table 2: Research flow on YATEP

Table 3: Horse assisted therapy intervention at AUA

Table 4: Baseline (T1) self-esteem

Table 5: Means and standard deviations for T1, T2 and the change from T1 to T2.

Table 6: Treatment outcome and average self-esteem between different groups.

Table 7: Findings based on the statistical analysis

Figure 1: Exclusion of participants for this study

Figure 2: Frequencies of RSES for baseline self-esteem.