

# Animals, Horseback Riding, and Implications for Rehabilitation Therapy

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Domestication of animals began over 12,000 years ago and continues today. Animals and humans have been developing special relationships for centuries. Despite descriptive and anecdotal reports, research focused on the use of animals as therapeutic interventions and the unique relationship that often exist between animals and humans has been sparse and frequently not based on rigorous methodology. The following article reviews interventions and outcomes of animals commonly considered companions or pets and horses. Issues and implications for rehabilitation professionals in regards to their awareness and use of these less than traditional forms of interventions are explored.

Historically, animals have played an important role in peoples' lives. Domestication of animals began over 12,000 years ago and continues today (Jorgenson, 1997). Approximately 53 million (56%) households in the United States (U.S.) in 1994 had a companion animal and more than half of these 53 million households had more than one animal (Albert & Bulcroft, 1988; Beck & Myers, 1996; Sabie, 1995). U.S. households own more dogs than any other pet, but the number of dogs and cats has been found to be declining, with ownership of birds, small animals, reptiles, and freshwater fish increasing. Two percent of U.S. households owns an average of 2.54 horses. People living in households with pets tend to be younger than the general population and people living in households with children more commonly have dogs, cats, or other small mammals (Beck & Myers, 1996). Gammonley and Yates (1991) reported that most Americans will own a pet during their lifetimes and that animals serve not only as pets but also as working companions for persons with disabilities.

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The earliest recorded use of animals in health care was by Florence Nightingale in 1860. Nightingale (1969) observed that "a small pet is often an excellent companion for the sick, for long chronic cases especially" (p. 103). She suggested that a person confined for years to the same room might enjoy and find pleasure in the presence of a caged bird. York Retreat in England, in the late 18<sup>th</sup> century, was the setting for the first recorded therapeutic use of animals. York Retreat incorporated small animals in its treatment of individuals with psychiatric problems. This intervention occurred in an attempt to decrease the use of drugs and restraints (Netting, Wilson, & New, 1987; Willis, 1997). The first extensive use of animals in a therapeutic setting in the United States occurred from 1944 to 1945 in Pawling, New York. Patients, recovering at the Army Air Corps Convalescent Hospital, were encouraged to work at the hospital farm. Since then animals have been used in many therapeutic interventions (Jorgenson, 1997).

Funding for studies that involve animals has been elusive. Lack of funds and mostly descriptive studies with small samples have contributed to a lack of generalizability of findings. It is often difficult to convince human service professionals of the value of using animals as a therapeutic modality; their use has frequently been met with skepticism and reluctance. This article will review the use of animals in the therapy of persons with disabilities and the implications and issues that arise for rehabilitation professionals.

## Review of Literature

The vast amount of material published about Animal-Assisted Therapy (AAT) has focused on animals that are commonly pets and are easily transported to facilities and persons desiring this therapy. Scarce research was found on therapeutic horseback riding or hippotherapy and its effects on persons with disabilities. This review of literature focused on the most common types of interventions used to influence some of the effects of disability and poor health. Outcomes for these alternative therapeutic modalities have also been presented. The review is divided into two major sections. The first section focused on interventions and outcomes with animals other than horses and the second

section focused on interventions and outcomes of therapy with horses.

#### Interventions Using Animals

Animals as an intervention have been utilized on many levels from pediatrics to geriatrics, acute-care facilities to outpatient rehabilitation/community care, and from prevention to healing. Intervention is based upon the idea that the human-animal bond can be utilized as an integrated holistic approach to the care and rehabilitation of individuals and their families with chronic illnesses and disabilities. Interventions using animals are divided into four categories: Pet Visitation, Animal-Assisted Therapy, Hippotherapy, and Therapeutic Horseback Riding. Each of these interventions and its reported outcomes is described in this section.

#### Pet Visitation

The simplest form of pet-assisted therapy has been *pet visitation*, focused on fostering rapport and initiating communication. Barba (1995) and Savishinsky (1992) suggested that animals have a range of positive effects. These effects included: (a) fostering socialization, (b) increasing a withdrawn person's responsiveness and animation, (c) giving pleasure, (d) enhancing morale, (e) fulfilling needs to nurture and be nurtured, (f) enhancing the treatment setting, (g) reducing dependence on psychotropic medications, and (h) helping to keep individuals in touch with reality by providing forms of sensory stimulation. In this type of intervention, the animal initiated contact and the individual determined the direction of the visit. Frequently, social interaction increased because the pet became a topic of conversation. Zisselman, Rovner, Shmueli, and Ferrie (1996) reported that no accepted standards for administering pet therapy existed. Recently, Hines and Fredrickson (1998) reported that the Delta Society has developed standards of practice that define the role of animals in therapeutic programs. These standards provided differentiation between programs that incorporate animals for entertainment or generalized benefits, animals-assisted activities, and animal activities that are used to cause a prescribed effect on specific individuals. Standards of practice also identified areas of concern such as: (a) animal selection and husbandry, (b) credentials and training of professional and voluntary personnel, specific requirements for protocols and processes operation, and (c) specific directions for recording data that may affect future programs (Hines & Fredrickson, 1998).

#### Animal-Assisted Therapy

Pet visitation led to Animal-Assisted Therapy (AAT), a goal directed intervention in which an animal meeting specific criteria becomes an integral part of the treatment process or treatment team. More recently, specific guidelines have been developed primarily by hospitals for Animal-Assisted Therapy (Huntington Memorial Hospital, 1992; ICP's, 1994; Proulx, 1998). AAT, delivered or directed by a human service professional in groups or individually, is designed to promote improvement in physical, social, emotional, and cognitive functioning. Carmack and Fila (1989) believed that AAT benefits not only clients but service providers by reducing stress and burnout.

#### Animal Therapy Outcomes

Literature on outcomes of human-animal bonding was found to be essentially anecdotal and focused on pets, companion animals, or both (Cole & Gawlinski, 1995; Duncan, 1995; Harris, Rinehart, & Gerstmann 1993; Johannes, 1996; Rosenkoetter, 1991; Shojai, 1996; Wolcott, 1993). Because the relationship between humans and animals is complex, different terms have been used to describe the therapy. McCulloch (1984) described animal/pet therapy as the use of an animal that is introduced into the immediate surroundings of an individual or group as a medium of interaction with a therapeutic purpose. Therapy utilizing animals has been based on the concept that human interactions with animals can result in both physiological changes and psychological benefits (Hines & Bustad, 1986).

Animal/Pet-Assisted Therapy has been placed in three categories: (a) provision of pets as companions for people living independently in their own homes or in assisted living facilities; (b) provision of resident pets that may be either simulators or companions for residents of institutions, staff, or both; and (c) provision of visiting animals to stimulate residents' interests and conversations in institutions (Draper, Gerber, & Layng, 1990; Hines & Fredrickson, 1998; Willis, 1997). Animals introduced into an individual's environment humanizes the provision of health and rehabilitation services. This *high touch* intervention can be contrasted with the *high tech* world currently found in health care and rehabilitation. Balancing the necessarily high tech environment with touching that encourages nurturing can change a person's locus of control from external to internal (ANA, 1980; Willis 1997). Francis (1991), Willis (1997), and Garrity and Stallones (1998) reported that people find that they care more about their health and well-being and want to participate in decisions concerning their health and rehabilitation if they know an animal is dependent upon them for love and care. They concluded that introduction of an animal to care for and to nurture can change a person's locus of control from external to internal.

#### Health Outcomes

Human health is more than the mere absence of disease. The sum total of many and varied factors contributes to *quality of life*. Friedmann, Katcher, Lynch, and Thomas (1980) suggested that links existed between companionship with animals and improved cardiovascular health and increased social interaction. This link was explored by examining the effect of social isolation and support on survival rates of persons hospitalized in a coronary care unit diagnosed with myocardial infarction or angina pectoris. It was hypothesized that the absence of companions interfered with the person's ability to maintain healthy behaviors and normal activity levels. Striking survival rates examined one year after hospitalization demonstrated that 28% of non-pet owners died whereas only 6% of pet owners died. Researchers concluded that the unambivalent nature of the exchange of affection and companionship between animals and humans differs from interaction with family and other human beings.

The petting of one's own dog with whom a bond had been established has been reported to achieve even greater effect over time than simply petting a dog. Garrity, Stallones, Marx, and Johnson (1989) reported that in individuals age 65 or older an inverse relationship existed between pet ownership and depres-

sion. The level of attachment to pet animals was inversely proportional to these participants' depression as measured on a standard symptomatic scale. Keil (1998), in a study (N= 275) designed to explore the role of the human animal bond in quality of life in older adults, reported that as loneliness and stress increased, attachment increased. Visual interaction, dog ownership, stress, and the animal's appeal to the study's participants explained 31% of the variance of human-animal attachment. Serpell (1990), in a study to determine the effect of dog or cat ownership on human health and well-being, reported a significant reduction in minor health problems during the first month after acquiring a pet and significant improvements in psychological well-being during the first six months of pet ownership. Effects were maintained in dog owners over the 10-month study period. Dog owners showed improvement in self-esteem and were less afraid that they would become victims of crime. Seigel (1990) reported that elderly pet owners demonstrated less psychological distress and fewer visits to physicians over a one-year period than respondents who did not own pets. Fifty-eight percent of this sample did not live alone; thus, pets were not their only relationship.

Baun, Oetting, and Bergstrom (1991) defined the term human-companion animal bond as an attachment that can be affectionate and friendly, involving an interaction between a human and an animal. Companion animals can decrease loneliness, can provide a focus for caring feelings, and be an outlet for keeping busy, and can fulfill the need for touching and fondling. Increased feelings of security and a stimulus for exercise have also been reported as associated with companion animals (Harris, Rinehart, & Gerstman, 1993; Willis, 1997).

Edney (1995) presented an overview of animal and human health. This overview included the physiological effect of the presence of friendly dogs on lowering of blood pressure of individuals experiencing moderate stress. Also reported were: (a) the relaxant effect on hypertension; (b) the anxiety-relieving effect of watching ornamental fish in the elderly; and (c) the positive effects of the introduction of cats, dogs, and rabbits on residents in a nursing home. It was noted in this overview that unsuitable animals introduced carelessly have been known to have undesirable effects. Duncan (1998) reported that this issue is limited not only to an animal being considered unsuitable but also to a person being considered inappropriate. The person utilizing the service of an animal on a continuous basis must be able to provide stewardship of the animal, receive adequate training, and have family and community acceptance of the partnership. Of equal importance is that the animal must meet the person's needs. An unhealthy, poorly behaved, stressed animal, or an animal inappropriate for the task (e.g. a dog too small to assist a visual impaired person) can be hazardous both physically and psychologically to the individual (Duncan, 1998).

#### Social Development Outcomes

Research in the 1980's has documented that pets foster sociability, animate the withdrawn, enhance morale, fulfill needs to nurture and be nurtured, reduce reliance on psychotropic medication, and provide significant forms of sensory stimulation (Arkow, 1984; Anderson, Hart, & Hart, 1984; Beck & Katcher, 1984). Triebenbacher (1998) reported that children's attachment to a

companion animal is positively related to their sense of self-esteem. It has been reported that early cruelty to animals is a reliable indicator of child abuse and other criminal behavior later in life (Arkow, 1992; Hutton, 1985; Kellert & Felthous, 1985). Ascione (1992) and Edney (1995) have both hypothesized that encouraging nurturing traits by the supervised introduction of companion animals may have the effect of reducing the levels of crime and other antisocial behavior exhibited by young people. Based on these types of hypotheses, prisons have begun to utilize animal programs, primarily birds and fish, in the rehabilitation of inmates. Edney (1992) reported a reduction in violence and other antisocial behaviors, that included suicides and drug use when animals were a part of the life of inmates.

Edney's overview (1995) reported that children who have been raised in an environment that has animals have better non-verbal communication, are more popular, and have increased social competency. Additionally, these children have been reported to show higher levels of self-esteem. Children and adults in a household with animals have increased physical activity, especially if that animal is a dog. The soft fur of most animals appeals to the basic requirement for comforting textures, and, thus has benefited children. A child frequently has learned much about life by observing a situation in which an animal is disciplined for a behavior but remained loved. Edney (1995) concluded that it is not too far-fetched to conceive that it might be possible to reduce antisocial behavior and crime by encouraging nurturing of animals by the careful introduction of companion animals for troubled youth. Work with bottle-nosed dolphins and porpoises has demonstrated increased responsiveness in autistic children (Nathanson & de Faria, 1993). Nathanson and de Faria (1993) reported that dolphins served both as a stimulus and reinforcement and they were two to ten times more effective at increasing attention and language skills among children with mental disabilities than the more traditional stimuli and reinforcements used in most land-based classrooms.

Friedmann, Katcher, Lynch, and Thomas (1980) reported that companion animals/pets are an available source and focus of attention. Pets as a source of comfort can be scheduled at any time and in any amounts, without bargaining, and this contact comfort may significantly lower heart rate and blood pressure (Friedmann et al., 1980). Ryncarson (1978), McCullough (1984), Gerrwolls (1990), and Sable (1991) all reported that pets increase feelings of happiness, security, self-worth, and reduce feelings of loneliness and isolation on a daily basis and during separations or transitions such as spousal bereavement.

Descriptive studies have continued to report that animals provide affection and a sense of being needed. These descriptive studies reported that people who have a positive view of animals obtain physiological and psychological benefits. When these interactions happen repeatedly, they can have a significant effect on quality of life and on the moderating of stressful events (Friedmann, 1990; Jorgenson, 1997). Human service professionals need to be informed, open, and willing to discuss the role pets play in people's lives and to examine the potentially therapeutic use of animals as companions and as an alternative to traditional methods of therapy. One such alternative method is horseback riding.

### Therapeutic Horseback Riding

There has been a growing interest in therapeutic riding and a corresponding increase in the number of therapeutic riding programs since the 1950's. It has been reported that early Greeks gave horseback rides to raise the spirits of persons who were incurably ill (Brudvig, 1988; Hines & Bustad, 1986). Literature from the 17<sup>th</sup> century contained references to horseback riding being prescribed for gout and neurological disorders and for low morale (Willis, 1997). Therapeutic riding in the most literal sense has existed for many years. Liz Hartel of Denmark brought recognition to the possibilities of horseback riding as a rehabilitative therapy when she won the silver medal for Grand Prix Dressage in 1952, despite having used a wheelchair since 1943 (Brudvig, 1988; Griffith, 1992; Potter, Evans, & Nolt, 1994).

European programs have utilized horses in treatment and rehabilitation programs for individuals with a wide range of disabilities. Willis (1997) reported that long held beliefs that horseback riding was beneficial (Harpoth, 1970; Lange, 1986; Tuttle, 1987) to persons with disabilities has led to the spread of riding programs. Presently, approximately 500 riding centers, accredited by the North American Riding for the Handicapped Association (NARHA), exist in North America, assisting more than 26,000 individuals with disabilities. Horseback riding programs in the U.S. feature riding for recreation, sport, and therapy (Hines & Bustad, 1986).

Hippotherapy and therapeutic horseback riding are interventions with recreational and social benefits for individuals with chronic illness and disabilities. The amount of benefit an individual with a disability gains from horseback riding is dependent on a combination of factors that includes: (a) type of disability, (b) severity of the disability, (c) motivation, and (d) form of therapy offered (Britton, 1991; Fitzpatrick & Tebay, 1998).

### Hippotherapy

Hippotherapy, a term derived from the Latin word *hippos*, meaning horse, is horseback riding used as a form of treatment. The horse, with its rhythmic, dynamic movement is used to influence the rider's posture, balance, and mobility (Fitzpatrick & Tebay, 1998). The aim of this intervention is not riding skills but the accomplishment of specific predetermined goals of therapy. Hippotherapy's primary goal is to improve the individual's posture, balance, mobility, and function. It is an individualized treatment with a team approach (Britton, 1991). Hippotherapists are specially trained physical therapists, occupational therapists, or both, who utilize horseback riding as a therapeutic modality (Jorgenson, 1997; National Institute for Health, 1987). An interdisciplinary team is essential in hippotherapy.

Hippotherapy is used in a variety of ways that affect the physical and psychological well-being of a person with movement disorders. A horse can serve in the capacity of a moving platform that enhances balancing exercises. Furthermore, if no saddle is used there is more contact with the horse, resulting in increased stimulation and the need to work harder to maintain balance and equilibrium (Brudvig, 1988). For some, time away from traditional exercises and machines keeps them motivated and returning to therapy. Britton (1991) listed the following contra-indications to hippotherapy: (a) unhealed pressure sores; (b) fragile bones; (c)

hemophilia; (d) epilepsy, uncontrolled by drugs; and (e) no desire for riding, after a trial experience.

### Therapeutic Riding

Horseback riding is a play and leisure activity that many people consider a favorite hobby or pastime. Horseback riding frequently has a calming effect and helps a person relax. Therapeutic riding simply uses the recreational pleasures of horseback riding to promote various social, emotional, and physical benefits (Britton, 1991). It is also a normalizing and equalizing type of activity.

Therapeutic riding encompasses various leisure and therapeutic activities such as leisure riding, driving and vaulting, and competitive riding. Unlike hippotherapy, therapeutic horseback riding not only incorporates the activity of riding but also includes the activities associated with stable management. The therapeutic riding instructor is the heart and soul of this intervention. He or she is also a member of a team whose goal is to increase the quality of life of a person with a disability. This trained instructor must have a positive approach to varied situations, a good understanding of the disabilities of the participants, and a clear understanding of his or her influence on the rider (Britton, 1991).

### Horseback Riding Outcomes

Horseback riding has been reported to include physical benefits, psychological benefits, social benefits, and educational benefits. The value of horseback riding is based in the relationship that develops between the rider and the horse. This relationship is paradigmatic of the improvement in any given case (Griffith, 1992). Rationale explaining horseback riding as a therapy has focused on the concept that riding provides the person with a disability a normal sensorimotor experience that contributes to the maintenance, development, rehabilitation, and enhancement of physical skills. The sensorimotor experience involves vestibular input which stimulates the rider's balance mechanism as constant adjustments are needed with the horse's movement at different gaits (MacKinnon, Noh, Laliberte, Lariviere, & Allan, 1995; MacKinnon, Noh, Lariviere, et al., 1995). Relating to and successfully maneuvering this large animal can be very satisfying to the rider. Health outcomes and psychosocial outcomes have been reported.

### Health Outcomes

Research in the 1980's (Bertoti, 1988; Biery & Kaufman, 1989; Fox, Lawlor, & Luttes, 1984) reported improved conditioning of adults and children with disabilities after participation in therapeutic horseback riding programs. These studies focused on children and adults with a variety of disabilities, such as spinal cord impairment, CVA, head injury, cerebral palsy, blindness, deafness, multiple sclerosis, spina bifida, polio, autism, mental retardation, psychiatric problems, and learning disabilities (Brudvig, 1988; Freeman, 1984; Griffith, 1992; Potter et al., 1994).

Freeman (1984) presented case examples that included a 7-year-old unable to hold her head up and walk alone before hippotherapy. At the end of 6 months this 7-year-old rode with a straight back and improved head control. At the writing of the article, this 7-year-old could sit at the trot with improved balance

of her head, neck and back, and was independent on crutches. Another 7-year-old, who at the initiation of hippotherapy was walking only 4 steps with crutches, 6 months later was walking 4 blocks, using only 1 crutch (Freeman, 1984). An improved outlook on life and self-concept was also reported. However, no description of how these changes were measured or any control of extraneous variables was reported in either case study.

Research literature on the therapeutic benefits of horseback riding has been primarily descriptive, focusing on the observations and subjective reports of therapists, riding instructors, caregivers of riders, and riders (Biery, 1985; MacKinnon, Noh, Laliberte, et al., 1995). Reported physical benefits included: (a) improvement in balance, (b) muscle strength, (c) posture, (d) muscular control, and (e) increased joint range of motion (Bertoti 1988; Biery, 1985; Brock, 1989; Mackay-Lyons, Conway, Roberts, 1988). Beneficial exercises include stretching, strengthening, relaxing, and developing skills in balance and coordination. A technique reported to facilitate postural responses was placing the rider on the horse's back, in a variety of positions, such as prone, side lying, side sitting, or sitting (Bertoti, 1988).

Bertoti (1988) conducted a study to measure postural changes in children with spastic cerebral palsy (CP) after participation in a therapeutic riding program. The sample consisted of 11 children ranging in age from 2 years to 9 years. Inclusion criteria were: (a) medical diagnosis of CP, spastic quadriplegia, or diplegia; (b) no other medical complications, such as seizures or hydrocephalus; (c) normal intelligence as documented by a psychologist; (d) normal spine and hip roentgenograms; (e) passive hip abduction to at least 20 degrees bilaterally as measured in the supine position; (f) passive hamstring muscle mobility to at least 60 degrees of hip flexion by a straight leg test; and (g) functional ability to sit and stand alone or with minimal support. A repeated-measures design that consisted of pretest 1 (followed by a 10 week period of no horseback riding), pretest 2 (followed by a 10 week therapeutic riding program), and a posttest was utilized. This design allowed the subjects to serve as their own control group. Researcher bias was addressed by having three pediatric physical therapists, not involved in the riding program, assess the children at each of the measurement intervals, simultaneously with no verbal discussion. A composite score for each child was calculated from the three assessments. Qualitative notes were made by the three therapists and the researcher. Utilizing Friedman's nonparametric test, a significant change in posture was reported. Subjective clinical improvements were reported in the areas of decreased fear of movement, decreased hypertonicity and improved weight-bearing and functional balance skills.

Brock (1989) utilized a pretest/posttest design to study the effects of therapeutic horseback riding on 15 adults with physical disabilities and a posttest-only design for 24 adults, with various physical disabilities, who were randomly assigned to a riding or non-riding group. Participants rode twice weekly for eight weeks, with the first session being 60 minutes in length, and the second session ranging between 90 and 120 minutes. The Tennessee Self-Concept Scale was chosen for its test-retest reliability coefficient of .92 and for its reported validity as a measure of self-concept. An instrument designed by Fox, Lawlor, and Lutges (1984) was built and adapted for adult riders to quantify the effectiveness

of therapeutic horseback riding. Analysis of variance was used on all scores in both research designs for self-concept, coordination, and strength.

Brock (1989) reported improvement in coordination for subjects, but no significant differences were found in self-concept or strength. The author made four recommendations: (a) longitudinal studies to detect change in less than six months; (b) use of alternative instruments for measurement of strength, because persons with spasticity may involuntarily resist an opposite force; (c) measurement of attitude change or socialization skills of both individuals with disabilities and individuals without disabilities; and (d) studies designed around individuals with specific disabilities assigned into riding and non-riding groups.

MacKinnon, Noh, Laliberte, Lariviere, and Allan (1995) conducted a review of 11 data-based studies that reportedly validated the effectiveness of therapeutic horseback riding. Focused on physical and psychosocial outcomes, the review revealed weak scientific rigor, small sample sizes, and a lack of homogeneous populations. The use of standardized instruments was limited, as many researchers relied on nonstandardized observational techniques to evaluate change.

Based on recommendations included in their review of data-based studies, MacKinnon, Noh, Lariviere, et al. (1995) conducted a study with the dual purpose of examining the physical and psychosocial outcomes of therapeutic horseback riding on children with CP. The research question focused on physical outcomes was: "Does a therapeutic riding program improve the physical abilities (i.e. posture, gross and fine motor control, activities of daily living) of mildly or moderately involved children with CP?" (p. 19)? Nineteen children between the ages of 4 and 12 years (mean age 6.5 years) and with a diagnosis of spastic type CP, normal intelligence (>70 IQ), the ability to sit independently for two minutes in a chair, and an interest in riding were enrolled in the research study. The sample was stratified into a group of mildly involved (defined as those who could walk independently) and a group moderately involved (defined as those who used wheelchairs or assistive devices for independent mobility).

Each group was randomly assigned to a control or an experimental group. Children in the experimental group were involved in the riding program for 26 weeks, riding weekly for one hour. No attempt was made by the researchers (MacKinnon, Noh, Lariviere, et al., 1995) to control for any additional therapies or activities engaged in by the participants. Mildly involved riding group participants were encouraged to use reins, use both hands, and ride using saddles. Riding participants of the moderately involved group did not use saddles, riding only with saddle pads and surcingles. External consultants were utilized to evaluate and provide feedback on the program three months into the study, and no significant changes were recommended.

Physical health outcomes have been measured using various tools that include: (a) Bertoti's 1988 Posture scale, (b) Gross Motor Function Measure (GMFM), (c) Peabody Development Motor Scale, (d) Bruininks-Oseretsky Test of Motor Proficiency, and (e) the Vineland Adaptive Behavior Scales (subscale to mea-

sure activities of daily living) (MacKinnon, Noh, Lariviere, et al., 1995). MacKinnon, Noh, Lariviere, et al. also collected qualitative data from the riding instructor's weekly journal of each child's performance, the physical therapist's end-of-program summary (documented by observations of each child during the program), changes observed and reported by parents, and videotapes done at three different intervals.

Total scores for the GMFMD showed improvement, but did not verify benefits from the riding program. A difference was noted between the mildly and moderately involved groups in the measure of posture. The moderate group showed a gain and the mild group showed a decrease. The Peabody Fine Motor Tests revealed a significant interaction result ( $t = 2.44, p = .045$ ) only in skill A (grasping) between the moderate experimental group and the moderate control group. This finding suggested that riding may have some benefit. The subscale of the Vineland Adaptive Behavior Scale, used to measure activities of daily living, demonstrated no significant changes. Qualitative results reported on physical benefits were: (a) weekly progress in the sitting position on the horse; (b) reported improvements in posture, trunk control, attention span, pelvic mobility, and hand control; and (c) parents reported positive changes in the areas of functional skills such as gait and activities of daily living and physical skills of flexibility, balance, relaxation, and posture. Videotapes demonstrated improvements in position of head, neck, shoulder, elbow, hand, hip, calf, and heel. MacKinnon, Noh, Larivier, et al. (1995) failed to demonstrate statistically significant physical benefits of therapeutic riding.

#### Psychosocial Outcomes

Only one research study was found that addressed psychosocial benefits of horseback riding. MacKinnon, Noh, Lariviere, et al. (1995) asked the question, "Does a therapeutic riding program improve the psychosocial abilities (i.e. perceived self-adequacy, socialization, global behavior) of mildly or moderately involved children with CP" (p.19)? The Vineland Adaptive Behavior Scale (subscale to measure socialization) and the Harter Self-Perception Scale were used as measurement tools. Analysis of the subscale of the Vineland Adaptive Behavior Scale on socialization revealed no statistically significant difference. Children with mild CP demonstrated the most gain in self-perception, social interaction and confidence, as well as improvements in social skills. Parents reported improvement in motivation, willingness to try other new activities, self-confidence, self-esteem, cooperation and enthusiasm. A negative effect reported by parents was an increase in aggression that appeared to parallel the increase in self-confidence. Facial expressions on the videotapes appeared to indicate an improvement in the children's level of satisfaction and self-confidence.

### **Implications of Non-Traditional/ Alternative Treatment Modalities for Rehabilitation Professionals**

The human-companion animal bond can be affectionate and friendly and can provide interaction between a human and animal. This interaction can provide a focus for caring feelings and decrease feelings of loneliness. This bond can be an outlet for

keeping busy and can fulfill the need for touching and fondling. Bonding with animals has been associated with increased feelings of security and with increased likelihood of regular exercise (Willis, 1997).

#### Horseback Riding Therapy

Perhaps one of the most profound benefits of horseback riding is the confidence and increase in self-esteem that comes from being able to maneuver and control an animal that may weigh in the excess of 1000 pounds. Horseback riding, out in the fresh air and away from facilities associated with chronic illness and disability, imparts a sense of general well-being. The world expands instead of shrinking, as is common for those with a disability. The excitement of riding stimulates the rider, encouraging him/her to talk about it and thus increases one's interest in life. Riding encourages risk taking, development of patience, emotional control and self-discipline, sense of normality, and expansion of the locus of control. Horseback riding gives individuals with disabilities the chance to participate and succeed at something many able-bodied people may hesitate to try either recreationally or competitively. Riding allows persons with disabilities to socialize with others who have similar interests and often a passion for horses. Individuals have reported increased perception of quality of life and life satisfaction and have proved to themselves and others that they are more than their disability.

Another area of concern for persons with disabilities is achieving the highest level of wellness possible. Rehabilitation professionals need to help clients build on positive attributes and reduce negative factors (Davidhizar, 1997; Davidhizar & Shearer, 1997). Hippotherapy, therapeutic horseback riding, and animal therapy with its reported descriptions of increased self-esteem, interaction with peers, and ability to cope, and decreased stress may provide a valuable addition to more traditional types of therapy for persons with disabilities. An awareness of or training as a therapeutic riding instructor could provide new avenues of service provisions for rehabilitation professionals.

#### Animal Therapy

Rehabilitation professionals need to be aware of the positive effects on health and social development that animals may bring to the rehabilitation process. Rehabilitation professionals' awareness of interventions utilizing pets and the importance of pets to some individuals with disabilities will increase their ability to provide comprehensive services to their clients. This awareness can extend into assisted and independent living for persons with disabilities. Rehabilitation professionals can assist individual clients or community-based programs in designing programs that incorporate animal therapy. Awareness by rehabilitation professionals of animals as part of someone's family may affect relationships with clients that may have a profound impact on issues of quality of life.

### **Future Research**

Rehabilitation professionals, with their in-depth knowledge of disabilities, need to be leaders in developing research studies and instruments measuring changes. A major problem with animal studies has been the lack of existing standardized measure-

ment tools' ability to measure change in this diverse population of individuals, particularly in short periods of time. More rigorous research is needed on pet-assisted therapy, hippotherapy, and therapeutic riding. Development of tools to assess and quantify meaningful improvements in functional outcomes is needed to accurately assess the improvements that qualitative research has reported with horseback riding. Longitudinal studies that specifically address the psychosocial benefits received from pet-assisted therapy and horseback riding are crucial. A priority for the development of community-based services that incorporates animals is an interdisciplinary team. These interdisciplinary teams ideally should consist of equine scientists, veterinarians, psychologists, and human service professionals, such as physicians, physical therapists, occupational therapists, nurses, and rehabilitation professionals.

Rehabilitation professionals are in a unique position to educate their clients about the benefits of animals in health and in treatment. It is imperative that clients and rehabilitation professionals realize that animals by themselves are not a guarantee of increased quality of life, increased physical functioning, increased social interaction, or a cure for any of life's problems. Research in the area of animal therapy is limited by lack of rigorous studies that involve control, randomization of subjects, appropriate instruments to measure change, and lack of generalizability, often due to small sample sizes. Companion animals and therapeutic horseback riding are in most cases adjunctive therapies to more traditional methods. When used alone, interventions using animals such as hippotherapy, require teamwork between healthcare and rehabilitation professionals, the client, and the family. The use of companion animals, horses, or both must be carefully assessed for appropriateness and calculated benefits.

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