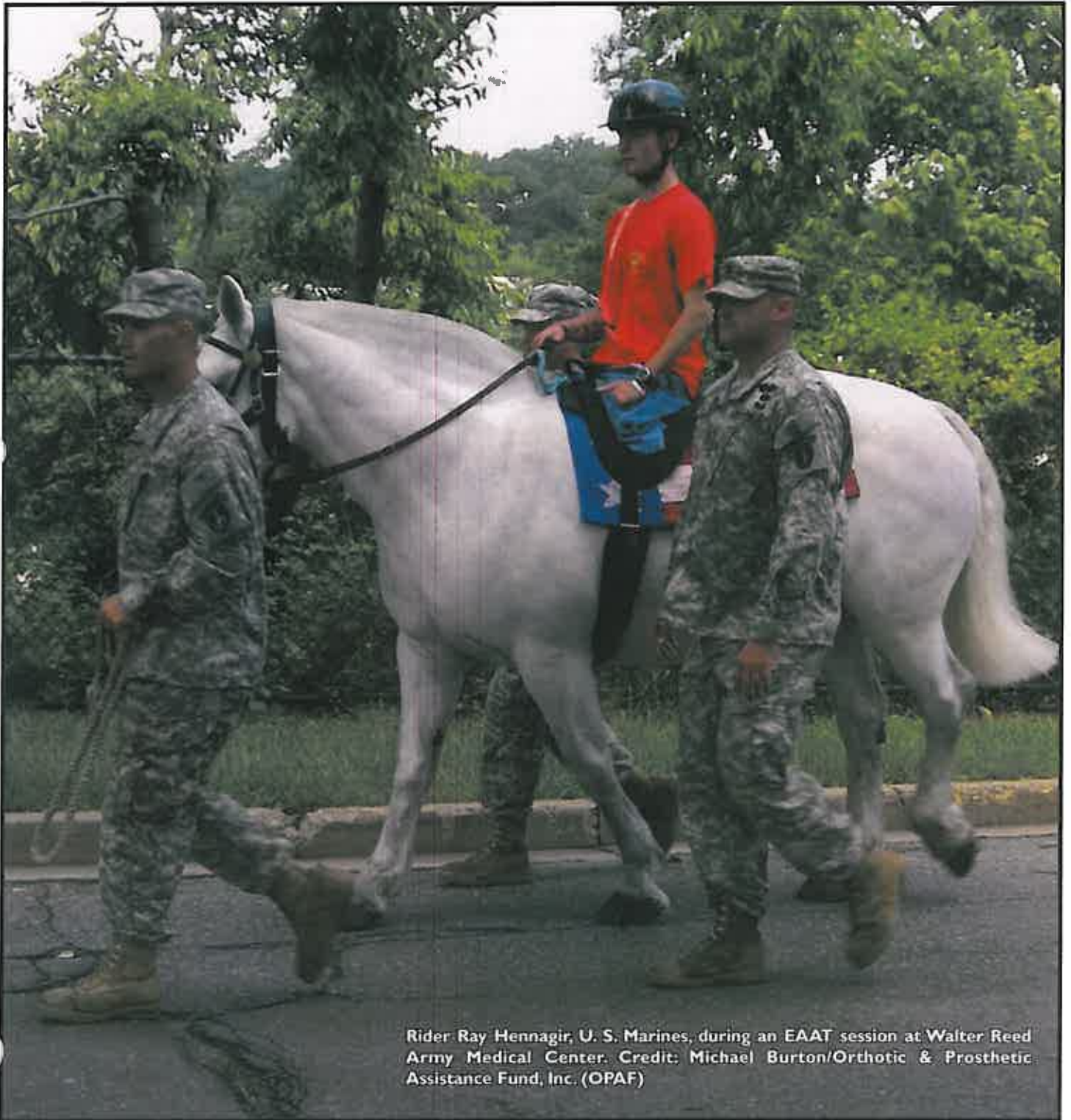


Riding Rehab

Veterans with Limb Loss Benefit

By Mary Jo Beckman and Major Elizabeth Painter



Rider Ray Hennagir, U. S. Marines, during an EAAT session at Walter Reed Army Medical Center. Credit: Michael Burton/Orthotic & Prosthetic Assistance Fund, Inc. (OPAF)

During World War II, Walter Reed General Hospital in Washington, D.C., established an amputee center to concentrate the skills of prosthetists, therapists and surgeons to handle the wounded from World War I. (Dougherty, 1993). Today, Walter Reed Army Medical Center (WRAMC) is one of three Department of Defense amputee care centers for service members who have sustained major limb loss. In May 2006, an equine assisted activities and therapies (EAAT) pilot program consisting of four lessons focused on therapeutic riding was added. Many of the participants had sustained major limb loss, which included five riders who have sustained bilateral transfemoral (above the knee) amputations.

The lesson horses came from the Caisson Platoon of the United States Army 3rd Infantry (the Old Guard). For decades, the Caisson Platoon has provided either all white/gray or black teams of horses for military details to honor individuals who are buried in Arlington Cemetery. Three soldiers ride the left hand horses that pull the Caisson, and an independent soldier rides ahead of the unit. For special honorary funerals, a riderless horse is saddled with the boots placed backwards and is led after the Caisson. With the implementation of the pilot program, the Old Guard horses and soldiers took on a new role as instruments of healing.

Because of its initial success, the Caisson Platoon EAAT program, whose structure and benefits will be described, has continued. So far, approximately 45 wounded service personnel and two Vietnam veterans have participated with positive results that include improved balance, posture, flexibility, strength and self-esteem.

Benefits of EAAT for Soldiers

EAAT is one example of the implementation of companion animals in the treatment of individuals with emotional and/or physical disabilities (Farias-Tomaszewski, 2001). The concept of using EAAT as a rehabilitation activity for soldiers with amputations is not new. At Fitzsimmons General Hospital in Denver, CO, Colonel Paul W. Brown, a U.S. Army physician, treated more than 1,000 combat-injured amputees from the Korean and Vietnam con-

flicts. He stated that the challenges associated with learning how to use a prosthesis are intimately connected with confidence and personality factors.

Ancillary rehabilitation programs initiated for wounded soldiers at Fitzsimmons included skiing, water skiing, golfing, dancing, swimming, scuba diving and horseback riding. These programs were introduced to foster pride and a sense of achievement (Brown, 1970). Past NARHA President Mary Woolverton brought her horses to Fitzsimmons and

Lieutenant Colonel Greg Gadson, U. S. Army, with Caisson Platoon soldiers during a lesson. Credit: Suzanne Dortch



taught some of the soldiers with amputations to ride with positive results.

Wingate (1982) reported on the success of a pilot project involving therapeutic riding, noting the following benefits:

- improvement of postural alignment
- facilitation of normal movement and equilibrium reactions, thereby improving sitting balance and, in some cases, standing balance and walking

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- decrease in lower extremity adductor spasticity
- improvement in body image and self concept
- integration of sensory stimulation with motor-planning skills
- low level cardiovascular conditioning

Patients who are affected both orthopedically and neurologically must develop balance to compensate for movement of the horse. The balancing skills required in horsemanship improve postural alignment in all activities (Freedman, 1984). The rhythmic, swinging movement of the horse promotes balance, coordination and motor development (Tuttle 1987). Strandquist (1997) states the position of a rider astride a horse best promotes correct postural alignment and more evenly activates and strengthens trunk musculature for dynamic balance in sitting.

In order for the rider to feel a stable base of support, the rider requires the correct shape of the horse's back, proper equipment and the hands-on support provided by sidewalkers. When the riders have achieved a stable, secure base of support, they can learn to better control their trunk and upper body. Guernsey (2006) describes the ideal EAAT horse and indicates that when a qualified horse is available, the rider can realize numerous and extensive benefits including: learning riding skills, developing physical strength, flexibility, coordination, improved motor skills, balance and body awareness. All of these benefits can contribute to increased self-esteem.

Psychological Issues

The psychological reactions of patients who sustain amputation or other life altering injury can be varied and complex. A person who suffers major limb loss suffers a triple insult:

“With all activities, emphasis is placed on allowing the rider to safely accomplish the tasks as independently as possible.”

loss of function, loss of sensation and loss of body image. Seymour (2002) reports that a person's perception of wholeness may be changed forever which can lead to fragmentation. The feeling of fragmentation is intensified by lower self-esteem due to body image distortion, changes in employment status, decreased social interaction and decreased independence. Negative perception of perceived body image may lead to social isolation.

However, Seymour also reports a positive correlation between body image and increased self-esteem and life satisfaction and decreased anxiety and expression. This is well illustrated by one of the Caisson's participants, a 23-year-old enlisted female U.S. Army soldier, who was injured in Iraq in October 2005 by an improvised explosive device. Her left leg was amputated below the knee. She then suffered a fracture of her left tibia which delayed prosthetic fitting. As a result of her injuries, her physician reported that she experienced frequent phantom pain and struggled with psychological issues related to her loss. These psychological struggles contributed to her limited social interaction with others.

After participation in the pilot EAAT program, this patient's physician at WRAMC noted her improved attitude, socialization and overall

wellness. Additionally, the rehabilitation staff noted that because of her increased physical ability and association with the horses, she was more determined to proceed with her rehabilitation.

As one measure of her improved balance, she was administered a timed-up-and-go test before and after riding by WRAMC Occupational Therapist Joe Butkus. The test measures the time it takes for an individual to rise from a standard arm chair, walk to a line on the floor (approximately 10 feet away), turn, return and sit back down. The patient's timing improved more than 42 percent over the course of two weeks from 13.8 seconds to 7.9 seconds.

During participation in the program, this soldier, who rode more than 20 times, progressed from a tense and hesitant individual to a confident rider who succeeded in performing a two-point at the trot. She was learning the posting rhythm when she was medically discharged from WRAMC in December 2007.

Lesson Content

At the Army's Caisson Platoon weekly riding program, class size varies from one to five riders with a range of horse familiarity. All riders use bareback pads or a pad with a surcingle initially to provide them with uninterrupted input from the horse's back muscles. This allows them to find a neutral pelvic position while improving motor control and strength of the core muscles on a mobile platform. The pads allow the riders to sit in various positions (side-ways and backwards at the walk) on the horse's back which would might

not have been possible or uncomfortable with a saddle.

Lessons start with stretches at the halt or walk, depending on the balance issues of the riders. Along with the normal upper and lower extremity exercises and trunk rotations, forward and backward stretches are emphasized. In order to stretch the extensor muscles along the front of the legs, the riders lay back with their heads



Max Ramsey, U.S. Army, with Caisson Platoon soldiers practicing balance during an exercise. Credit: Larry Pence

near the horses' tails. A further stretch occurs when the arms are taken over the riders' heads.

Horsemanship skills are the object of each lesson. Students learn the various turning aids: looking where they want to go, shifting weight into the hip in the direction of the turn and, finally, using the reins. Progression of the aids encourages the riders to use their bodies to influence their horse before using the reins. Skills, such as

halting the horse with all four hooves in a box of poles, then stopping with only the front hooves or only the back hooves in the box, and turning skills help the riders establish control over their horses.

Riders are challenged to practice their skills through figure eights, serpentine, circles, weaving cones and upright poles, walking over poles set up parallel to each other in the middle of the arena or between poles set in a zig-zag pattern. Throwing a Nerf football while the riders are at the halt or at the walk also works well to increase the level of difficulty. The skill of trotting, which encourages core strength and flexibility, is included if the riders can handle the movement. If the rider is using an English saddle, the posting trot is practiced.

Other activities which are accomplished with or without leaders include: relay races, drill team maneuvers and a barrel racing pattern. Cool down includes more

stretches at the walk or a ride around the base. With all activities, emphasis is placed on allowing the rider to safely accomplish the tasks as independently as possible.

Goals and Improvements

The goals are for the riders to improve balance and fitness, develop core muscle strength and control, and if they desire, pursue independent riding. One rider with a right trans-femoral amputation was having problems finding his center of gravity. He kept sitting heavy on his left ischium

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(seat bone) and was not responding to verbal correction from the instructor. Changing the surface from dirt to asphalt roads encouraged him to improve his weight distribution and sit evenly on both seat bones. The rider explained that he could feel the impact of the horse's movement on the hard surface better.

After that ride, his physical therapist reported that his prosthetic training progressed quickly as he was able to transition from using the parallel bars, to two canes, to one cane in one week. Similar improvements in symmetrical weight shifting and consistent limb advancement during gait were also noted in another participant with bilateral transfemoral amputations.

For this military program, the riders are encouraged to determine when and if they wanted to have the leaders disconnect the lead lines for the activities. This allows service members to develop their confidence and riding skills in a safe environment, while at the same time, providing them with

the latitude to make decisions based on their physical capabilities.

Based on our experience, the EAAT program has contributed to wounded service personnel's overall physical and psychological healing. The use of active duty soldiers as leaders and sidewalkers during the lessons allowed the riders to interact with their peers. The outdoor setting provided a stimulating environment for rehabilitation and fitness. Learning a new skill and increasing physical ability may lead to improved self-confidence and self-esteem.

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