College of Veterinary Medicine
University of Missouri

Horses Working in Therapeutic Riding Programs Do Not Experience Additional Stress, MU Study Finds

In the United States, therapeutic horseback riding offers equine-assisted therapy to diverse populations, including children and adults who have anxiety disorders. Veterans diagnosed with post-traumatic stress disorder often are prescribed this type of therapy in order to cope with anxiety, but little is known about how these programs affect the stress levels in horses. Now, a **University of Missouri** study has revealed that horses ridden by veterans with PTSD did not have undue physiological stress responses, nor did they exhibit behavioral stress while participating in a veterans' therapy program. This shows that therapeutic horseback riding, also known as THR, may provide a viable repurposing for

Rebecca Johnson found that horses

retired or unwanted horses.

ridden by veterans with PTSD did not have undue physiological stress responses, nor did they exhibit behavioral stress while participating in a veterans' therapy program.

"Estimates have shown that approximately 6,300 horses globally work in therapeutic horseback riding programs at more than 800 centers," said Rebecca Johnson, a professor in the MU College of Veterinary Medicine, and the Millsap Professor of Gerontological Nursing in the Sinclair School of Nursing. "While there is a growing body of literature demonstrating the beneficial outcomes from THR programs for people with developmental, cognitive and psychosocial disabilities, such as veterans with PTSD; it is imperative that we consider horse stress levels to ensure their health and welfare. Our study was designed to assess the differences in both physiological stress levels and behavioral stress responses while being ridden by veterans in these programs or by experienced riders."

Two groups were recruited for the study: veterans who were diagnosed with PTSD and healthy, experienced riders. Each individual horse was ridden in accordance with an approved program for approximately 60 minutes weekly at the same time of day for six weeks. Veterans learned basic horseback riding skills as well as how to apply riding tack to the horse, mounting and dismounting. Experienced riders were asked to go through the same actions as the veterans.

In order to measure physiological stressors on the horses, blood samples were collected 30 minutes before classes started, after the riding tack was applied to the horse, and after the riding class at the first, third and sixth weeks. Cortisol, which is a part of the central nervous system and a good indicator of stress in the body, was measured as well as glucose concentrations and other measurements.

Behavioral stress indicators were assessed by viewing videotapes of the horses obtained for two-minute periods during the first, third and sixth weeks. Using a stress scale, two researchers scored the videos involving different horses to determine restlessness, jumpiness and startle-reflexes, as well as how accepting and calm the horses were at other times.

"Findings from our physiological and behavioral data indicated that the horses were not unduly stressed by the THR work; however, we found differences in the horses' stress levels between rider groups," Johnson said. "Equine cortisol levels were

elevated after riding tack was applied by inexperienced riders, in this case the veterans. However, we think that might be because these riders were applying the tack and mounting the horses a little differently than the experienced riders. The horses also showed elevated physiological and behavioral responses with experienced riders, which could indicate that these riders expect a higher level of performance from the horses. Overall, horses involved in the THR program exhibited low stress responses, indicating no harm from doing the work of THR, which could give retired or unwanted horses a new lease on life."

The interaction between horses and riders has been demonstrated to increase riders' confidence, self-esteem, sensory sensitivity and social motivation while decreasing stress. THR programs could enhance their orientation times and curricula to include tacking classes and increasing introductory sessions between horses and riders to decrease stress to the horses, Johnson said. Future studies should include larger groups of participants as well as other measures of physiological stress.

The article, "Horses Working in Therapeutic Riding Programs: Cortisol, Adrenocorticotropic Hormone, Glucose, and Behavior Stress Indicators," was published in the *Journal of Equine Veterinary Science*. Funding was provided by the USDA National Institutes of Food and Agriculture, Animal Health (Grant: 1003417). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

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