

The Effects of Equine Assisted Activities (EAAT) and Therapies on Stress and Well-being in Horses and Measures of Symptoms of Post-Traumatic Stress Disorder in Veterans

Drs. Karyn Malinowski and Ken McKeever, G.H. Cook Scholar, Michael Ye, and colleagues from Monmouth University and South Indiana University, as well as Special People United to Ride (SPUR), partnered to investigate the Effects of Equine Assisted Activities and Therapies on specific measurements of physiological stress and well-being in horse involved in EAAT.



The Research Project

With the increase in the number of horses being used in EAAT programs, and with the increasing concern for animal welfare, it is important to understand the impact of such interventions on the stress level and quality of life for the horses involved. The purpose of this study

was to test the hypothesis that participation in equine-assisted activities and therapies (EAAT) would acutely alter physiological markers of stress and well-being, including plasma cortisol, plasma oxytocin and heart rate variability, in horses and that symptoms of Post-traumatic Stress Disorder



Dr. Ric Birks views the electrocardiogram (ECG) display, used to calculate Heart Rate Variability (HRV).



Dr. Malinowski, Michael Yee, and other undergraduate students from the School of Environmental & Biological Sciences pose with two of the horses used in the study.



Veterans from the Lakewood Veterans Affairs pose for pictures on the last day of the 5-day trial.

(PTSD) would be reduced after five sessions of EAAT in veterans who had previously been diagnosed with PTSD.

Nine healthy geldings, of various breeds, ages 10-23 years, conditioned and experienced as therapeutic riding horses, were selected to participate in the study. Of these, 7 were selected at random to wear ECG units and all 9 were used for blood sampling to measure plasma cortisol and oxytocin. Each horse was randomly assigned to partner with a veteran for 5 EAAT sessions, 1 hour in duration. A standing control was conducted on a later date on which horses did not participate in EAAT. The research was conducted at Sunnyside Equestrian Center in Lincroft, NJ – a part of the Monmouth County park system. Sunnyside is affiliated with Special People United to Ride (SPUR) an Equine Assisted Therapy program approved by PATH, International.

Measurement after five days of EAAT was conducted immediately after the end of the last session on day five using two recognized measures for PTSD - the Brief Symptom Inventory and the PCL-5 (The PTSD Checklist for the DSM-5).

There were no significant day by time interactions for plasma cortisol or oxytocin concentrations in the horses. There was a significant day by time interaction for heart rate; where on day 1, HR (bpm) was significantly lower during the interaction with the veterans. There were no significant differences in heart rate variability variables which is in agreement with the current literature.

Post-therapy measures in PTSD symptoms in veterans were significantly reduced except for Interpersonal Sensitivity and Phobic Anxiety. There was an effect of EAAT on heart rate which was significantly reduced on day 2 during the actual EAAT session. EAAT had no effect on respiration rate and systolic or diastolic blood pressure in veterans involved in five sessions of EAAT lasting 60 minutes in duration over the course of five days.

Stress levels, as demonstrated by plasma cortisol concentrations and heart rate variability, did not change in horses involved in Equine

Assisted Activities Therapy sessions with veterans who had been previously diagnosed with PTSD. Furthermore, the horses used in this study did not demonstrate increased levels of well-being as demonstrated by the lack of change in plasma oxytocin concentrations after EAAT sessions. Symptoms of PTSD did change significantly in the veterans who participated in this study.

Conclusions and Future Directions:

While Equine Assisted Activities and Therapies have been shown to have a positive effect on people with assorted physical and psychological disorders, there is limited research reporting the effect of EAAT on the horses involved.

It was the goal of the research reported here to increase our body of knowledge regarding the horses' levels of stress and or well-being after interaction with humans engaged in EAAT. A limitation to the current study was the inability to measure the same hormone and physiological measurements for heart rate variability as done in the horses due to logistics of this field study.

In conclusion, stress levels, as demonstrated by plasma cortisol concentrations and heart rate variability, did not change in horses involved in Equine Assisted Activities and Therapies sessions

with veterans who had been previously diagnosed with PTSD.

Furthermore, the horses used in this study did not demonstrate increased levels of well-being as demonstrated by the lack of change in plasma oxytocin concentrations after EAAT sessions.

Symptoms of PTSD decreased significantly in the veterans who participated in this study. Further research should be conducted with a larger number of horses to further study the impact of EAAT on horses used in these types of activities and to obtain human subjects who would not be adverse to having the same endocrine and heart rate variables measured as those in the horses.

Meet the Researchers

Dr. Karyn Malinowski
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Dr. Karyn Malinowski, has been a faculty member at the School of Environmental and Biological Sciences since 1978 in various roles as an Extension Specialist in Equine Sciences, Animal Sciences Professor and Director of Rutgers Cooperative Extension from 2002-



2008. Her research and extension programs concentrate on improving the well-being and quality of life of the equine athlete while ensuring the vitality and viability of the equine industry, both statewide and nationally. She played a lead role in building the equine science program at Rutgers University and in the formation of the Rutgers Equine Science Center.

A New Jersey native, Malinowski earned three degrees from Rutgers, with a bachelor's degree in Animal Science, a master's in Animal Genetics, and a Ph.D. in Zoology, specializing in Equine Endocrinology. Dr. Malinowski is the recipient of many awards, including the American Society of Animal Science – Equine Science Society Equine Award, 2012, the United States Harness Writers Association – Unsung Hero Award, 2012, Governor's Trophy for Horse Person of the Year, 2010, Rutgers Graduate School Lifetime Achievement Award, 2007, Outstanding Equine Educator Award from the Equine Nutrition and Physiology Society, 2001, Marjorie Van Ness Award from the American Horse Council, 2001, Research Excellence Impact Award from Cook College and NJAES, 2000, and Woman of Distinction from the Delaware-Raritan Girl Scout Council, 2000.

In 1995, she became only the second woman in fifty years to receive the New York Farmers Club Award, which was given by the prestigious and venerable Northeastern Agricultural Society to her for her contributions to agriculture.

Dr. Malinowski is the author of over 50 refereed journal articles and abstracts and numerous book chapters. Her expertise in the area of aging and stress management in horses has resulted in her speaking at numerous international venues, and her extension project entitled, "Careers in the Green Industry: Youth Sow Seeds for Their Future," which involved horses and adjudicated youth, has served as a model for similar programs around the globe. She also led the effort in developing the Horse Industry Handbook during her presidency of the American Youth Horse Council.

Regarding her support for horse racing, Malinowski was a member of the team which conducted the prize-winning study, The New Jersey Equine Industry 2007: Economic Impact. In 2009 she authored the "Impact of Slot Machines on the Economy, Horse Racing and Breeding Industry, Agriculture and Open Space" and in 2014, the "2014 State of the New Jersey Horse Racing Industry".

Further Readings:

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