



Original Research

Effects of Therapeutic Riding on Measures of Stress in Horses



Caroline McKinney, Megan K. Mueller*, Nicholas Frank

Department of Clinical Sciences, Cummings School of Veterinary Medicine at Tufts University, North Grafton, MA

ARTICLE INFO

Article history:

Received 1 June 2015

Received in revised form 11 August 2015

Accepted 14 August 2015

Available online 22 August 2015

Keywords:

Salivary cortisol
Therapeutic riding
Stress

ABSTRACT

The popularity of therapeutic riding is growing rapidly. With greater numbers of horses used in this field, it is becoming increasingly important to understand how this work impacts horse quality of life. Salivary cortisol concentrations and behavior scores are two measures of stress in horses, and the goal of this study was to test the hypothesis that horses used in therapeutic riding exercises have greater increases in cortisol concentrations during therapeutic riding, when compared to a traditional hunt seat lesson program or at rest. Salivary cortisol concentrations were measured in six adult horses on 3 days per week for a total of 6 weeks. Horses served as their own controls, and salivary cortisol concentrations were measured during therapeutic riding, traditional riding, and at rest, with samples collected at 0, 30, and 60 minutes. Delta cortisol concentrations were calculated by subtracting baseline cortisol concentrations from values obtained at 30 or 60 minutes. Delta salivary cortisol values were compared among different types of activity by the nonparametric Wilcoxon matched-pairs signed-rank test. No significant differences in delta cortisol values were detected between riding conditions. Delta salivary cortisol values at 30 minutes were 0.147, 0.0762, and -0.032 $\mu\text{g/dL}$ for rest, traditional riding, and therapeutic riding conditions, respectively, and delta values at 60 minutes were -0.0177 , -0.002 , and -0.031 $\mu\text{g/dL}$, respectively. Behavior scores did not differ significantly between different riding conditions. Our hypothesis was not supported, and we conclude that therapeutic riding was not associated with increased stress in horses in this sample.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

The popularity of equine-assisted therapy is expanding rapidly. Per the Professional Association of Therapeutic Horsemanship International, there are over 3,000 certified instructors and 800 member centers participating in therapeutic programs involving horses [1]. Even this large number is an underestimation of the true number of participants in this field, not accounting for nonregistered organizations. The growing population of horses used in this treatment modality makes it increasingly important to

understand how therapeutic work affects quality of life for the horses. Equine-assisted interventions can include many types of therapeutic activities such as hippotherapy, equine-facilitated psychotherapy, therapeutic driving, interactive vaulting, and therapeutic horseback riding [1]. For this study, we chose to examine horses involved in therapeutic riding, which includes mounted activities designed to achieve physical, emotional, social, cognitive, behavioral, and educational goals through emphasizing the development of a relationship between the horse and the rider [2,3]. Therapeutic horseback riding is recommended for a variety of both physical and psychological conditions [1–4].

Research documenting the benefits of therapeutic riding for human participants is increasing, but the impact on horses has not been thoroughly investigated [2,3,5,6].

* Corresponding author at: Megan K. Mueller, Department of Clinical Sciences, Center for Animals and Public Policy, Cummings School of Veterinary Medicine at Tufts University, 200 Westboro Rd, North Grafton, MA 01536.

E-mail address: megan.mueller@tufts.edu (M.K. Mueller).

The physical and mental health challenges of individuals participating in therapeutic riding (e.g., decreased mobility and trunk stability, reactive behavior) may result in additional mental or physical stress on the horses. One psychological characteristic, nervousness, has been reported to transmit from riders to horses, as measured by increased heart rate, even without visible changes in behavior [7]. Previous research has also demonstrated that the ability of riders to cooperate with their horses, also known as horse-rider match, significantly influences stress experienced by horses [8]. It was hypothesized that therapeutic riding lessons would be more stressful for the horses because of the nature of the mental and/or physical challenges of the riders which could interfere with their ability to manage the requirements of horseback riding. Cortisol was chosen as the quantifiable measure of stress in the horses participating in this study because it has been strongly correlated to animal stress, reactivity, and welfare [9]. Salivary cortisol concentrations were measured because saliva can be collected with less stress compared to blood collection, and values correlate with free cortisol concentrations in the blood [10–13]. Free cortisol is excreted into saliva and accounts for 5% to 10% of the cortisol released by the adrenal cortex; and it is the biologically active form of the hormone responsible for the physiological effects of stress [14–16].

Cortisol concentrations are influenced by individual factors such as age, breed, and past experiences [17]. To reduce the effects of individual horse variability, delta cortisol values were calculated, with each horse serving as its own control. Salivary cortisol concentrations follow a diurnal rhythm [18]. To account for this fluctuation, samples were collected at the same times during each sampling session. Because therapeutic riding programs expose horses to riders with physical, cognitive, social, or emotional issues, we hypothesized that when adjusted for physiological factors, horses used in therapeutic riding exercises would have greater increases in their cortisol levels before, during, and after a therapeutic riding lesson than when ridden in a standard lesson program with an experienced rider [8]. Behavior was also evaluated for indications of stress.

2. Materials and Methods

2.1. Animals

Six adult horses experienced in hunt seat and therapeutic riding lessons were studied over a period of 6 weeks. Median (range) age was 17 (12–20) years for the testing group. Two mares and four geldings were included in the test group with Morgan (3), Quarter Horse (2), and Hackney (1) breeds represented. The horses were housed individually in shavings-bedded box stalls from 7:30 AM until 5:30 PM, before and after sampling periods, and were turned out on pasture for approximately 14 hours overnight. The horses were fed a consistent diet throughout the study and experienced no major medical problems. These horses are owned by the equestrian facility. During therapeutic riding sessions, the horses were ridden in an indoor riding arena, and the hunt seat riding lessons took place in an adjacent outdoor riding arena.

2.2. Riders

There were two groups of riders that participated in this study. One was the hunt seat riding group that consisted of six campers aged 8 to 14 years at an all-girl equestrian camp. Because length of stay limited camper participation, 30 campers served as the riders for this group. The second was a therapeutic riding group comprised of six children, five boys, and one girl, who were participating in therapeutic riding as part of treatment for a variety of diagnoses including autism spectrum disorder, attention deficit hyperactivity disorder, reactive attachment disorder, intellectual disability, sensory processing disorder, posttraumatic stress, and oppositional defiant disorder, who were also between the ages of 8 and 14. The therapeutic riding group was consistent throughout the 6-week study period. The hunt seat riding group varied as campers completed their sessions, but the riding levels of campers, as determined by the camp's head riding instructor, remained consistent. During therapeutic sessions, the horses were initially walked on lead lines but were eventually taken off as riders became more comfortable. Even when off the lead line, the therapeutic riders were accompanied by a sidewalker.

2.3. Study Design

Saliva was collected on 3 different days per week for a total of 6 weeks. To control for the effects of activity, in general, on changes in cortisol, these horses served as their own controls, and their saliva was collected on one day for rest, one during a traditional hunt seat riding lesson, and one during therapeutic riding. To account for diurnal fluctuations of cortisol, samples were collected at the same times each day. Samples were taken at 3 PM or just after the riders had mounted, 3:30 PM or 30 minutes into riding, and at 4 PM or 60 minutes into the activity, which marked the completion of the riding. To control for physiologic stress created by physical exertion, exercise was kept as consistent as possible [13]. The horses were only ridden at the walk and trot during sampling periods. No cantering or jumping was allowed. Riding sessions were limited to 1 hour for all horses. All procedures performed with the horses were reviewed and approved by the Tufts University Institutional Care and Use Committee.

2.4. Behavioral Evaluation

Riding sessions were videotaped to evaluate any stress behaviors in horses. Recordings of the ridden sessions were reviewed by one investigator (CM), and the horses were scored for different stress behaviors based on an ethogram developed by Kaiser et al [19] specifically for studying horses used in therapeutic riding programs. Seven specific behaviors were coded as manifestations of stress: ears pinned back, raising the head, turning the head to the left or right independent of the actions of the rider, tossing the head, shaking the head, holding the head down, and defecating. Every one of these behaviors produced by a horse was tallied to create an overall stress behavioral score for the horse as it worked in either a traditional or therapeutic capacity. The horses' stress behavior scores were

Download English Version:

<https://daneshyari.com/en/article/2394743>

Download Persian Version:

<https://daneshyari.com/article/2394743>

[Daneshyari.com](https://daneshyari.com)