

## Psychological and Physical Benefits of Interactions with Horses

### Abstract

Although much research exists concerning how horses can benefit people with specific debilitating impairments, relatively few studies have pursued what benefit horses offer people in the way of stress relief and improved quality of life. Study participants interacted with horses by grooming them and leading them through an obstacle course. Data were gathered through pre- and postinteraction surveys. Results suggest that interaction with horses offers a variety of benefits that may improve quality of life, such as increased confidence, lower stress, and an increase in caloric output. Implications exist for Extension programming.

**Keywords:** [assisted](#), [horse](#), [horse handling](#), [human health](#)

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## Introduction

Interactions with horses such as leading, grooming, petting, and training require direct and constant engagement, a state that can bring relief to individuals under stress (Evans et al., 2009; Ianonne, 2003; Klontz, Bivens, Leinart, & Klontz, 2007; Meek, 2012; Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Much research has addressed youth and adult programs that focus on horse handling and horsemanship as means for affecting emotional welfare and social capabilities (Evans et al., 2009; Ianonne, 2003; Klontz et al., 2007; Saunders-Ferguson, Barnett, Culen, & TenBroeck, 2008; Trotter et al., 2008; Weigel, Caiola, & Pittman-Foy, 2002); however, research on horse programs aimed specifically at alleviating stress and improving physical well-being of participants is limited. Benefits of working with horses include increased confidence and ability to communicate, improved self-esteem, and more constructive decision making or behavior (Evans et al., 2009; Ianonne, 2003; Meek, 2012; Trotter et al., 2008; Weigel et al., 2002). Even when not riding, interchange with a horse, such as

that which occurs through walking and brushing, requires rhythmic movements from the handler, and similar movements have resulted in relaxation and reduced stress (Novotney, 2013). Thus, we undertook a study to identify potential benefits related to daily stress and physical well-being that people may attain through close interactions with horses. We surmised that if benefits exist, working with horses could be influential in promoting psychological and physical health improvements for people undergoing typical stresses of everyday life and thus could serve as the basis for Extension programs aimed at improving quality of life for participants.

## Materials and Methods

We conducted our study under the Mississippi State University Institutional Review Board for the Protection of Human Subjects in Research protocol number 16-300. Participants were volunteers from 18 to 30 years of age with minimal or no horse experience. According to their answers to two independent preinteraction screening questions, they were categorized into groups based on daily stress level (DSL) (low, medium, high) and personality type (type A—competitive, highly aware of time, driven, highly motivated, very productive; type B—relaxed, stays in the moment, somewhat productive, tends to enjoy the present). Each participant took part in one of four sessions (approximately 1 hr in length), with 11 to 14 people participating in each session. To accommodate participant schedules and ensure having an adequate number of horses available, we conducted sessions on separate days during a single week. At the beginning of each session, participants were instructed by experienced horse handlers regarding how to handle horses safely and follow the research procedures. Horses used in the study were part of a therapeutic riding program, ensuring safe interactions for the inexperienced handlers.

Pre- and postinteraction survey questions were researcher-designed to lead to data that would be categorized into three themes: self-evaluated ability to exhibit positive behaviors before (pre) and after (post) interaction with horses (demonstrating patience, exhibiting confidence, obtaining goals, expressing using verbal techniques, remaining calm, focusing on tasks, and demonstrating assertiveness) (theme 1) and perceived impacts of interactions with horses on psychological state in relation to DSL (theme 2) and personality type (Friedman & Rosenman, 1959) (theme 3). Interactions included each participant's brushing both sides of a horse at three progressive regions—(a) neck, shoulder, forearm, and chest, (b) back and side, (c) hindquarter—with 50 strokes per region; brushing the mane and tail (grooming); and leading the horse through an obstacle course. The course included, in order, walking over poles, weaving through a set of cones, circling right, stopping in an 18 m box, turning the horse 270 degrees to the right, jogging away from the box, slowing to a walk, walking over a bridge, stopping, and backing. Before the interactions, participants were asked to complete the two screening questions related to DSL and personality type and a question pertaining to theme 1. After the interactions, participants were asked to respond to questions pertaining to all three themes. We also asked each participant to describe in a single word his or her experience of working with a horse.

To address benefits to physical well-being, we estimated energy expenditure according to body weight by using My Fitness Pal (My Fitness Pal Inc., Baltimore, MD). We also conducted a validation of energy expenditure estimation by using a FitBit fitness tracker (FitBit Inc., San Francisco, CA) on four random participants (two males and two females).

We conducted statistical analysis using SAS 9.4 (SAS Institute, Cary, NC). For theme 1, we used a paired *t*-test. For themes 2 and 3, we performed analysis of variance through the MIXED procedure with DSL (theme 2) or personality type (theme 3) serving as the fixed effect with differing means separated by a *t*-test. Statistical significance was determined at  $p \leq .05$ .

## Results and Discussion

### Demographic Information of Participants

Demographic information pertaining to the participants of the study is presented in Table 1. Fifty participants volunteered for the project; nine were male, and 41 were female. All were 18 to 25 years of age except one who was in the 26- to 30-year-old range. Twenty participants reported a low DSL, whereas 17 and 11 had medium and high DSLs, respectively (two did not answer the question). Thirty-six participants identified themselves as having a type-A personality, and 11 had a type B personality (three did not answer the question). Twenty-four participants had body mass indexes in the range of 18.5 to 24.9 (normal), whereas 22 participants were classified as either overweight or obese (four did not provide information).

**Table 1.**  
Participant Demographic Information

Demographic	Number of participants
Age	
18–25	49
26–30	1
Sex	
Male	9
Female	41
Daily stress levels <sup>a</sup>	
Low	20
Medium	17
High	11
Personality type <sup>b</sup>	
A	36
B	11
Body mass index <sup>c</sup>	
Underweight (less than 18.5)	2
Normal weight (18.5 to 24.9)	24
Overweight (25.0 to 29.9)	12
Obesity (30.0 or greater)	10

<sup>a</sup>Participants perceived daily stress levels as indicated through use of a scale ranging from 1 to 5 (1–2 = *low*, 3 = *medium*, 4–5 = *high*). <sup>b</sup>Personality type—type A (competitive, highly aware of time, driven, highly motivated, very productive) or type B (relaxed, stays in the moment, somewhat productive, tends to enjoy the present)—was determined via a preinteraction question. <sup>c</sup>Body mass index (BMI) was calculated via BMI calculator at [https://www.nhlbi.nih.gov/health/educational/lose\\_wt/BMI/bmicalc.htm](https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm)

## Perceived Ability to Behave Positively Before and After Interaction with Horses

Participants perceived that they were able to behave more positively after interactions with horses ( $p \leq .006$ ) (Table 2). Remaining calm under pressure was the most improved ability, with averaged responses indicating an increase of 19% for this behavior ( $p < .001$ ). Participants also perceived improvement ( $p \leq .006$ ) in the areas of demonstrating patience (13%), demonstrating assertiveness (10%), exhibiting confidence (8%), and focusing on tasks (8%). However, no changes in perceptions of obtaining goals or expressing oneself using verbal techniques were detected ( $p \geq .104$ ). These findings align with those reported by Evans et al. (2009), who identified improvements in patience, assertiveness, and social confidence of college students participating in equine training courses. Furthermore, equine programs such as 4-H and intervention programs focusing on basic horsemanship activities and horse handling have resulted in boosts in socially important qualities such as self-esteem and confidence for the youths involved (Saunders-Ferguson et al., 2008).

**Table 2.**

Participants' Perceived Abilities Before and After Interaction with Horses

Perceived ability	Preinteraction	Postinteraction	SE <sup>a</sup>	<i>p</i> value
Demonstrating patience	7.0	8.3	.3	< .001
Exhibiting confidence	7.4	8.2	.3	.006
Obtaining goals	8.5	8.6	.2	.740
Expressing using verbal techniques	8.1	8.5	.2	.104
Remaining calm	7.0	8.9	.3	< .001
Focusing on tasks	8.0	8.8	.2	.001
Demonstrating assertiveness	7.8	8.8	.2	.005

*Note.* Ratings were on a scale of 1 = *low* to 10 = *high*. Interactions included brushing both sides of a horse at three progressive regions—(a) neck, shoulder, forearm and chest, (b) back and side, (c) hindquarter—with 50 strokes per region; brushing the mane and tail; and leading the horse through an obstacle course. The course included walking over poles, weaving through a set of cones, circling right, stopping in a trail-style box, turning horse 270° to the right, jogging away from the box, slowing to a walk, walking over a bridge, stopping, and backing, in that order.

<sup>a</sup>Pooled standard error.

## Perceived Impacts of Interactions with Horses on People with Varying DSLs

Table 3 shows complete results related to the perceived impacts of interactions with horses on DSL. Participants in all DSL categories mostly agreed that interacting with horses helped them emotionally (on a scale of 1 = *strongly disagree* to 4 = *strongly agree*, levels of agreement were 3 to 4), although almost no differences were found among the three DSL groups. However, people with low DSL agreed more ( $p = .002$ ) that interactions with horses helped calm them from the stress of life than did participants with medium and high DSLs. In addition, participants did not feel frustrated after interactions with horses (agreement levels for "frustrates me" were 1.3 to 1.7). Across all questions, only a few differences ( $p < .05$ ) were found among the low, medium, and high DSL

groups, and the magnitudes of those differences were small. Participants agreed (agreement levels of greater than 3) that most positive impacts had occurred and disagreed (agreement levels of 1.6 or lower) that any negative impacts (feeling angry, rejected, frustrated, ignored, depressed, etc.) had occurred.

In a study on equine-assisted psychotherapy regarding mental health benefits for children who experienced intrafamily violence, it was suggested that equine-assisted psychotherapy contributed to greater global assessment of functioning scores. The population involved in the study represented a variety of mental and psychological disorders, including posttraumatic stress disorder and attention deficit hyperactivity disorder (Schultz, Remick-Barlow, & Robbins, 2006). Similar positive responses among all three DSL groups in our study indicate that working with horses posed almost no risk but had a rewarding impact on the mental health of participants.

**Table 3.**

Impacts of Interactions with Horses Perceived by Participants in Low, Medium, and High Daily Stress Level (DSL) Groups

<b>Perceived impact<sup>a</sup></b>	<b>Low DSL</b>	<b>Medium DSL</b>	<b>High DSL</b>	<b>SE<sup>b</sup></b>	<b>p value</b>
<b>Positive impacts</b>					
Helps calm me from stresses of life	3.9	3.3	3.5	.2	.002
Provides means to relieve emotional stress	3.6	3.2	3.2	.2	.241
Makes me happy	3.9	3.6	3.8	.1	.407
Gives me a more positive perspective	3.5	3.4	3.2	.2	.485
Helps enhance my self-esteem	3.3	3.1	2.7	.3	.224
I feel I experience freedom	3.1	3.3	3.3	.3	.808
I physically feel better	3.6	3.6	3.5	.2	.892
Feel more confident	3.6	3.2	3.1	.3	.127
Feel more dominant	2.9	3.2	2.4	.3	.067
Can think more clearly	3.2	3.1	3.2	.3	.920
Feel more capable of good decision	3.2	3.2	3.4	.2	.724
Feel more motivated	3.4	3.4	3.6	.2	.566
Feel invigorated	2.3	2.7	3.6	.3	.010
Feel inspired	3.5	3.5	3.4	.3	.860
<b>Negative impacts</b>					
Frustrates me	1.3	1.4	1.7	.2	.363
I experience fear	1.5	1.8	1.9	.2	.247
Feel more angry	1.1	1.2	1.1	.1	.842
Sense rejection	1.0	1.4	1.4	.2	.036
Feel frustrated	1.1	1.4	1.5	.2	.053
Feel ignored	1.0	1.2	1.1	.1	.015
Feel judged	1.0	1.3	1.3	.1	.057
Feel judgmental	1.2	1.4	1.2	.2	.532

Feel more rundown	1.4	1.4	1.5	.2	.954
Feel depressed	1.1	1.1	1.0	.1	.740
Feel more anxious	1.5	1.6	1.2	.3	.456

*Note.* DSL was screened via a preinteraction question at the beginning of the study. <sup>a</sup>Participants self-evaluated each perceived impact on a scale of 1 to 4 (1 = *strongly disagree* and 4 = *strongly agree*). <sup>b</sup>Pooled standard error.

## Perceived Impacts of Interactions with Horses on People with Differing Personality Types

Table 4 shows results for impacts of interactions with horses perceived by individuals with differing personality types. It should be noted that 36 participants (75%) identified themselves as having a type A personality (competitive, highly aware of time, driven, highly motivated, very productive). They agreed more ( $p = .012$ ) that working with horses made them happy than did participants having a type B personality (relaxed, stays in the moment, somewhat productive, tends to enjoy the present). This finding is important for developing future equine-assisted therapeutic programs because type A behavior has been associated with potentially higher levels of stress and higher risk of cardiovascular disease (Heilbrun & Friedberg, 1988). In a study on possible correlations between type A behavioral tendencies in Chinese students, a correlation existed between type A personality and stress-related hostility. The authors recommended that those experiencing stress to the point of hostility seek exercise (Shi et al., 2013). If type A personality is partly causative of cardiovascular health risk and other stress-related risks, working with horses may be an important tool for improving health and achieving a higher quality of life for people under constant stress caused by their behavioral tendencies. Working with horses appears to be a stress-reducing hobby and provides a means of physical exercise. For individuals self-identifying as having a type A personality or living under highly stressed conditions, working with horses may be an alternative therapy for reducing stress in addition to increasing physical exercise.

Moreover, similar to our findings regarding DSL groups, most other impacts perceived after interactions with horses did not differ between the groups having the two personality types ( $p \geq .062$ ). As with individuals having varied DSLs, participants with both personality types indicated great agreement (agreement levels of greater than 3) with positive impacts and disagreement (agreement levels of 1.1 to 1.7) with negative impacts. These results further emphasize the low-risk, highly rewarding aspects of equine-assisted activities for all types of people.

**Table 4.**

Impacts of Interactions with Horses Perceived by Participants with Different Personality Types (Type A or Type B)

Perceived impact <sup>a</sup>	Type A	Type B	SE <sup>b</sup>	p value
Positive impacts				
Helps calm me from stresses of life	3.6	3.6	.2	.836
Provides means to relieve emotional stress	3.4	3.2	.2	.416
Makes me happy	3.9	3.5	.1	.012
Gives me a more positive perspective	3.4	3.4	.2	.991
Helps enhance my self-esteem	3.1	3.1	.3	.945
I feel I experience freedom	3.2	3.2	.3	.942

I physically feel better	3.5	3.6	.2	.920
Feel more confident	3.3	3.3	.3	.839
Feel more dominant	2.8	3.0	.3	.704
Can think more clearly	3.1	3.3	.3	.459
Feel more capable of making good decision	3.2	3.2	.2	.881
Feel more motivated	3.4	3.4	.2	.938
Feel invigorated	2.8	2.5	.4	.486
Feel inspired	3.5	3.4	.3	.688
Negative impacts				
Frustrates me	1.4	1.7	.2	.188
I experience fear	1.8	1.4	.2	.062
Feel more angry	1.1	1.3	.1	.224
Sense rejection	1.3	1.1	.2	.298
Feel frustrated	1.3	1.3	.2	.772
Feel ignored	1.1	1.1	.1	.818
Feel judged	1.2	1.1	.1	.498
Feel judgmental	1.3	1.4	.2	.625
Feel more rundown	1.4	1.4	.2	.788
Feel depressed	1.0	1.1	.1	.375
Feel more anxious	1.4	1.6	.3	.462

*Note.* Personality types A (competitive, highly aware of time, driven, highly motivated, very productive) and B (relaxed, stays in the moment, somewhat productive, tends to enjoy the present) were determined via a preinteraction question.

<sup>a</sup>Participants self-evaluated each perceived impact on a scale of 1 to 4 (1 = *strongly disagree* and 4 = *strongly agree*). <sup>b</sup>Pooled standard error.

## Single-Word Description

Participants were asked to describe their experiences working with horses in a single word. Of 48 responses, 96% were positive. Positive expressions included the following responses: *accomplished, amazing, calming, confident, elated, empowered, entertaining, an escape, freedom, fun, happy, inspired, peaceful, refreshing, relaxing, relieved, stress free, stressless, and stress relief*. *Happy* was the most frequently chosen word, expressed by 17% of respondents. The only negative response was *scary*. Various studies on humans' interactions with animals have revealed positive impacts on people through recorded phrases, sentences, or segments of interview that capture participants' perceptions (Ianonne, 2003; Lambarth, 2011; Weigel et al., 2002). To our knowledge, our study is the first to report in a single word the experience of interacting with horses. The trend of responses from our participants reinforces the reality of the positive effects of equine-assisted exercise and therapeutic programs.

## Physical Benefits of Interactions with Horses

Most participants performed one round of grooming and three rounds of leading. These interactions with horses resulted in an average expenditure of 114.7 cal ( $SD = 35.4$  cal) for each participant. Each round of grooming required 65.7 cal ( $SD = 19.3$  cal), and one round of leading required 20.2 cal ( $SD = 5.8$  cal). Typical energy expenditures of grooming and leading for a person of 100 lb body weight were 40 and 69 cal, respectively. There was no difference in calorie expenditure of either grooming or leading between software estimation and FitBit tracking ( $p > .180$ ).

Research specifically analyzing the possible health benefits of working with horses has suggested not only physical benefits but also the possibility that working with horses provides motivation to exercise. A study from the British Horse Society (2011) classified horseback riding as a possible means of achieving moderate-intensity exercise. In 2013, the British Equestrian Foundation launched an exercise initiative known as Trot to be Trim that targets caloric burn achieved through riding horses and working around horses before and after riding (British Equestrian Foundation, 2013).

## Conclusion

Our findings offer a basis for Extension services' implementing equine-assisted programs. Equine interactions provide multifaceted benefit potential ranging from mental to physical health. Our study offers evidence that equine-assisted intervention for social or psychological needs is generally beneficial and generates a very low-risk therapeutic environment and thus may allow for the creation of Extension programs intended to improve the well-being of people with varying levels of stress and different personality types. Programs such as introducing schoolchildren to horses during classroom hours to promote relaxation and engagement may be considered as a means of providing psychological and physical benefits. Further research is needed to understand long-term benefits of interacting with horses. Through incorporation of a program such as the one we studied, Extension personnel can use horses, and possibly other animals, to deliver well-rounded, positive impacts related to the well-being of clientele.

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