

**THE USE AND PERCEPTIONS OF ALTERNATIVE THERAPIES IN THE
HORSE INDUSTRY**

by

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ABSTRACT

Horse owners use and interest in alternative therapies appears to be growing. It is imperative then to understand what drives perception and use of chiropractic, acupuncture, pulsed electromagnetic field (PEMF), and massage therapy on horses. This study explored horse owner use and perceptions of these alternative therapies. We hypothesized that participant-reported use of these therapies would differ by rider discipline, age, education, and frequency of competition. An online survey was distributed via social media and included demographics and questions to determine respondents' use and perceptions of these alternative therapies. Of 702 respondents, 661 met the criteria of inclusion of having owned or cared for horses. Overall, 86% of respondents had used a form of alternative therapy on a horse they owned or cared for. Further, respondent age, frequency of competition, and discipline influenced use in chiropractic and acupuncture, but only age and frequency of competition influenced PEMF use. Ninety-nine percent of respondents agreed that massage was safe to use on their horse, while only 91% felt similarly about PEMF. When asked if the effectiveness of each therapy was well researched, only 63% agreed for PEMF, while 85% agreed that chiropractic was. This study indicates that owners feel that these therapies are beneficial to their horses, and perceive they are generally safe or effective despite little scientific evidence.

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CHAPTER I: LITERATURE REVIEW

Introduction

Alternative therapies have quickly risen in popularity within the last two decades with humans. With a desire to go more ‘natural’ and move away from conventional medicines that are available and proven to remedy issues, people have become more aware of available alternative therapies. Common therapies seen in human use today include chiropractic, acupuncture, massage, and pulsed electromagnetic field therapies. Pet owners alike have shown interest in more non-invasive, at-home treatments that are affordable as well as effective in minimizing risk of injury, healing wounds, and improving overall health and comfort of their animals (Gaynor et al., 2018). In a survey of 423 horse owners, 96% percent had used a form of alternative therapies on their horses, with massage being the most popular (Thirkell and Hyland, 2017). With more than 7.2 million horses and 2 million owners in the United States alone (American Horse Council, 2017), owners may be choosing these therapies with little knowledge of their true efficacy. Despite widespread and growing use, research into the efficacy of these therapies remains sparse.

Chiropractic

A therapy frequently seen today is chiropractic. Originating from the Greek word for hand, ‘cheir’, and done, ‘praktos’, chiropractic was first named meaning ‘done by hand’ (American Chiropractic Association, 2021). Chiropractic was first reported in 2700 BCE, long before the first case of modern chiropractic in 1895 when Daniel David Palmer adjusted a deaf janitor and claimed he was able to restore his hearing (Nesci, 2019). Chiropractic has since become a commonality in human health (Nesci, 2019). In

1906, the Universal Chiropractors Association was created to combat legal troubles practitioners encountered while working (Johnson and Green, 2021). Today, chiropractic in the United States is performed by more than 70,000 licensed chiropractors, with an estimated treatment of 35 million adults (American Chiropractic Association, 2021).

Also referred to as “spinal manipulation”, the purpose of chiropractic is to restore and maintain natural body position and structure to reduce spinal irritation and improve spinal function (Nesci, 2019). Chiropractic focuses on the adjustments of the skeletal system particularly the spine, to maintain alignment and structure of the body. It is based on the concept that nerve signals are hindered when the skeletal system becomes fixed instead of having normal movement necessary for the passage of nerves to the rest of the body (Nesci, 2019). The goal of using chiropractic as an alternative therapy is to decrease pain in the body from nerve disruption caused by the misalignment of the skeletal system.

In humans, perceptions of use and efficacy on chiropractic care have been evaluated using surveys. One such survey was conducted in 2015 and sought information regarding the perceptions of chiropractic use in humans (Weeks et al., 2015). Of 5422 respondents, 13.7% had seen a chiropractor in the last year, but 24.2% thought that chiropractic was dangerous. Over half, 61.4%, thought chiropractic was effective at treating back and neck pain (Weeks et al., 2015). Understandably, perceptions of danger decreased as the likelihood of chiropractic use increased for respondents (Weeks et al., 2015).

In New Zealand, a survey on alternative therapies was conducted on 110 riders and trainers in the disciplines of show jumping, dressage, or Thoroughbred racing (Meredith et al., 2011). The most frequently used alternative therapy was chiropractic

(37%) because of back pain exhibited by the horse (Meredith et al., 2011). Chiropractic care is quickly becoming one of the most frequented alternative therapies not only in humans, but also horses.

Efficacy

While anecdotal evidence of chiropractic efficacy abounds, research into its efficacy remains limited. Lynge et al. (2021) evaluated chiropractic manipulation and sham manipulation with children that presented with chronic headaches at least once per week. Chiropractic reduced the number of days children reported headaches, but there was no difference in perceived pain intensity of the headaches. It was concluded that because the treatment is easy to apply and with no increase in perceived pain by the subjects, chiropractic is relatively low-risk and provides little, if any, adverse reactions post treatment (Lynge et al., 2021).

In another study, office workers reported improvement in pain with consistent chiropractic treatments and adaptations of new posture behaviors, and the effectiveness of treatments lasted past the 16-week duration of the study (Sherrod et al., 2013). Although pain levels were self-reported by the study subjects themselves, the authors maintained that the benefits seen and felt by the subjects were direct effects of the chiropractic treatments done to relieve musculoskeletal pain.

Contrary to many human studies, studies in equine subjects have proven limited or shown no perceived benefits in the use of chiropractic manipulation. In a study evaluating the effect of two periods of chiropractic treatment on performance and behavior of 10 lesson horses, trot stride length improved, although minimally, and a subjective assessment of the horse's temperament improved, perhaps signifying less pain.

The study concluded that although improvement was seen after only three chiropractic treatments, the long term benefits need to be studied further (Schultz et al., 2015).

Similarly, Haussler et al. (2020) evaluated chiropractic in riding horses. An evaluation of 34 Quarter Horses that had been diagnosed with back pain were placed into three different treatment groups of either laser treatments, chiropractic treatments, or a combined treatment of chiropractic and laser together (Haussler et al., 2020). This study author was blinded, but both owners and the treating practitioner knew which treatment each horse received. Visual Analog Scores (VAS) ranging from 0 to 10 were recorded by owners to note the severity of the back pain each horse exhibited. The veterinarian applying treatments to the horses also used VAS scores of their perceived pain and spinal function of each horse (Haussler et al., 2020). Each horse received three treatment sessions over 3-5 days. Spinal examinations of the trunk and pelvis were administered, spinal and pelvic reflexes were taken, and pain thresholds were recorded before the start of the treatments and after the third treatment was completed (Haussler et al., 2020). The results showed that there were no significant changes in measures of back pain (-13%), but there were improvements in thoracic (+28%) and pelvic (+28%) flexion reflexes within the chiropractic treatment only (Haussler et al., 2020). The laser therapy treatment group had significant changes in back pain (-41%) compared to all other groups (Haussler et al., 2020). This study is significant in modern research with findings suggesting that chiropractic care is not as effective as other alternative therapies seen in the industry today.

Acupuncture

Acupuncture is another common alternative therapy seen in the horse industry. Originating from ancient Chinese culture, acupuncture first started with the utilization of sharp stones on certain parts of the body to alleviate symptoms of injury (Wang et al., 2019). The first documented uses of intentional acupuncture dates back during the Ming Dynasty in a book entitled *The Great Compendium of Acupuncture and Moxibustion* which first established 365 acupuncture points. In 1822, however, the Emperor of China excluded acupuncture from the Imperial Medical Institute as it was deemed as irrational (White and Ernst, 2004). Still, in the 1970s, acupuncture increased in popularity in Europe and America in human use because Felix Mann, a British acupuncturist, began promoting the use of acupuncture as conventional medicine claiming that acupuncture had an effect on endorphins in the nervous system (Cady and Farmer, 2015). In 1997, the National Institutes of Health deemed that there was sufficient empirical data to conclude that acupuncture can be effective in treating issues such as nausea and vomiting and some relief of pain from dental work (Marwick, 1997).

The first research on acupuncture that included horses was not seen until 1972 with more research with horses being conducted much later in the 1990s (Satory, 1972). Still, acupuncture represents a growing alternative therapy in veterinary medicine with veterinarians pursuing additional training in this area with more than 1000 veterinary acupuncturists licensed today (Lin, 2018).

Acupuncture is claimed to provide analgesic effects to the body using certain reactive points on the body (Takeshige et al., 1993). Most commonly, practitioners use needles to pierce the skin in particular areas of the body to help open up obstructed

pathways (Cady and Farmer, 2015). Traditional Chinese medicine believes that through these pathways in the body, Qi (pronounced ‘chee’), or energy flow, is reached when not obstructed. Thousands of acupuncture points are connected to these pathways and if any are disrupted, small thin needles strategically placed can alleviate these blockages (Cady and Farmer, 2015). Acupuncture has become widely popular in western culture and alternative medicine and continues to be popular among equine enthusiasts.

In humans, perceptions of use have been recorded from data in the National Health Interview Survey in 2007. Of the 23,393 respondents, 1.4% had used acupuncture in the last year with most of them having done so because they failed to see results from conventional medicine. Still, of those who had used acupuncture formerly but not in the last year, .5% of participants reported stopping had treatments and felt it was unsafe (Zhang et al., 2012). With this information, it can be said that there is still some uncertainty regarding acupuncture use in humans in the US today.

Efficacy

The effectiveness of acupuncture continues to be debated. Beyond pain relief, there are a multitude of claims including increased energy and concentration. A study using rats evaluated the use of acupuncture on cerebral blood flow (Zhang et al., 2014). This study found that in rats with a recorded decrease in cerebral blood flow, there was an increase of blood flow post acupuncture treatment and because of that, an increase in cognitive function was seen (Zhang et al., 2014).

Acupuncture is surprisingly one of the most well-researched alternative therapies in the horse industry, with multiple studies being conducted on various facets of acupuncture use in horses. Recent research has also recently included the use of

acupuncture to aid in reproductive health in broodmares and stallions. A retrospective study conducted in conjunction with Hagyard Equine Medical Institute reviewed previous cases where acupuncture was perceived to have helped with smooth muscle motility, pain relief, infection and libido in stallions (Schofield, 2008). Admittingly, the majority of these cases lacked appropriate scientific control or adequate animal numbers

Another study in acupuncture used 44 Thoroughbred mares that had a history of pooling uterine fluid based on ultrasonography by a reproductive specialist. One day after acupuncture treatment, resolution of the fluid was apparent in the ultrasound and subsequently that season 81% of the mares used were confirmed pregnant (Schofield, 2008).

Even though some research claims acupuncture to be beneficial, there are just as many refuting those claims. Most notably, reproductive overviews in horses have claimed that uterine infections, anestrus and stallion libido are being treated with positive benefits (Schofield, 2008). Other studies have found no significant difference between control horses and acupuncture treated horses when treated twice a week for 3 weeks (Niemantsverdriet-Murton et al., 2011). The most recent evidence not supporting acupuncture use evaluated the effectiveness of exercise, ecbolics (the use of drugs to induce contractions of the uterus), or acupuncture on reducing intrauterine fluid in broodmares. Exercise proved the most effective, followed by oxytocin with acupuncture having minimal effect on fluid reduction (Swift et al., 2020).

Although there is empirical evidence on both sides of infertility effectiveness in mares and stallions, there is early empirical support of back pain relief after acupuncture treatments (Klide, 1984). Klide evaluated 15 horses who had chronic back pain and had

no improvement using other methods. On average horses were treated 7.9 times on a weekly basis. Thirteen of the 15 horses showed physical signs of increased mobility and were able to function normally after treatments had concluded (Klide, 1984). A more recent study evaluated dry-needling on horses with lumbar or gluteal pain. Data showed that there was a difference in treated horses versus control horses and that when evaluating sedation signals in treatment, there was a beneficial difference in treatment groups (Varhus and Huisheng, 2019).

Research has recently been done on horses with laminitis in conjunction with acupuncture treatments (Faramarzi et al., 2017). The study used 12 horses with chronic laminitis and each of them received two acupuncture treatments a week apart. Using a sensor to gauge lameness in the gaits as well as a lameness evaluation by a veterinarian, it was seen that the sensor and the lameness evaluation both saw a decrease in the severity of the lameness after acupuncture treatment (Faramarzi et al., 2017). This study supports the use of acupuncture in laminitis cases, with quantifiable, not anecdotal evidence, supporting certain treatment protocols.

Massage

Another frequently seen therapy in both humans and horses alike is massage. An early record on massage therapy dates back to the dark ages. It was reported that three different treatments over 100 days where a patient was to rise early in the morning and be massaged gently by two trained adolescents and progress to using stone filled sacks to exercise the back (Scientific American, 1898). Massage has been linked to benefitting muscle, skeletal, joint, and neurological issues. Although massage is impossible on internal structures without making an open wound, the manipulation of muscle and

subsequent release afterwards can relieve pressure on joints and surrounding tissues (Scott and Swenson, 2009).

For decades now, massage has been a long-standing routine for human athletes (Martin et al., 1998; Dawson et al. 2004). Massage is the manipulation of tissues using manual force (hands) to promote pain relief and relieve muscle soreness in the body (Haussler, 2009). As massage use has grown in the general human population in recent years as a way to reduce muscle soreness, pain and increase range of motion, blood flow, and flexibility, so has its use in equine subjects. Massage is quickly growing in popularity in the equine industry and owners and trainers alike are becoming more open to using massage. Massage uses manual pressure and techniques of various depths applied to the subject at “trigger points,” or spots of tissue that are tender when pressed. Application of the three main massage strokes, compression, direct pressure, and cross-fiber friction, are used to release tension in the fascia of muscle (Scott and Swenson, 2009).

In humans, massage therapy has only been used by 6.8% of people in the last year, as reported from data on a 2012 National Health Interview Survey of 34,525 people (Sundberg et al., 2017). Of these who reported massage use in the last year, 56% did so to improve or maintain general health (Sundberg et al., 2017). This survey is the most recent perception data available regarding human use of massage therapy.

An early pioneer of equine massage therapy who obtained the first grant for use in non-human subjects in massage, Jack Meagher, catapulted equine sports massage into the industry limelight in 1999 (Scott and Swenson, 2009). He claimed that horses had 25 common areas of stress, and that if direct pressure was applied to these points, a cascade of release followed (Figure 1). Since that time, massage use in the horse industry has

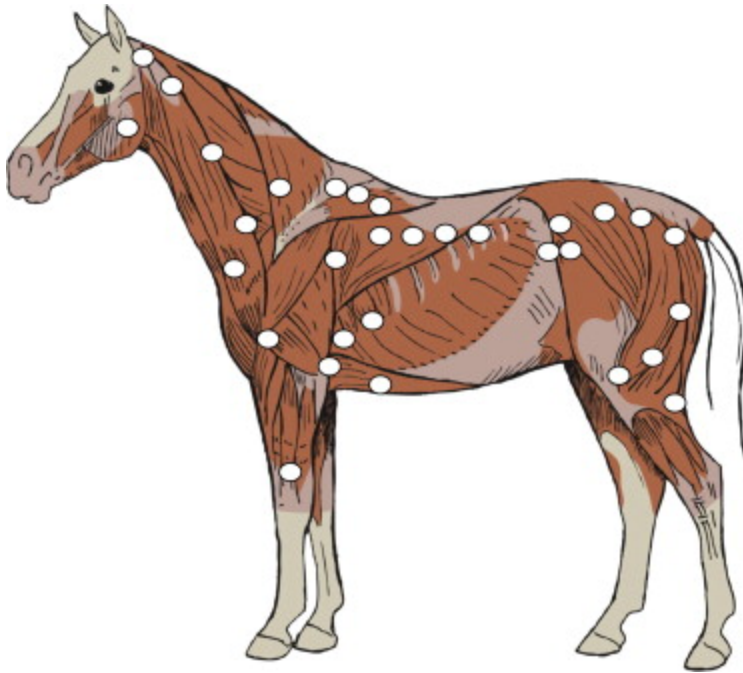


Figure 1: The most common areas of equine stress points, an expanded version of Jack Meagher's 25 points (Scott and Swenson, 2009)

grown and has now been recorded as the second most common alternative therapy for horses in some countries such as New Zealand (Meredith et al., 2011). The biggest reason for massage therapy use was to help with back pain (32%), and lameness (25%; Meredith et al., 2011).

Efficacy

In humans massage has been decently studied and the effectiveness and risks associated with massage therapy has been examined. In breast cancer survivors, massage had a positive effect on fatigue compared to those who received sham massage and traditional care. There were also no documented adverse effects or risks associated with the massage (Wang et al., 2021). A meta-analysis investigating the influence of massage on anxiety and depression levels in pregnant women concluded that massage may be a

great alternative to medicinal treatment as it seems to show a reduction in anxiety and stress short-term (Hall et al., 2020).

Jack Meagher's initial study delved into stride length pre- and post-massage treatments in horses (Wilson, 2002). In this study, major muscle groups seen in activated exercise were evaluated: supraspinatus, triceps brachii, biceps femoris, and superficial gluteal muscles. Using ultrasonography, a cross-section of those targeted muscle junctions was taken before horses were worked on a treadmill (Wilson, 2002). Stride length was observed during each horse's work on the treadmill at a speed of 8 miles per hour for the trot for 100 strides, and 12 miles per hour for 100 strides. After horses worked on the treadmill and were cooled down, massage was applied in the form of direct pressure, cross-fiber friction and compression each for 20 minutes on the major muscle groups. Horses were then re-ultrasounded after work at the major muscle groups to gather the cross-sectional data. Wilson (2002) found that there was an increase in stride length and a decrease in stride frequency after massage was applied. The cross-sectional ultrasounds of the muscle post exercise and massage found that there was an increase in the diameter of the muscle tendon junctions on all muscle groups. They concluded that massage was beneficial and had a positive outcome on stride length and muscle diameter (Wilson, 2002).

Sullivan et al. (2005) examined the effects of chiropractic treatments and massage treatments on spinal mechanical nociceptive thresholds in horses. Thirty-eight adult horses that exhibited no signs of lumbar pain were placed into one of three treatment groups: chiropractic treatment, massage treatment, and phenylbutazone (bute) treatment or were in one of two control groups of active exercise or inactive exercise. Baselines of

mechanical nociceptive thresholds were taken and were repeated on d 1, 3 and 7, of seven different muscle sites on the horse. Results concluded that massage and chiropractic both had an increase in pain thresholds in horses, with massage beckoning an almost immediate threshold response on d 1 of treatment (Sullivan et al., 2005). With this study the use of massage gained more momentum with horse owners seeing the value of adding equine massage to a horse's routine care.

Additional research has since been completed using 60 3-year-old racehorses in training (Kedzierski et al, 2017). Horses were grouped into five groups of 12: a control group that received no relaxation methods (CN), one received relaxing music for one hour per day (MC1), one group received relaxing music for three hours per day (MC2), one group received relaxing massage only on the day before an official race (MG1), and the last group received massages every day during the six months the study lasted (MG2; Kedzierski et al., 2017). Effects of the music and massage were measured by heart rate and heart rate variability and salivary cortisol. Heart rate was lower at rest in groups MC2 and MG2 compared to the control groups and salivary cortisol was lower in MG2 than any other groups compared to the baseline tests. Comparatively, the results indicated that the massage groups were more relaxed than the music groups, and out of the massage groups, getting massaged every day produced lower stress levels than getting massaged then only right before a race (Kedzierski et al., 2017).

Pulsed Electromagnetic Field

The newest alternative therapy seen today is pulsed electromagnetic field therapy (PEMF). The PEMF therapy was first used in the 1930s as a means to transmit heat deep into tissue, but with a reduction in heat output from the machine itself (Gaynor et al.,

2018). Although first distributed commercially in the 1950s, PEMF devices were researched as a way to heal fractures and increase repair response in bone (Bassett, 1974; Heckman et al., 1981). As time progressed into the early 2000s, and research advanced, more studies aimed at using PEMF to target more than just bone healing and remodeling. Studies using PEMF to examine the depth of heat into tissue and muscle were being conducted while some studies found decreases in cellular inflammation and apoptosis in addition to the positive effect of cartilage regeneration (Draper et al., 1999; Rahbek et al., 2005; Parate et al., 2020). Some of the most recent research has linked PEMF with increasing fine motor skills in humans with Parkinson's disease, although benefits are short term, with clinical signs of disease progressing a few months after the last treatment of PEMF (Bente et al., 2018). Currently, no peer-reviewed surveys were identified regarding the perceptions of PEMF use in humans or horses, which leaves a hole in the current research being conducted on PEMF itself.

PEMF is a type of electrotherapy transmitted by a magnetic waveform used to treat a targeted area on a subject. These pulsed waveforms are an electrical current passed through a wire coil to a targeted area on a subject intended to mimic and increase the body's natural response to certain stimuli (Figure 2). These wire coils are marketed in various modalities, such as sewn into leg wraps and full body blankets and include small and large single coil systems (Figure 3). These modalities often vary in output of wavelength and strength and are not uniform between types (such as blankets to coil units) or even within certain types because they differ with manufacturers (Schlater and Lewis, 2016).



Figure 2: PEMF coils come in a variety of different shapes and sizes, a small one is shown here.
(MagnaWave, 2021).



Figure 3: PEMF blankets have the coils sewn into a sheet over targeted large muscle groups
(Respond Systems Incorporated, 2016).

Efficacy

In humans, PEMF has been studied as a method of healing fractures that initially had failed surgery. Some subjects underwent a second surgery to fix the fracture, but subjects that received PEMF as a treatment instead had nearly the same success rate at 81% compared to the 82% healed by secondary surgery (Gossling et al., 1992). The results suggested PEMF therapy could elicit results similar to traditional surgical treatment with a less invasive approach.

While there is plenty of research into the benefits and safety of PEMF in human use, there is little empirical evidence in horse subjects. One such study investigated musculoskeletal tenderness in 12 sound horses using chiropractic and PEMF separately, and in conjunction with one another (Davey et al., 2021). Three groups were established: a control group with no intervention, one treatment group that received chiropractic only for ten minutes, and a treatment group that received both chiropractic and PEMF (placed cranial to T18 with 5 minutes per side). Mechanical nociceptive thresholds were taken at three muscle trigger points, to represent tenderness within the muscle, over a 150 minute period after treatment had concluded. The authors found that there was a reduction of tenderness in horses that had been treated with both therapies over a short time period, and the treatment group who only received chiropractic treatment also had a reduction of tenderness after treatment (Davey et al., 2021). As PEMF alone was not investigated in this study, it is unclear whether PEMF had an effect in addition to or in conjunction with the chiropractic, or if differences observed were the result of chiropractic treatment alone.

Similarly, Javadi et al. (2021) compared PEMF treatment to topical Dimethyl Sulfoxide (DMSO) in tendon injuries. Using polo horses diagnosed with superficial digital flexor tendonitis, horses either received treatment of PEMF along with DMSO for four days or just DMSO itself for four days. They found that treatment with PEMF along with DMSO had no more effect on the tendon than the use of DMSO. The authors concluded that in order for PEMF to possibly reach a beneficial point to the tendon, more research into treatment length and protocols would be needed (Javadi et al., 2021).

A double-blind placebo controlled study using 20 polo ponies with back pain was conducted evaluating the effects of PEMF on mechanical nociceptive thresholds of 25 sites on the horses' backs (Biermann et al., 2014). Horses wore either a blanket with an active PEMF device attached, or a placebo blanket during the first period of 10 d. After the first treatment period, a wash out period of 5 to 14 days occurred, and then the second period started with the groups switching treatment groups (Biermann et al., 2014). At the end of the study, no changes were evident compared to baselines, and stiffness was reported after back flexions were completed. There was an increase in back pain in some horses with increased pain values compared to those baselines. This may be attributed to the fact that the horses were still playing in polo matches (Biermann et al., 2014). With the majority of the PEMF research findings being inconclusive in horses, the data is inadequate to suggest that PEMF devices for equine use would be of any benefit on bone, muscle or tendon issues.

Conclusion

Alternative therapies are a popular tool used by horse owners worldwide as shown by anecdotal use within the horse community. Therapies such as chiropractic and

acupuncture have gained traction with humans as evidenced from surveys done in recent years. Massage and PEMF therapies still need to be surveyed further to establish a baseline for perceptions and use in both humans and horses going forward into modern research. The general lack of empirical data in all four of the therapies discussed in relation to horses raises concern into the efficacy of them. Chiropractic and acupuncture therapies have the most data supporting the effectiveness of them in horses, but treatment protocols vary widely and are far from standardized. PEMF and massage therapy leave more research into their efficacy desired, and similarly are not controlled in their application. With new research being conducted every year, it is possible that we will see empirical data supporting the use of these therapies as a substitution for western medicine in the average horse owner's barn. Still, even without research into their efficacy, horse owners are willing to utilize these treatments on their horses and thus understanding their rationale for doing so can be useful for educators and leaders within this industry.

CHAPTER II: THE USE AND PERCEPTIONS OF ALTERNATIVE THERAPIES IN THE HORSE INDUSTRY

Introduction

Alternative therapies continue to grow in popularity in the horse industry. They can be considered a practical alternative for those who are not able to use conventional medicine or those who wish to avoid it for personal reasons, or may be in addition to conventional medicine. Some alternative therapies are seen as a valuable asset to show stables and top performance barns who credit them with helping to achieve top placings at some of the world's best events. Yet, while they are commonly used, there is little empirical evidence to support the widespread use of such modalities in the horse industry. There is also limited information available about why horse owners choose an alternative therapy and who they source their information from regarding the use of an alternative therapy.

The purpose of this study was to evaluate horse owner use and perceptions of alternative therapies and to investigate what factors influence an owner to use them. We hypothesized that participant-reported use of chiropractic, acupuncture, massage, and Pulsed Electromagnetic Field (PEMF) therapies would differ by rider discipline, age, education, and frequency of competition.

Materials and Methods

In this study, an online survey was developed and administered using Qualtrics, a survey creation software that allows storage, data collection and analysis. The survey and

all methods were approved by the Institutional Review Board at Middle Tennessee State University (Protocol ID# 22-1015 2q); Appendix A). The survey was widely distributed to equine owners and caretakers via social media (Facebook). A survey link was made available beginning August 13, 2021, and closed on September 07, 2021. The information gathered in this survey contained no identifying questions and responses were completely anonymous. The complete survey can be found in Appendix B.

Respondents were first asked to briefly answer a series of consent questions along with confirming they were 18 years of age or older. They were then directed to an elimination question of how long they have owned or cared for (a) horse(s). All responses signifying they had never owned nor cared for a horse were directed to the end of the survey, all other responses progressed to the remainder of the survey. Respondents were then asked to identify their gender, age (in ranges), and to indicate their highest level of education. They were then asked several questions regarding their horse ownership status, rider identification, riding discipline, how often they compete with their horse, whether they had used a form of alternative therapy on themselves, whether they had used a form of alternative therapy on a horse, and where they are most likely to consult *first* regarding the use of alternative therapies for their horse.

In addition to these, respondents were asked a series of 6-point Likert scale questions about perceived issues of a particular horse in their care. They were then directed to the remainder of the survey regarding the use of four alternative therapies: chiropractic, acupuncture, massage, and Pulsed Electromagnetic Field (PEMF) therapy. If a respondent had used a particular therapy they were directed to a separate set of Likert scale questions regarding their use of that therapy. Respondents who had not used the

therapy, received only the questions about the likelihood of use and safety/efficacy. These Likert scale questions were repeated for the remaining three alternative therapies.

Responses were collected over a period of 26 d, at which point, data collection was halted and the survey link was closed. Prior to survey evaluation, the inclusion criteria was established to be those who had owned or cared for a horse. Respondents who answered “no” were not included in the data analysis. All other responses were included in the analysis.

Summary statistics and frequency counts of data were completed using the survey software Qualtrics (SAP Qualtrics XM, Provo, Utah). Data were further examined using frequency counts, chi-square test for measures of association, and an analysis of variance using a mixed linear model (SAS for Academics, SAS Stat. Inc., Cary, NC). Statistical significance was set as $P < 0.05$, and trends were considered when $0.05 < P < 0.10$.

Results

Demographics

In total, 702 respondents started the survey, of which 661 met the criteria for inclusion. Of the respondents, 96% were female, 3% were male, and less than 1% identified as non-binary or a third gender. Eighty-one percent of respondents owned or cared for horses for 10 or more years, 9% for 6-9 years, 9% for 1-5 years and less than 1% owned horses for less than one year or not at all. There was a diverse spread of age represented with 2% of respondents under 20 years old (but at least 18), 30% were 20-30 years old, 27% were 31-40 years old, 16% were 41-50 years old, 14% were 51-60 years old, 9% were 61-70 years old, 2% were 71 years and older (Figure 4).

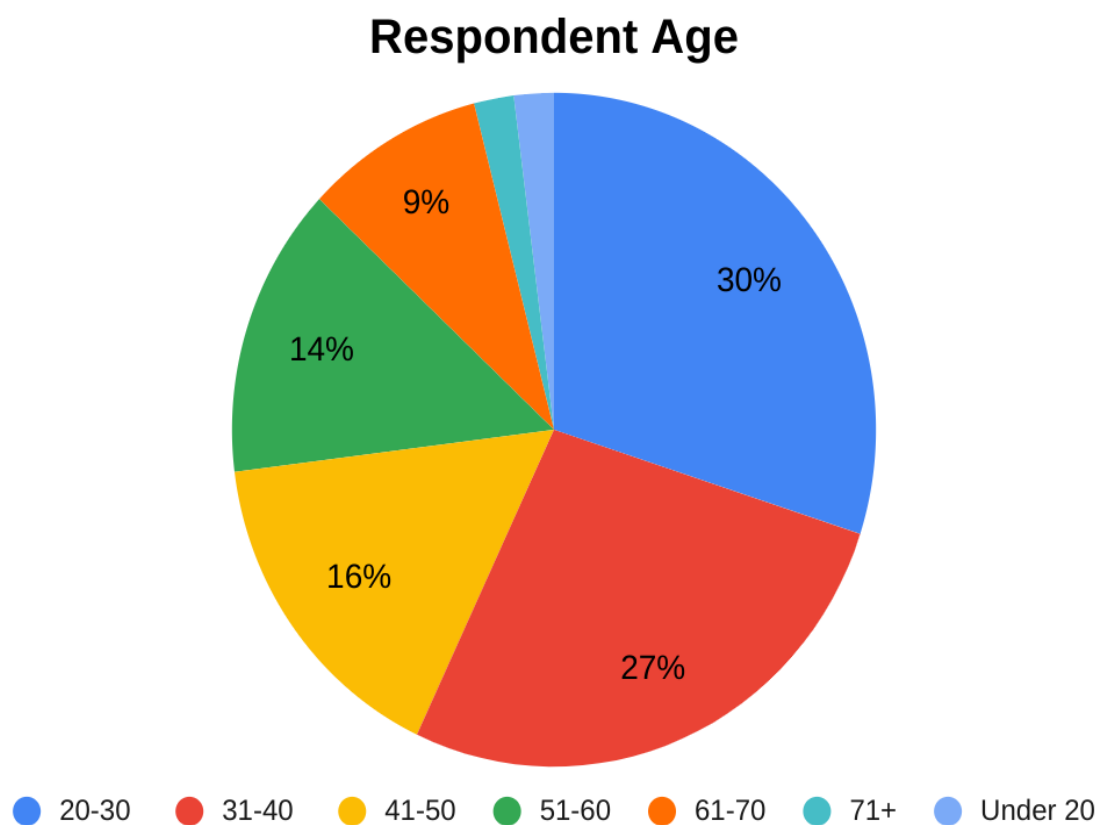


Figure 4: Respondent ages by percent of included responses.

When asked the highest level of education they had received, less than 1% had less than a high school education, 4% had a high school diploma or GED, 1% trade school, 15% had some college, 8% had an associate degree, 39% had a bachelor's degree, and 32% had a postgraduate degree (Figure 5).

When asked how many horses respondents cared for or owned, 25% owned one horse, 40% owned or cared for between 2-4 horses, 18% owned or cared for between 5-9 horses, and 18% owned or cared for 10 or more horses (Figure 6). When asked where their horses were kept, 43% kept their horses at a separate boarding facility, 44% kept them on their own property, 11% both kept them on their own property and boarded them at a separate facility, and 2% currently do not own or care for any horses.

The majority of survey respondents identified themselves as amateurs or non-professional riders/exhibitors at 50%, while 26% were recreational or non-competing riders, 17% were professional riders or trainers, 3% were non-riding owners, and 4% identified themselves as a groom or caretaker (Figure 7). Of those respondents 31% did not compete with their horse, 32% of them competed one day per month or less, 21% competed 2-3 days per month, 9% competed 4-5 days per month, and 7% competed more than 6 days per month.

Respondents represented a large array of disciplines including dressage, driving, endurance, eventing, halter, hunter/jumper, polo, racing, speed events (barrel racing, pole bending, mounted shooting), recreational/trail riding, western all-around events (trail, pleasure), western performance events (reining, cutting, team penning), rodeo events (team roping, tie-down roping, steer wrestling, breakaway roping), and other. The top five disciplines represented being 22% hunter or jumpers, 19% recreational riding or trail

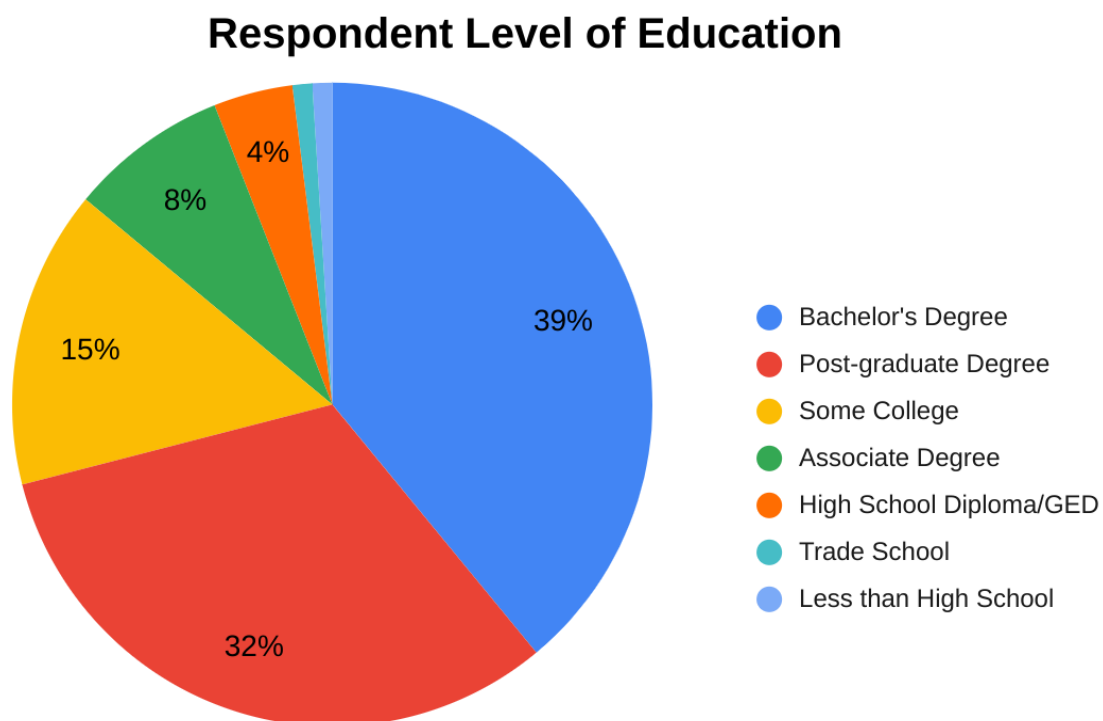


Figure 5: Respondent level of education by percent of included responses.

Respondent Length of Ownership

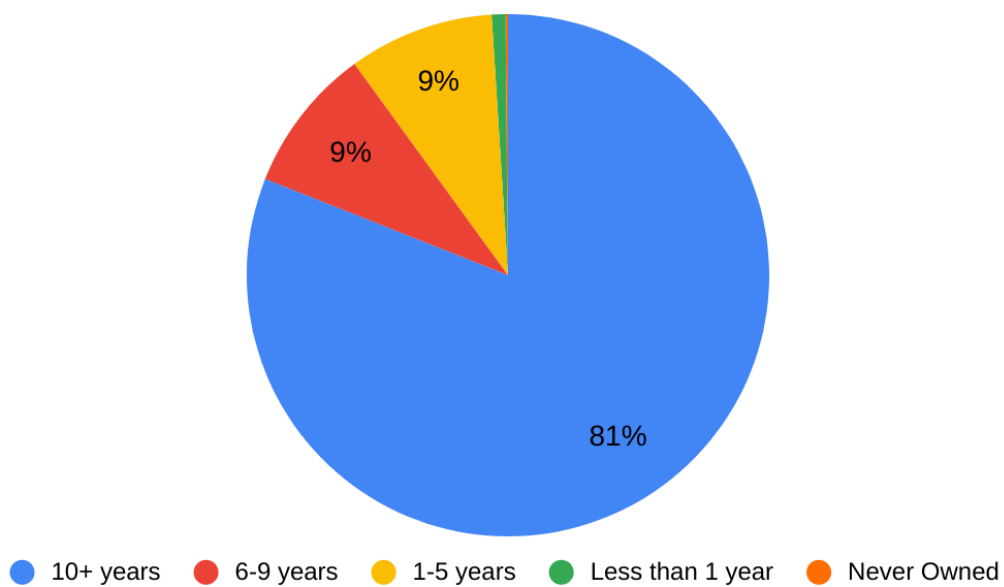


Figure 6: Respondent length of horse ownership by percent of included responses.

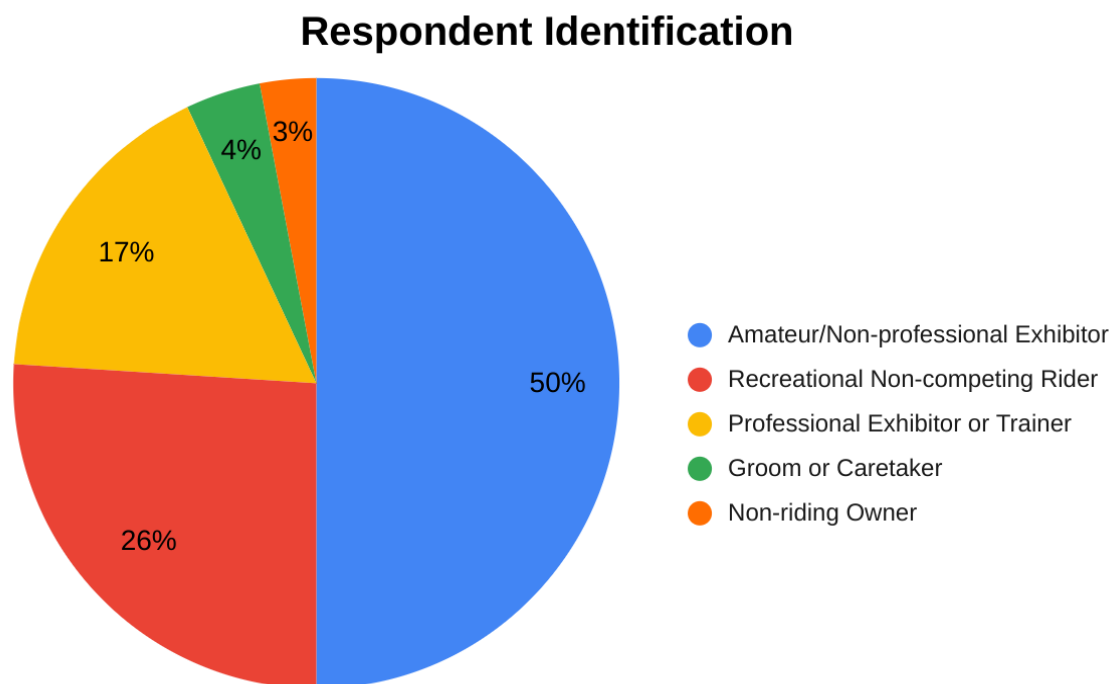


Figure 7: Respondent identification by percent of included responses.

riding, 13% dressage, 13% western all-around events, and 11% three day eventing (Figure 8). Across all disciplines 25% of owners agreed that their horse had behavior issues, 54% joint issues, 41% muscle issues, 24% hindgut issues, 29% performance issues. Only 28% of owners believed their horse had no issues (Figure 9).

Respondents reported that 86% had used a form of alternative therapy on the horses they own or care for, and 85% had reported they had also used a form of alternative therapy on themselves (Figure 10). When asked to evaluate the use of alternative therapies on themselves, 74% used them to prevent issues and 86% to treat issues (Figure 11), 80% to promote overall health, and 83% to complement their own health care plan.

When asked where they receive information about alternative therapies, 50% of respondents said that they would consult their veterinarian first. Fifteen percent reported they would consult peer-reviewed articles, 10% other horse owners, 10% alternative therapy providers, 6% internet sites, 7% trainers, and 2% barn or farm owners (Figure 12).

Acupuncture

Regarding acupuncture use with their horses, 43% had used acupuncture as an alternative therapy (Figure 13). Of those that had used it, 58% did it to prevent issues with their horse, and 98% to treat issues (Figure 14), 87% to promote overall health, and 87% to complement routine veterinary care.

All respondents were asked to rate the likeliness of acupuncture use regardless of whether they had used it previously. Of those, 49% were likely to use it to treat or prevent

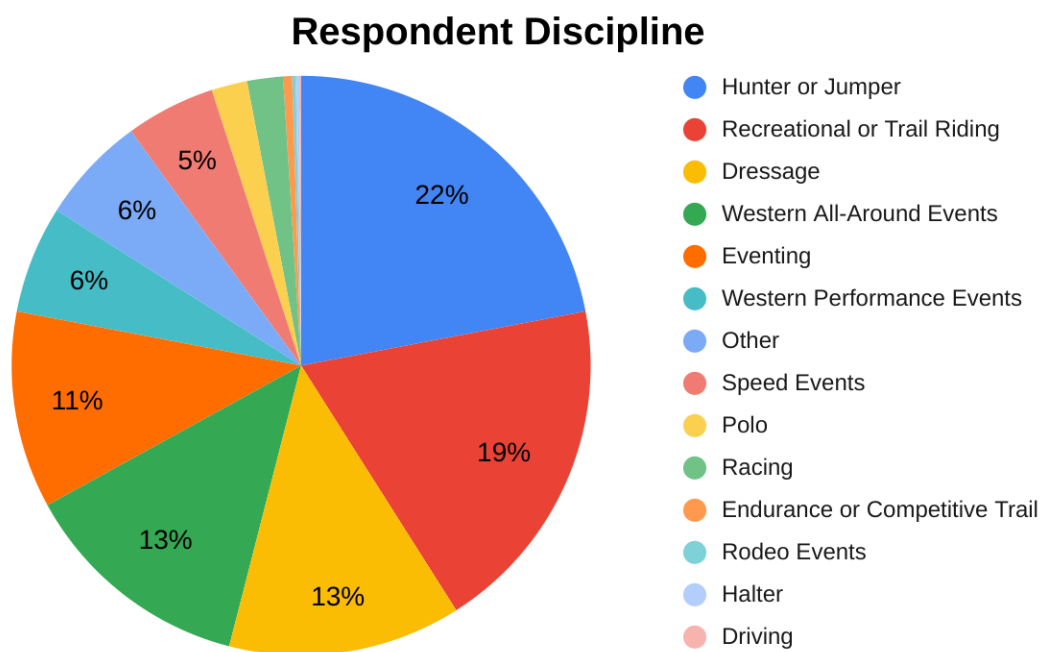


Figure 8: Respondent discipline by percent of included responses.

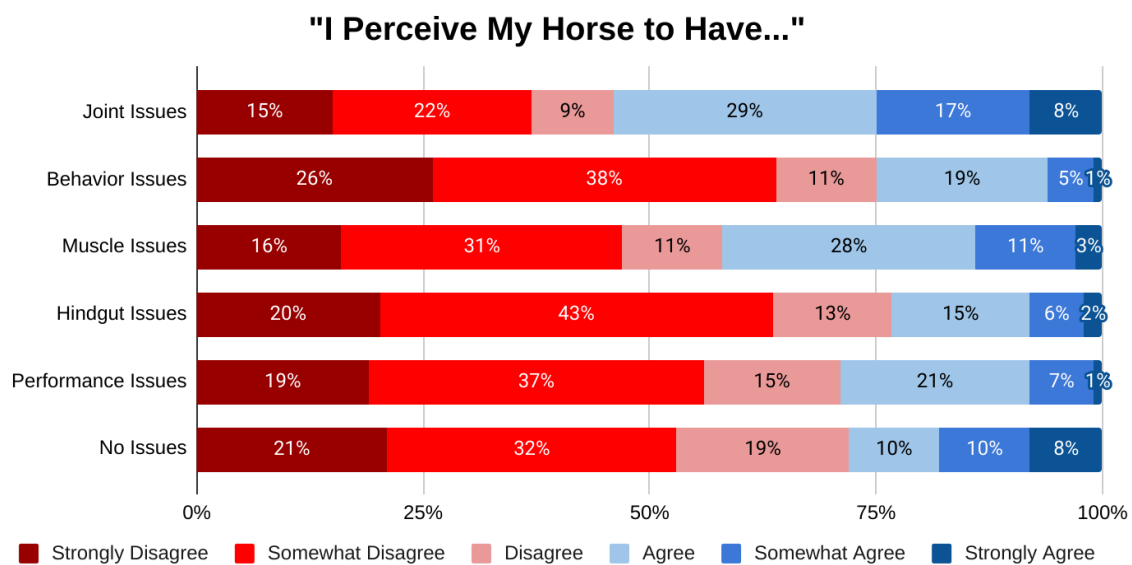


Figure 9: Respondents' perceptions on the issues they believe their horse to have.

Respondents Who Have Used an Alternative Therapy on Themselves

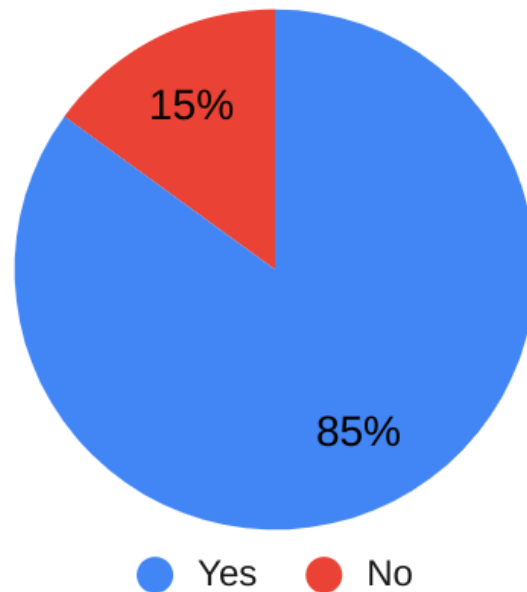


Figure 10: Respondents who have used a form of alternative therapy on themselves by percent of included responses.

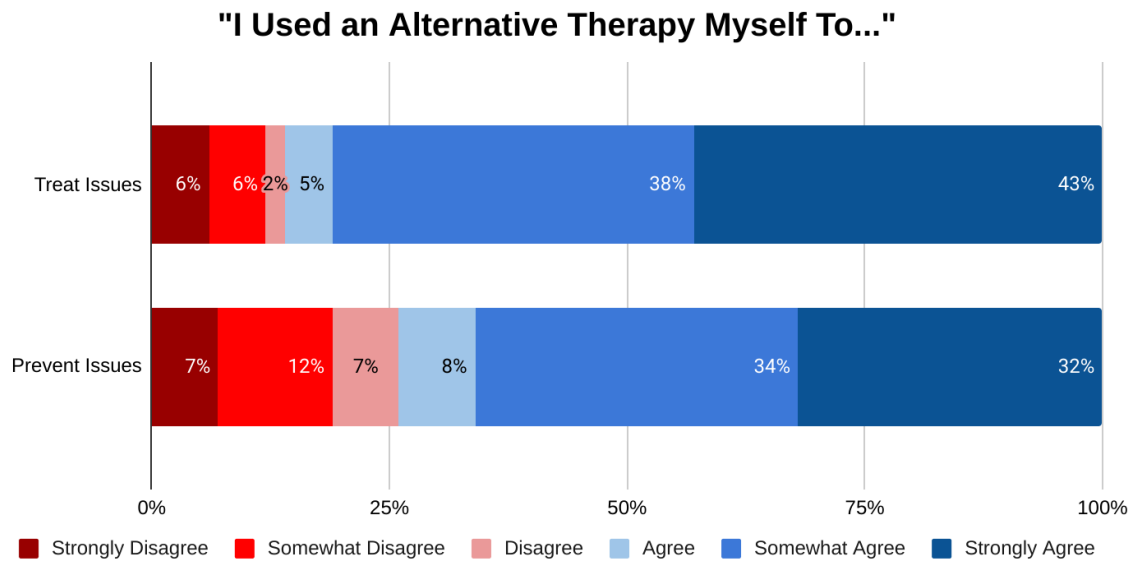


Figure 11: Respondents who used an alternative therapy to treat and prevent issues for themselves.

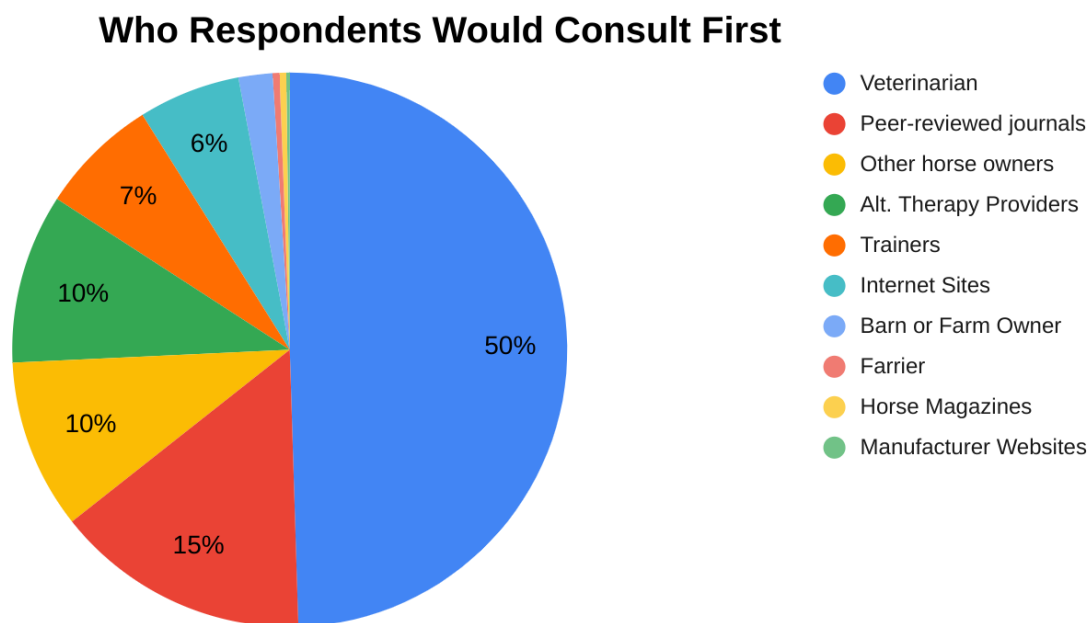


Figure 12: Who respondents would consult first regarding the use of an alternative therapy by percent of included responses.

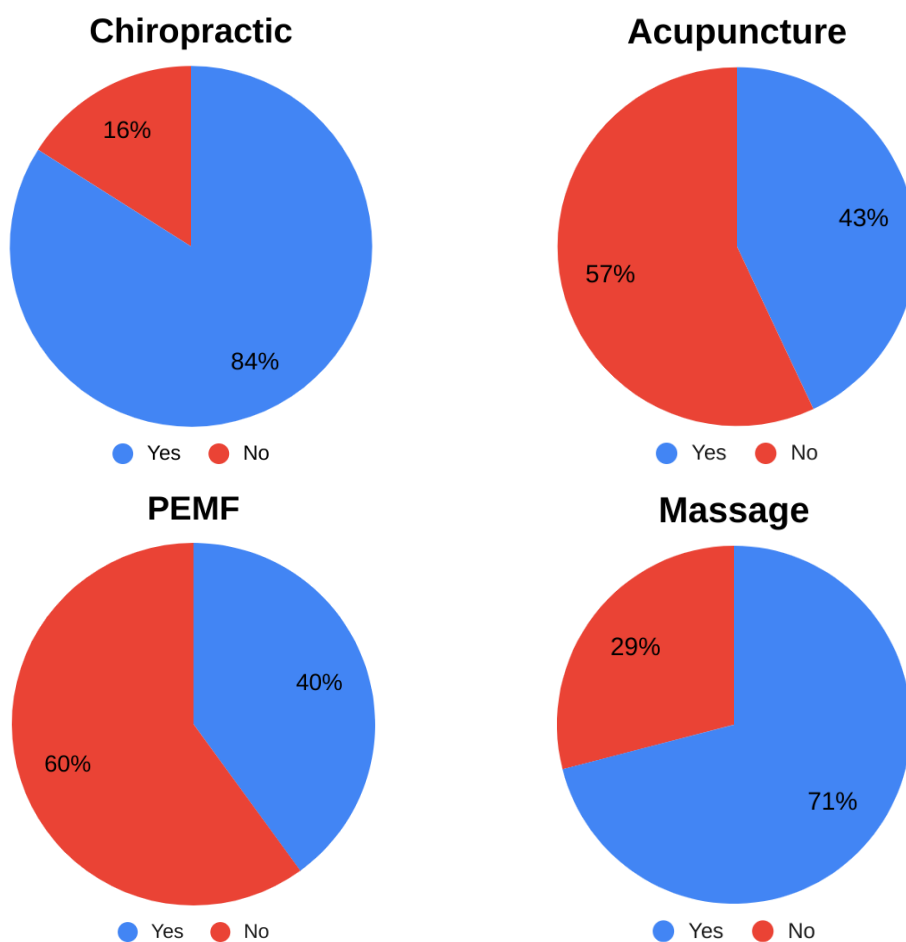


Figure 13: Respondents' use of each alternative therapy by percent of included responses.

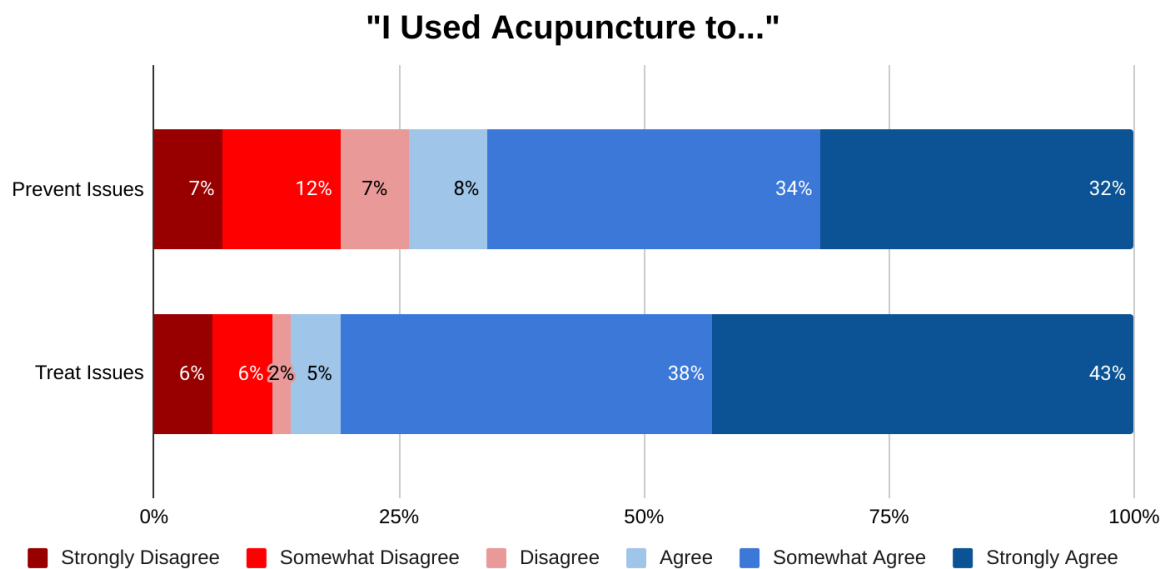


Figure 14: Respondents who have used acupuncture to treat and prevent issues in their horse by percent of included responses.

behavior issues, 56% joint issues, 68% movement issues, 61% to improve willingness to work, and 73% to improve a horse's comfort level (Figure 15). When asked about their beliefs on acupuncture, 94% of respondents said they believe acupuncture is safe for their horse (Figure 16), 86% believe safety is well researched, 78% believe effectiveness is well researched (Figure 16), 76% believe it is useful to prevent problems, and 79% believe it is useful to treat problems in their horse.

Examining the effects of discipline, age, education, and competition on acupuncture use, it was found that age ($P = 0.03$) influenced use with respondents 40 years old or younger being more less likely to use acupuncture than those greater than 40. Education did not influence use of acupuncture ($P = 0.23$). Racing and English disciplines were more likely ($P < 0.001$) to use acupuncture than western disciplines. Acupuncture use was also greater ($P = 0.04$) in those that compete at least once per month than those that did not compete.

Chiropractic

When asked whether or not they had used chiropractic treatment on their horses, 84% of respondents indicated that they had (Figure 13). Of those who had, 84% said they used chiropractic to prevent issues in their horse, 99% to treat issues (Figure 17), 91% to promote overall health, and 90% to complement routine veterinary care. Regarding their likelihood of using chiropractic, 72% would use it to treat or prevent behavior issues, 82% joint issues, 43% hoof issues, 91% to improve movement, 92% to improve comfort level (Figure 18), and 87% to improve willingness to work.

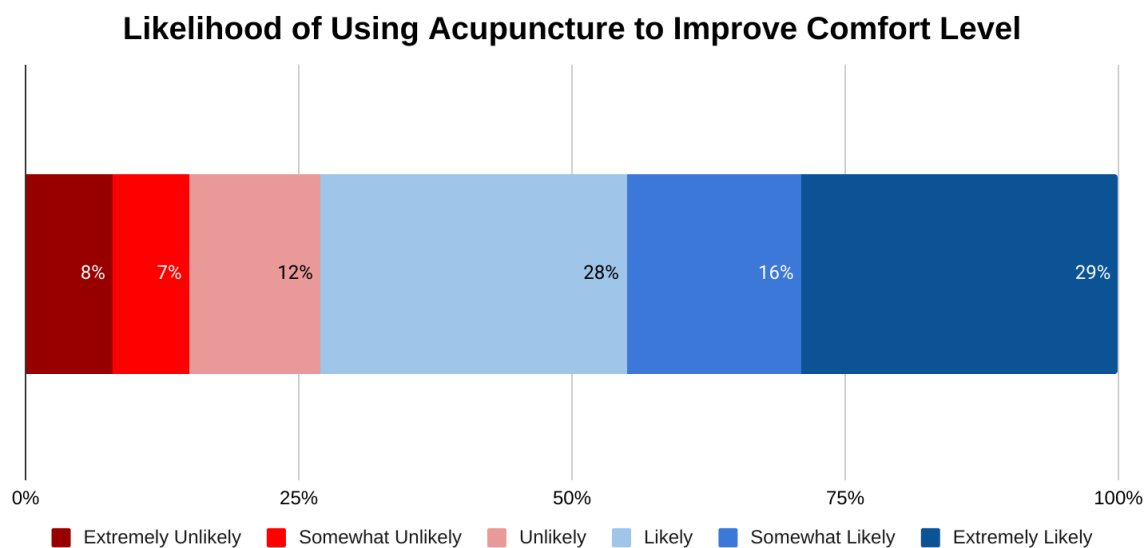


Figure 15: Respondents' likelihood of using acupuncture to improve their horse's comfort level.

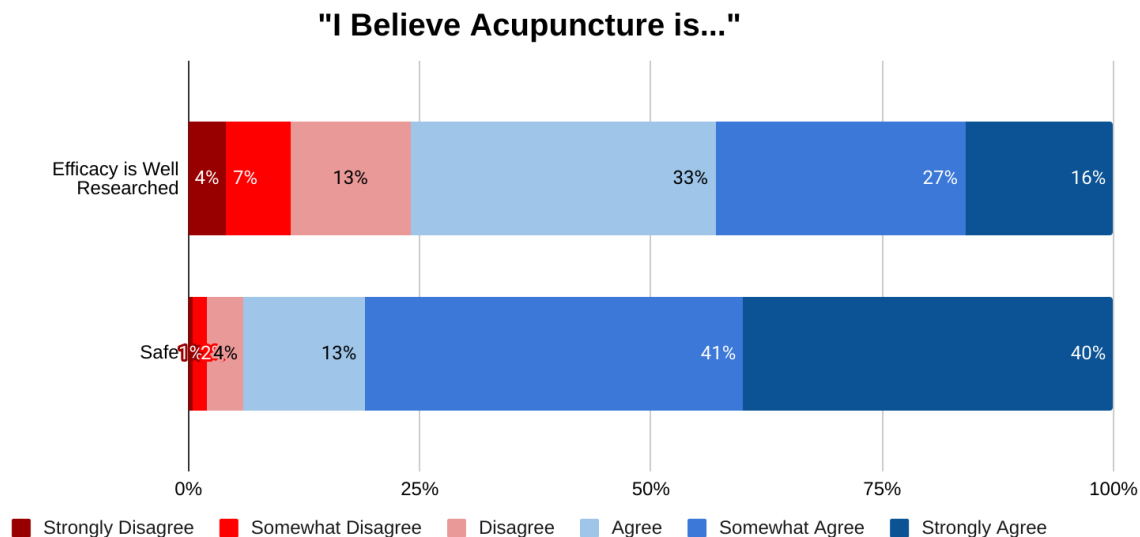


Figure 16: Percentages of respondents on whether they believe acupuncture is safe to use on their horse and whether they believe the efficacy of acupuncture is well researched.

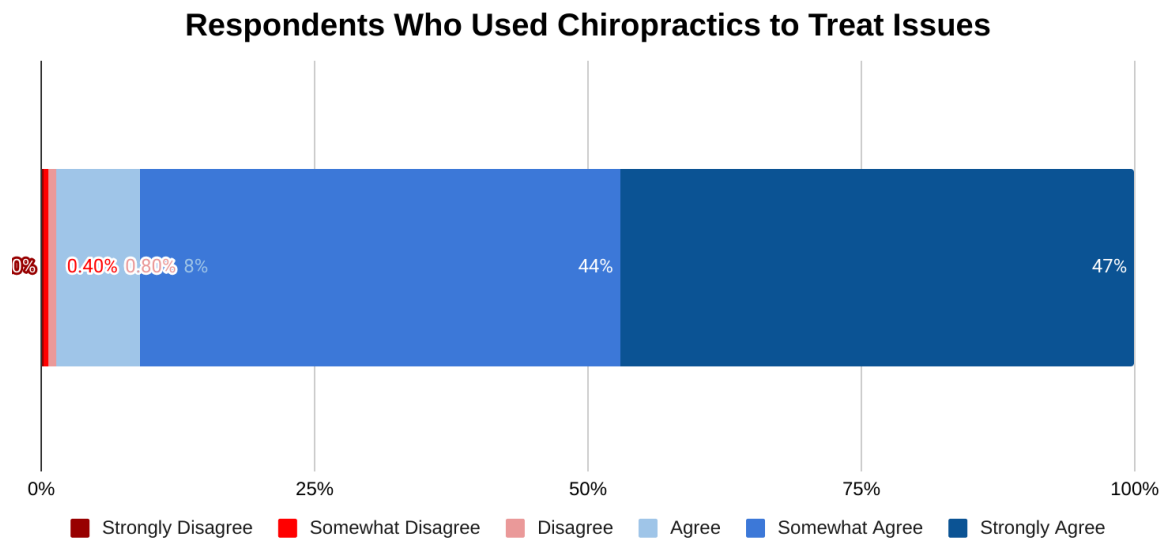


Figure 17: Respondents who used chiropractic to treat issues in their horse.

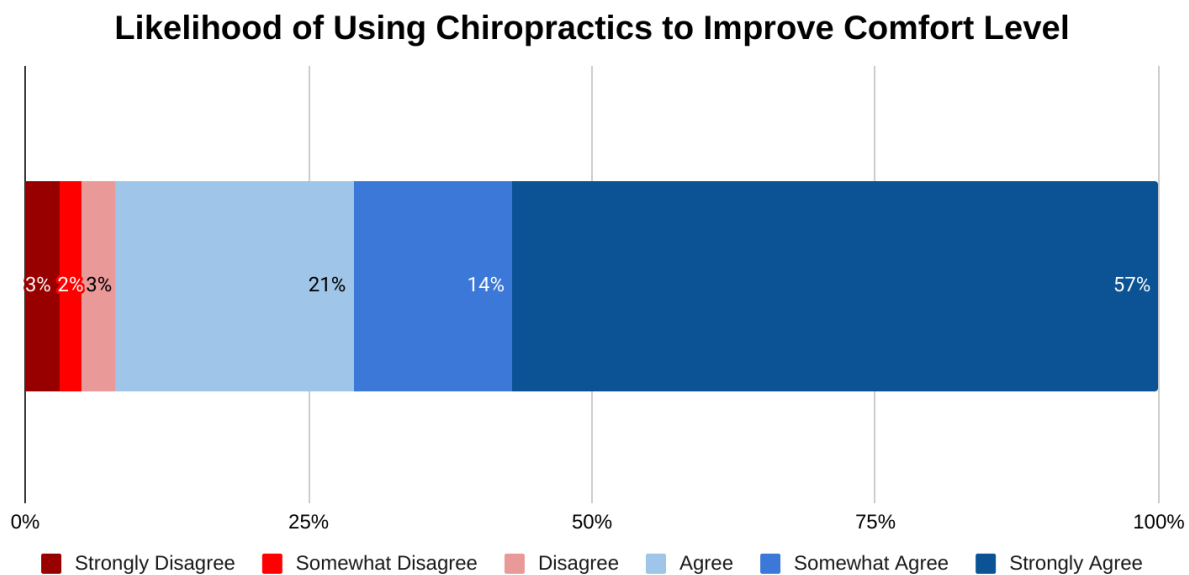


Figure 18: Respondents' likelihood of using chiropractic to improve their horse's comfort level.

Regarding their beliefs on chiropractic, 95% of respondents believed it to be safe to use on their horse, 88% believed safety is well researched, 85% said effectiveness is well researched (Figure 19), 89% believe it is useful to prevent problems, and 93% believe it is useful to treat problems.

As hypothesized, discipline, age, and competition influenced the use of chiropractic, yet education did not. Age impacted the use of chiropractic ($P = 0.03$) with those 51-60 years old showing less use than those 20-50 years old. Education did not influence use of chiropractic ($P = 0.41$), although discipline did influence use ($P = 0.03$) with recreational riders less likely to use than all other disciplines. Similarly, frequency of competition influenced use ($P = 0.004$) where those not competing were less likely to use chiropractic as an alternative therapy.

Pulsed Electromagnetic Field

When asked if they had used PEMF as an alternative therapy, only 40% of respondents indicated that they had (Figure 13). Of that 40%, 77% indicated they did so to prevent issues in their horse, 96% to treat issues in their horse, 89% to promote overall health (Figure 20), and 84% to complement routine veterinary care.

In regards to the likelihood of using PEMF, only 43% of respondents said they would use it to treat or prevent behavior issues, 58% joint issues, 66% to improve movement issues, 63% to improve willingness to work, and 69% to improve comfort level for their horse (Figure 21). When prompted, 91% indicated that they believed PEMF was safe to use on their horse (Figure 22), 69% believed safety was well researched, and 63% believed the effectiveness was well researched (Figure 22).

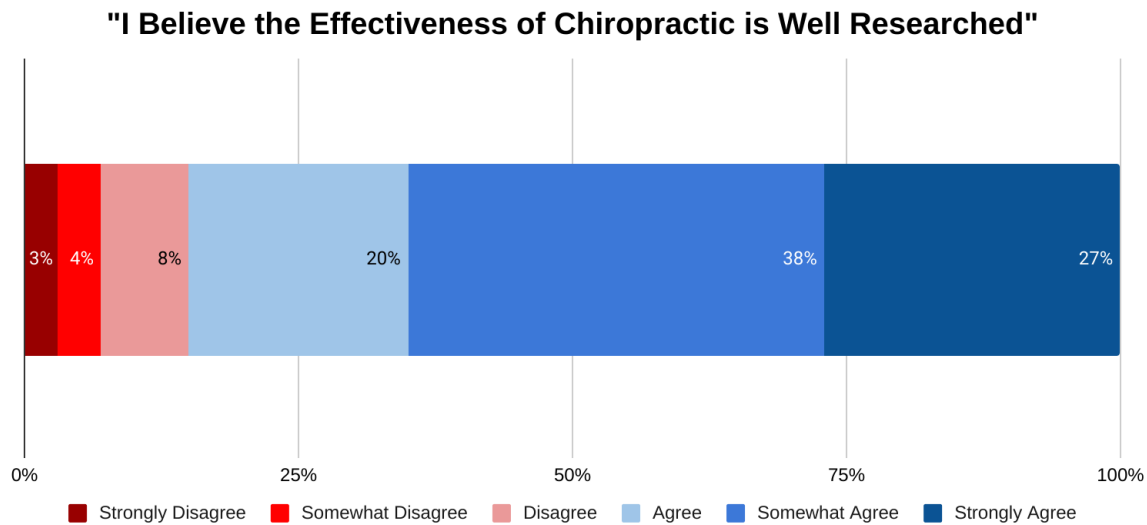


Figure 19: Percentages of respondents who believe the effectiveness of chiropractic is well researched.

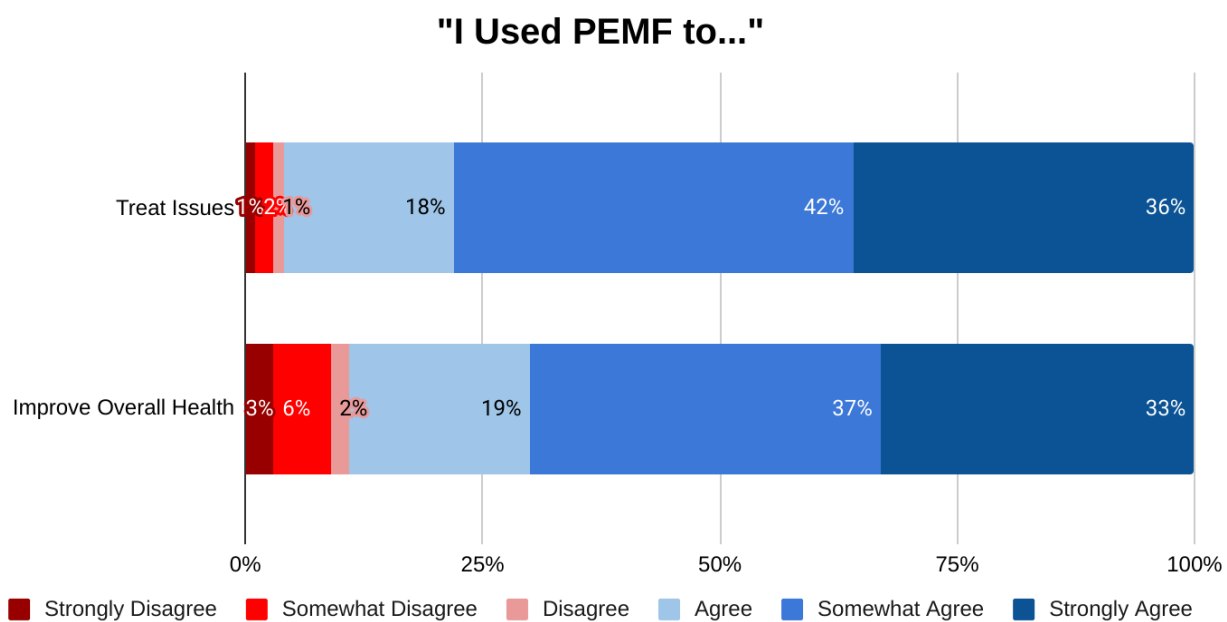


Figure 20: Respondents who used PEMF to treat issues and improve the overall health of their horse.

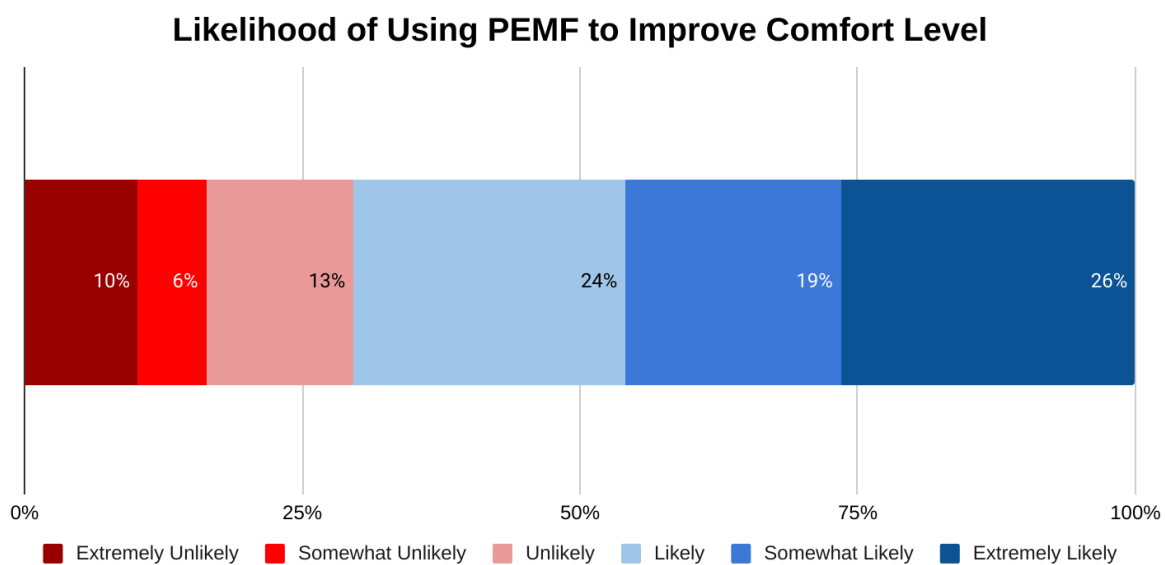


Figure 21: Respondents' likelihood of using PEMF to improve their horse's comfort level.

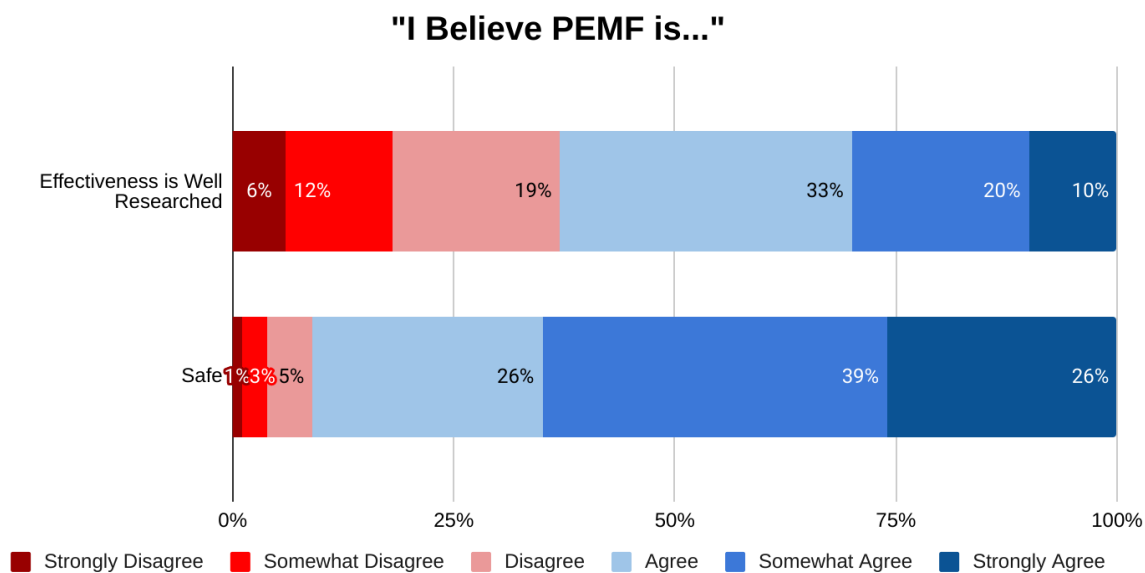


Figure 22: Percentages of respondents on whether they believe PEMF is safe to use on their horse and whether they believe the efficacy of PEMF is well researched.

Seventy-one percent of respondents also believe that PEMF is useful to prevent problems in their horse while 77% believe it is useful to treat problems in their horse.

Examining the effects of age, discipline, education and competition on use of PEMF, age did not influence use ($P = 0.75$), yet those with a postgraduate degree showed more disagreement with statements that PEMF was safe ($P = 0.05$) or the effectiveness of PEMF was well researched ($P < 0.0001$). Those that did not compete were less likely ($p < 0.001$) to use PEMF than those competing, and recreational riding showed less likelihood of use ($p < 0.001$) than all other disciplines.

Massage

Regarding use of massage on their horses, 71% of respondents indicated they had, while 29% said they had not prior to this survey (Figure 13). Of the 71% that indicated yes, 88% used massage to prevent issues in their horse, 97% to treat issues (Figure 23), 95% to promote overall health, and 89% to complement routine veterinary care.

Respondents were likely to use massage to improve movement and willingness to work in their horse at 86% and 84%, respectively; yet 89% would also be likely to use it to improve comfort level (Figure 24). 68% were likely to use massage to treat or prevent behavior issues and 65% to treat or prevent joint issues for their horse. Ninety-nine percent of horse owners believed massage to be safe to use on their horse (Figure 25), while 86% believe the safety is also well researched and 82% of respondents believing the effectiveness is well researched (Figure 25). Respondents overwhelmingly believe massage is useful to prevent problems and treat problems at 90% and 92%, respectively.

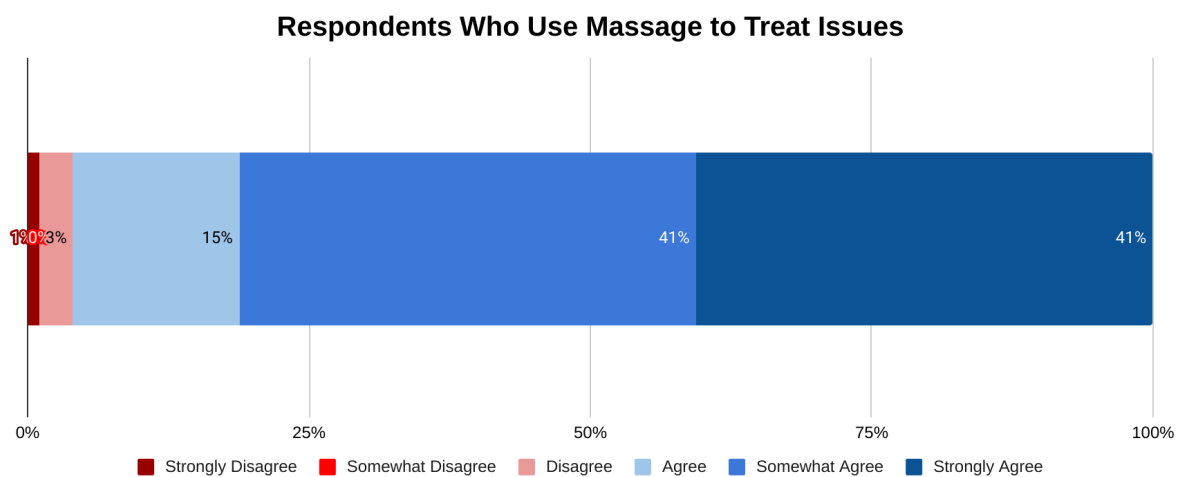


Figure 23: Respondents who use massage to treat issues in their horse.

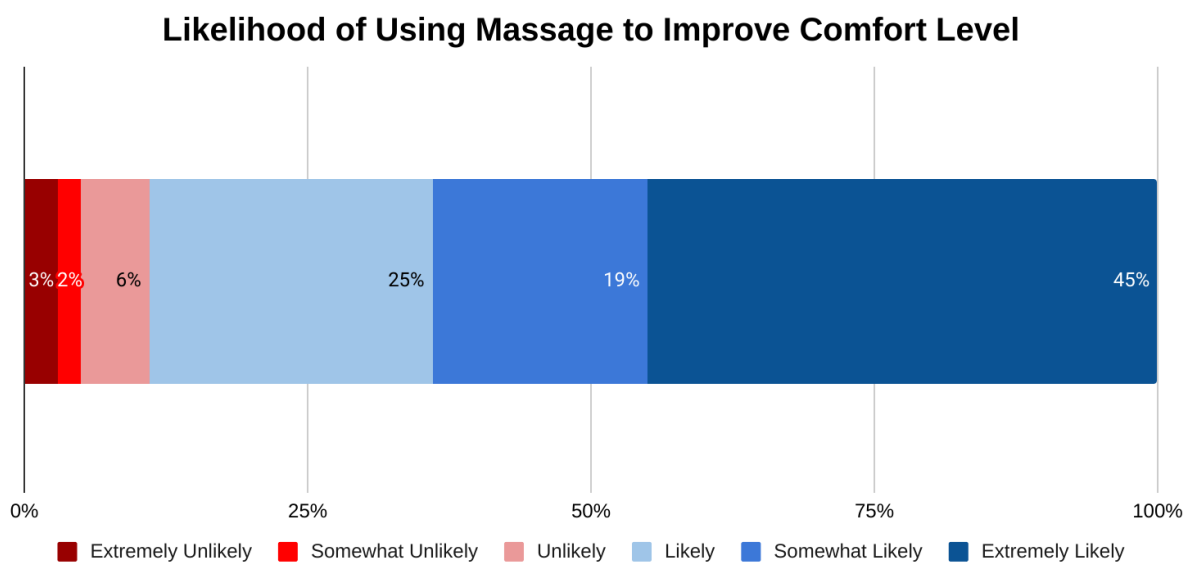


Figure 24: Respondents' likelihood of using massage to improve their horse's comfort level.

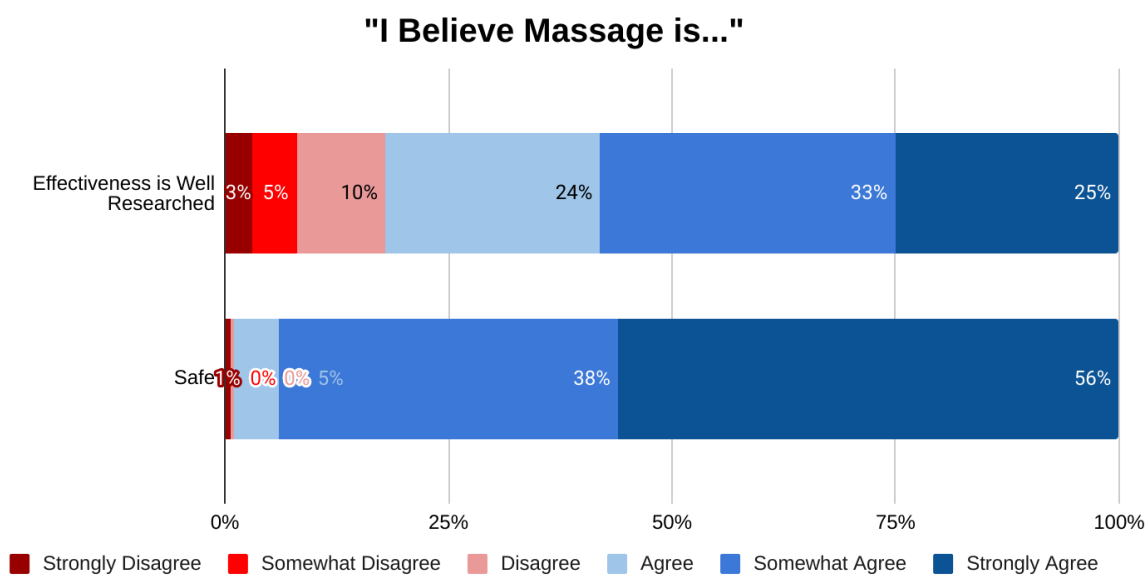


Figure 25: Percentages of respondents on whether they believe massage is safe to use on their horse and whether they believe the efficacy of massage is well researched.

Discussion

This study aimed to collect perceptions from horse owners and caretakers regarding the use of four of the most commonly used alternative therapies seen today in the horse industry: acupuncture, chiropractic, PEMF, and massage. In total, 661 respondents included in this survey which appear to be an adequate representation of the horse industry based on the wide age distribution observed, as well as broad representation of education levels and disciplines. Survey participants represented both professional and amateur and both competitive and recreational riders.

Over 86% of respondents indicated they have used a form of alternative therapy on their horse speaks to anecdotal observations that alternative therapies are commonplace in the horse industry. This is substantially higher than a survey of 1532 horse owners reporting that 72% of owners have used a form of alternative therapy in the past (Keller et al., 2021). It could be that since the recruitment message used in this study described the study as a survey of alternative therapies, horse owners with a vested interest in or use of such therapies were more likely to participate. This is commonly referred to as a self selection bias and is an unavoidable limitation to this type of study.

It is interesting to note that 85% of respondents also have used a form of alternative therapy on themselves, of which 86% said they used a form to treat issues they already had and 74% used them to prevent issues from occurring. Similarly, 84% of one hundred HIV/AIDS patients reported using an alternative therapy to help treat symptoms of their disease (Sparber et al., 2000).

Overall, the majority of respondents in this survey reported that they believe these four modalities to be safe to use on their horse. Massage was believed to be the safest at

99%, while chiropractic and acupuncture were perceived safe by 95% and 94% of respondents respectively. Ninety-one percent of respondents agreed that PEMF was safe to use on their horse. Respondents overall were in agreement that the effectiveness was well researched in chiropractic and massage at 85% and 83%, respectively. Seventy-eight percent of respondents agreed that the effectiveness was well researched for acupuncture. Respondents were most unsure about PEMF at 63% agreeing they felt the effectiveness was well researched. This could be attributed to the novelty of its use in the horse industry or that participants know PEMF therapy more by trade names commonly used such as “Bemer” or “MagnaWave”.

There was no difference regarding use of an alternative therapy within the demographics of how many horses one owned, or where they kept them. It is interesting that having fewer horses did not result in more likelihood of use as it might be believed that one may be willing to spend additional money on a single horse.

Competitive status did have an effect on use, with those competing at least once per month were more likely to use a mode of alternative therapy on their horses. Similarly, those who identified themselves as recreational riders were also less likely to use a form of alternative therapy than all other disciplines. These findings suggest that owners may be using these therapies to gain a competitive advantage or that they perceive competition horses to require more treatment or care than recreational horses.

Another interesting note is that 50% of horse owners reported they would first consult their veterinarian regarding using an alternative therapy on their horse, suggesting owners perceive their veterinarian to be knowledgeable about the alternative therapies provided on the market. A contrasting study reported that owners believed their

veterinarians had limited knowledge or had preconceived ideas towards alternative therapies (Brennan et al., 2018). One caution in asking questions such as this in a survey is the idea of social desirability bias, whereas participants answer in what they perceive to be the desired response even if it does not reflect their actual behavior. For instance, they may perceive it would be best to consult their veterinarian, despite not actually doing so. It would also be beneficial to do an additional study to determine if veterinarians are, in fact, being asked by horse owners about alternative therapies, and also to ask what their own perceptions of these four alternative therapies are to gain insight into what information is being relayed to horse owners.

Surprisingly our research study also found that 15% of owners would consult peer-reviewed journals first regarding alternative therapy use, even though a review of literature suggest that the four alternative therapies asked about in the survey vary in results regarding effectiveness of each therapy both in human and equine models (Javadi et al., 2021; Niemantsverdriet-Murton et al., 2011; Schofield, 2008; Schultz et al., 2015; Varhus and Huisheng, 2019). With such contradicting research in the various therapies, it brings to question again where respondents believe they *should* consult the peer-reviewed literature but are not actually doing so.

It should also be noted that when horse owners were asked if they had used a form of alternative therapy on themselves, 86% said they had. When asked why they used them over 80% used to treat issues, promote their overall health, and complement routine medical advice from a doctor. Additionally, all four alternative therapies asked about in this survey, when asked about previous experience using them in horses, at least 80% of the respondents agreed that they used at least one to treat issues, promote overall health,

and complement routine veterinary care. These numbers suggest that their own experiences with alternative therapies lead them to have confidence in the same therapies they have available for their horses. If horse owners are simply using an alternative therapy because they reported having a positive experience themselves, we might suggest anthropomorphism to be at play, whereas owners are applying human characteristics, in this case of health and wellness, onto their animals.

Without the recognition of current research into the efficacy of the use of these therapies on their equine partners, then the need for research to be published in a more owner friendly need is apparent. It can be assumed that the use of peer-reviewed scientific research may not be the first choice for some, as they may not be aware of them or have access to this material. The development of either a website or application for smartphones regarding alternative therapies in the horse industry along with a summary of current literature and the results of this literature is needed in order to allow owners, trainers, groom, and veterinarians the opportunity to make a conclusion on what may benefit their horse and the risks associated with the use of these therapies. An additional way to supply this information to owners is for local equine hospitals to hold webinars, or in-house programs for local horse owners to gain the knowledge they need in an informative session geared towards understanding scientific literature and interpreting the empirical data that comes from the research.

Conclusion

The majority of horse owners and caretakers surveyed in this study reported using some form of alternative therapy on a horse they own. Although it was hypothesized that discipline, age, education and frequency of competition would influence a horse owner to

use an alternative therapy, not one category influenced all four alternative therapies the same. Age influenced use of chiropractic and acupuncture, albeit in an inconsistent manner. Generally, frequency of competition and participation in non-recreational disciplines increased the likelihood of use of PEMF, chiropractic, and acupuncture. This study indicates that while owners feel that these therapies are beneficial to their horses, there is no overwhelming consensus regarding any one therapy use over the other in regards to beliefs of safety or efficacy.

As the use of alternative therapies continues to grow, so does the need for more research and empirical data on them in order to gain a better understanding of horse owner trends and perceptions. There is conflicting evidence by what horse owners are saying about these therapies, and where they say they are consulting for information regarding such therapies. Although horse owners perceive all four of these therapies to be safe to use on their horses, there is a need for greater layman's literature for the everyday horse owner as well as the need to educate the everyday horse owner and potentially veterinarian on the alternative therapies that are available for their use and the science behind them. While some therapies are evidenced to have adequate safety and their effectiveness well researched, others still leave room for improvement, especially those frequently used by horse owners.

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APPENDICES

APPENDIX A: IRB APPROVAL

IRB**INSTITUTIONAL REVIEW BOARD**

Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
FWA: 00005331/IRB Regn.. 0003571

**IRBN007 – EXEMPTION DETERMINATION NOTICE**

Friday, August 13, 2021

Protocol Title *Use and Perceptions of Alternative Therapies in the Horse Industry*
Protocol ID 22-1015 2q
Principal Investigator **Holly Spooner** (Faculty)
Co-Investigators Sara Holtz (sjh6h)
Investigator Email(s) holly.spooner@mtsu.edu
Department/Affiliation Agriculture
Funding NONE

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category **(2) Educational Tests, surveys, interviews or observations of public behavior (Qualtrics Survey)**. A summary of the IRB action and other particulars of this protocol are shown below:

IRB Action	EXEMPT from further IRB Review Exempt from further continuing review but other oversight requirements apply		
Date of Expiration	8/31/2022	Date of Approval: 8/13/21	Recent Amendment: NONE
Sample Size	TWO HUNDRED (200)		
Participant Pool	Healthy adults (18 or older) – Individuals who care for horses		
Exceptions	Online consent followed by internet-based survey using Qualtrics is permitted		
Type of Interaction	☐ Non-interventional or Data Analysis ☒ Virtual/Remote/Online Interview/survey ☐ In person or physical– Mandatory COVID-19 Management (refer next page)		
Mandatory Restrictions	1. All restrictions for exemption apply. 2. The participants must be 18 years or older. 3. Mandatory ACTIVE informed consent. Identifiable information including, names, addresses, voice/video data, must not be obtained. 4. NOT approved for in-person data collection.		
Approved IRB Templates	IRB Templates: Online Informed Consent and Recruitment Email Non-MTSU Templates: Recruitment Message		
Research Inducement	NONE		
Comments	NONE		

Summary of the Post-approval Requirements: The PI must read and abide by the post-approval conditions (Refer "Quick Links" in the bottom):

- **Final Report:** The PI must close-out this protocol by submitting a final report before **8/31/2022**; if more time is needed to complete the data collection, the PI must request an extension by email. **REMINDERS WILL NOT BE SENT. Failure to close-out (or request extension) may result in penalties** including cancellation of the data collected using this protocol or withholding student diploma.
- **Protocol Amendments:** IRB approval must be obtained for all types of amendments, such as:
 - Addition/removal of subject population and sample size
 - Change in investigators
 - Changes to the research sites – appropriate permission letter(s) from may be needed
 - Alternation to funding
 - Amendments must be clearly described in an addendum request form
 - The proposed change must be consistent with the approved protocol and they must comply with exemption requirements
- **Reporting Adverse Events:** Research-related injuries to the participants and other events, such as, deviations & misconduct, must be reported within 48 hours of such events to compliance@mtsu.edu
- **Research Participant Compensation:** Compensation for research participation must be awarded as proposed in Chapter 6 of the Exempt protocol. The documentation of the monetary compensation must Appendix J and MUST NOT include protocol details when reporting to the MTSU Business Office.
- **COVID-19:** Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the FA.

COVID-19 Management:

The PI must follow social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The MTSU's "Return-to-work" questionnaire found in Pipeline must be filled by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **PI's Responsibility:** The PI is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the PI must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

Post-approval Protocol Amendments:

The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would not result in the cancellation of the protocol's eligibility for exemption. **Only THREE procedural amendments will be entertained per year (changes like addition/removal of research personnel are not restricted by this rule).**

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Post-approval IRB Actions:

The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

Date	IRB Action(s)	IRB Comments
NONE	NONE.	NONE

Mandatory Data Storage Requirement:

All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol

Institutional Review Board, MTSU

FWA: 00005331

IRB Registration: 0003571

application. The data must be stored for at least three (3) years after the study is closed. Additionally, the Tennessee State data retention requirement may apply (*refer "Quick Links" below for policy 129*). Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects. **The IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this notice.** Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

- Post-approval Responsibilities: <http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php>
- Exemption Procedures: <https://mtsu.edu/irb/ExemptPaperWork.php>
- MTSU Policy 129: Records retention & Disposal: <https://www.mtsu.edu/policies/general/129.php>

APPENDIX B: SURVEY

1. How long have you owned or cared for (a) horse(s)?

- ☐ I have never owned or cared for any horses
- ☐ Less than 1 year
- ☐ 1-5 years
- ☐ 6-9 years
- ☐ 10+ years

All “I have never owned or cared for any horses” respondents will be directed to the end of the survey

2. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Non-binary/ third gender

3. What is your current age?

- ☐ Under 20
- ☐ 20-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ 61-70
- ☐ 71+

4. What is the highest level of education you have received?

- ☐ Less than high school
- ☐ High school diploma/GED
- ☐ Some college
- ☐ Associate degree
- ☐ Bachelor’s degree
- ☐ Postgraduate degree
- ☐ Trade School

5. How many horses do you own or care for?

- ☐ 1
- ☐ 2-4
- ☐ 5-9
- ☐ 10+

6. Do you keep your horse(s) on your property, or are they boarded at a separate facility?

- ☐ On own property
- ☐ Boarded at a separate facility
- ☐ Both (on own property and at a separate facility)
- ☐ I do not currently own horses

7. How would you identify yourself?

- ☐ Professional rider/exhibitor or trainer
- ☐ Amateur or non-professional rider/exhibitor
- ☐ Recreational non-competing rider
- ☐ Non-riding owner
- ☐ Do not interact with my horse
- ☐ Groom or caretaker

8. Which discipline of riding do you participate in most?

- ☐ Dressage
- ☐ Driving
- ☐ Endurance or Competitive Trail riding
- ☐ Eventing
- ☐ Halter
- ☐ Hunter or Jumper
- ☐ Polo
- ☐ Racing
- ☐ Speed Events (Barrel racing, pole bending, mounted shooting)
- ☐ Recreational riding or trail riding
- ☐ Western All-around Events (trail, pleasure)
- ☐ Western Performance Events (Reining, cutting, team penning)
- ☐ Rodeo Events (Team roping, tie-down roping, steer wrestling, breakaway roping)
- ☐ Other

9. How often do you, or the horses you care for, compete (on average)?

- ☐ I do not compete with my horse
- ☐ 1 day per month or less
- ☐ 2-3 days per month
- ☐ 4-5 days per month
- ☐ 6+ days per month

10. Think of the horse you ride and compete most often and evaluate the following statements based on your perceptions of that horse (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ My horse has a behavior issue
- ☐ My horse has joint issues
- ☐ My horse has muscle issues
- ☐ My horse has hindgut issues
- ☐ My horse has allergies
- ☐ My horse has performance issues
- ☐ My horse has no issues (no behavior, joint, muscle, gastric, allergies, or performance issues)

11. For the purpose of this survey alternative therapies are defined as therapies that complement or are used instead of traditional medicinal therapies. Based on this definition, answer the following question.

Have you used alternative therapies (acupuncture, chiropractic, pulsed electromagnetic field (PEMF), massage) for horses you own or care for?

- ☐ Yes
- ☐ No

12. Have you ever used Acupuncture for horses you own or care for?

- ☐ Yes
- ☐ No

Any respondents who indicated “yes” moved onto the next set of questions, all who indicated “no” moved onto question 14.

13. Evaluate the following statements based on your use of Acupuncture (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I use(d) acupuncture to prevent issues in my horse

- ☐ I use(d) acupuncture to treat issues in my horse
- ☐ I use(d) acupuncture to promote my horse's overall health
- ☐ I use(d) acupuncture to complement my horse's routine veterinary care

14. Evaluate the following based on likeliness of acupuncture use (**Extremely Unlikely, Somewhat Unlikely, Unlikely, Likely, Somewhat Likely, Extremely Likely**)

- ☐ How likely are you to use acupuncture to treat or prevent behavior issues?
- ☐ How likely are you to use acupuncture to treat or prevent joint issues?
- ☐ How likely are you to use acupuncture to treat or prevent hoof issues?
- ☐ How likely are you to use acupuncture to treat or prevent infertility?
- ☐ How likely are you to use acupuncture to treat or prevent colic?
- ☐ How likely are you to use acupuncture to maintain or improve a horse's movement?
- ☐ How likely are you to use acupuncture to maintain or improve a horse's willingness to work?
- ☐ How likely are you to use acupuncture to maintain or improve a horse's comfort level?

15. Evaluate the following statements about your beliefs on Acupuncture (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I believe that it is safe to use acupuncture on my horse
- ☐ I believe that the safety of acupuncture is well researched and studied
- ☐ I believe that the effectiveness of acupuncture is well researched and studied
- ☐ I believe that acupuncture is useful to help prevent problems in my horse
- ☐ I believe that acupuncture is useful to help treat problems in my horse

16. Have you ever used Chiropractic manipulation on your horse?

- ☐ Yes
- ☐ No

Any respondents who indicated "yes" moved onto the next set of questions, all who indicated "no" moved onto question 18.

17. Evaluate the following statements based on your use of chiropractic manipulation (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I use(d) chiropractic manipulation to prevent issues in my horse
- ☐ I use(d) chiropractic manipulation to treat issues in my horse
- ☐ I use(d) chiropractic manipulation to promote my horse's overall health
- ☐ I use(d) chiropractic manipulation to complement my horse's routine veterinary care

18. Evaluate the following based on likeliness of chiropractic manipulation use
(**Extremely Unlikely, Somewhat Unlikely, Unlikely, Likely, Somewhat Likely, Extremely Likely**)

- ☐ How likely are you to use chiropractic manipulation to treat or prevent behavior issues?
- ☐ How likely are you to use chiropractic manipulation to treat or prevent joint issues?
- ☐ How likely are you to use chiropractic manipulation to treat or prevent hoof issues?
- ☐ How likely are you to use chiropractic manipulation to treat or prevent infertility?
- ☐ How likely are you to use chiropractic manipulation to treat or prevent colic?
- ☐ How likely are you to use chiropractic manipulation to maintain or improve a horse's movement?
- ☐ How likely are you to use chiropractic manipulation to maintain or improve a horse's willingness to work?
- ☐ How likely are you to use chiropractic manipulation to maintain or improve a horse's comfort level?

19. Evaluate the following statements about your beliefs on chiropractic manipulation
(**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I believe that it is safe to use PEMF on my horse
- ☐ I believe that it is safe to use chiropractic manipulation on my horse
- ☐ I believe that the safety of chiropractic manipulation is well researched and studied
- ☐ I believe that the effectiveness of chiropractic manipulation is well researched and studied
- ☐ I believe that chiropractic manipulation is useful to help prevent problems in my horse

- ☐ I believe that chiropractic manipulation is useful to help treat problems in my horse

20. Have you ever used Pulsed Electromagnetic Field (PEMF) for horses you own or care for?

- ☐ Yes
☐ No

Any respondents who indicated “yes” moved onto the next set of questions, all who indicated “no” moved onto question 21.

21. Evaluate the following statements based on your use of PEMF (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I believe that it is safe to use PEMF on my horse
☐ I use(d) PEMF to prevent issues in my horse
☐ I use(d) PEMF to treat issues in my horse
☐ I use(d) PEMF to promote my horse’s overall health
☐ I use(d) PEMF to complement my horse’s routine veterinary care

22. Evaluate the following based on likeliness of PEMF use (**Extremely Unlikely, Somewhat Unlikely, Unlikely, Likely, Somewhat Likely, Extremely Likely**)

- ☐ How likely are you to use PEMF to treat or prevent behavior issues?
☐ How likely are you to use PEMF to treat or prevent joint issues?
☐ How likely are you to use PEMF to treat or prevent hoof issues?
☐ How likely are you to use PEMF to treat or prevent infertility?
☐ How likely are you to use PEMF to treat or prevent colic?
☐ How likely are you to use PEMF to maintain or improve a horse’s movement?
☐ How likely are you to use PEMF to maintain or improve a horse's willingness to work?
☐ How likely are you to use PEMF to maintain or improve a horse’s comfort level?

23. Evaluate the following statements about your beliefs on PEMF (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I believe that it is safe to use PEMF on my horse
☐ I believe that the safety of PEMF is well researched and studied

- ☐ I believe that the effectiveness of PEMF is well researched and studied
- ☐ I believe that PEMF is useful to help prevent problems in my horse
- ☐ I believe that PEMF is useful to help treat problems in my horse

24. Have you ever used Massage for the horses you own or care for?

- ☐ Yes
- ☐ No

Any respondents who indicated “yes” moved onto the next set of questions, all who indicated “no” moved onto question 25.

25. Evaluate the following statements based on your use of Massage (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I use(d) Massage to prevent issues in my horse
- ☐ I use(d) Massage to treat issues in my horse
- ☐ I use(d) Massage to promote my horse’s overall health
- ☐ I use(d) Massage to complement my horse’s routine veterinary care

26. Evaluate the following based on likeliness of Massage use. (**Extremely Unlikely, Somewhat Unlikely, Unlikely, Likely, Somewhat Likely, Extremely Likely**)

- ☐ How likely are you to use Massage to treat or prevent behavior issues?
- ☐ How likely are you to use Massage to treat or prevent joint issues?
- ☐ How likely are you to use Massage to treat or prevent hoof issues?
- ☐ How likely are you to use Massage to treat or prevent infertility?
- ☐ How likely are you to use Massage to treat or prevent colic?
- ☐ How likely are you to use Massage to maintain or improve a horse’s movement?
- ☐ How likely are you to use Massage to maintain or improve a horse's willingness to work?
- ☐ How likely are you to use Massage to maintain or improve a horse’s comfort level?

27. Evaluate the following statements about your beliefs on Massage. (**Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree**)

- ☐ I believe that it is safe to use Massage on my horse
- ☐ I believe that the safety of Massage is well researched and studied
- ☐ I believe that the effectiveness of Massage is well researched and studied

- ☐ I believe that Massage is useful to help prevent problems in my horse
- ☐ I believe that Massage is useful to help treat problems in my horse

28. Have you ever used a form of alternative therapy on yourself?

- ☐ Yes
- ☐ No

Any respondents who indicated “yes” moved onto the next set of questions, all who indicated “no” moved onto question 29.

29. Evaluate the following statements of your alternative therapy use on yourself.

(Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree)

- ☐ I use(d) a form of alternative therapy to prevent issues for myself
- ☐ I use(d) a form of alternative therapy to treat issues for myself
- ☐ I use(d) a form of alternative therapy to promote my overall health
- ☐ I use(d) a form of alternative therapy to complement my own health care

30. Which of the following would you consult for alternative therapy information **first**?

- ☐ Internet sites (not selling products)
- ☐ Manufacturer websites
- ☐ Barn or farm owner
- ☐ Trainer
- ☐ Horse magazines
- ☐ Peer-reviewed scientific journals
- ☐ Alternative therapy provider
- ☐ Farrier
- ☐ Veterinarian
- ☐ Other horse owners