The Alone Rangers and Silver

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In this issue of the *Journal,* Gabriels *et al.*[1] report what appears to be the first randomized clinical trial of therapeutic horse riding for children with autism. The result looks encouraging: a significant medium benefit compared with a randomly assigned control condition (a non-equine barn activity of equal duration and frequency) using an outcome measurement acceptable to the Food and Drug Administration for drug indications in autism (the Irritability subscale of the Aberrant Behavior Checklist). This report is most welcome and appropriate for several reasons.

Throughout modern history, the collaboration, and even romance, of rider and horse have permeated legend, heroics, and triumph of good over evil. Just a few examples are the knight on a white charger (chivalry, after all, is named for horses); the horseshoe nail for which a kingdom was lost; Paul Revere's ride; the 4 horsemen of the apocalypse (and Notre Dame pride); the idea of the cavalry to the rescue; Roy Rogers and Trigger; and the Lone Ranger and Silver. As work animals, horses worked in concert with their human mentors, as in *Man With A Bull-Tongue Plow,* or on a more upscale note, the Budweiser Clydesdales. For centuries, horses epitomized speed, power, athletic grace, and dedicated heart, as evoked by the phrases "sport of kings" and later the "iron horse," "horsepower," and "Seabiscuit." The unity of the horse-and-rider dyad was celebrated in movies such as *The Morgan Horse* and *National Velvet.* So valued were horses that in the Western frontier, horse theft was often a capital crime based on the theory that stealing a person's horse put his life in danger on the desolate plains or range.

This equine-human link intersected with a more modern interest in pet-facilitated psychotherapy, in which a patient who cannot trust other people first learns to trust and relate to an animal and then to people, or in which a lonely person with depression finds upbeat companionship in a pet.[2] It should not be surprising that equestrians would think of their steeds as logical partners in the animal-facilitated approach to psychosocial treatment and habilitation. After all, horses rival dogs in faithful companionship and exceed them in forming a working unit linked by physical contact and tactile communication.

There were good reasons to suspect that horse riding might be useful for children with autism. For one thing, they can relate to the need for preservation of sameness. Horses are known to prefer the same routine, the same stall, the same path or route, and the same habits, similar to children with autism. More importantly, horses are content to be guided by nonverbal communication but are amenable to verbal instruction, allowing children to experience and practice the power of communication by controlling a much stronger force than themselves in ways within their repertoire. They learn the magic and joy of communication, influencing the world by symbol-mediated fiat. (It is noteworthy that in this report, children's verbal production increased by an objective measurement with the riding condition compared with the control condition.) Further, successful riding is facilitated by learning to respond to the horse's nonverbal communication, getting "in synch" with the horse's movements, and making 2-way nonverbal communication. The horse's rhythmic stride can have a calming effect with its vestibular-cerebellar stimulation.[3] The tactile synchronized movement also can have a similar effect to massage, which has been shown to have a calming effect in autism.[4] The post-ride care of the horse, including the rubdown, offers a chance to experience the non-demanding gratitude of another living being. One is reminded of Temple Grandin's famous ability to relate to and understand animals, leading to a career as a livestock-handling consultant. Thus, aloneness in autism can yield to the attraction of horsemanship and its need to relate to the horse.

Based on such considerations, a cottage industry of therapeutic horse riding has sprung up, some for profit, but much of it as a charitable public-service endeavor by horse lovers. Needless to say, the activity is popular in families of children with autism. Unfortunately, up to this point, it was not supported by much solid evidence. The few previous studies were open trials or had small samples. With the article in this issue, we finally have some good evidence based on a respectable-size randomized trial with a reasonable control condition and some attempt at partial blinding.

This study is a breakthrough not only for therapeutic horse riding but also for the field of complementary and alternative treatments (CATs) in general. Many such treatments do not have the commercial profit possibilities to entice the venture capital needed to develop appropriate studies such as are available for patentable drugs and devices. The advocates and practitioners of CATs often do not have the mainstream scientific expertise to design and execute respectable controlled trials, whereas mainstream investigators often do not have expertise in the relevant CAT. The treatments are often of a sort that is not easily blinded, a problem shared with most psychosocial treatments. As another discouragement, exaggerated claims by some advocates of CATs, when found false, create a kind of "straw man" inoculation of funding-agency reviewers against the treatment and prevent more moderate benefits from being demonstrated, such as those demonstrated in this study.

Thus, the study by Gabriels *et al.* offers encouragement for better studies of CATs. Further encouragement might come from preliminary cost-benefit analyses about what

might be accomplished if a given treatment is found effective. In the case of therapeutic horse riding, the effect on irritability appears to be about half that from an antipsychotic approved by the Food and Drug Administration in approximately the same period (8-10 weeks); safety is far better (assuming a gentle horse), with no obesity, metabolic syndrome, or neurologic side effects; and the benefit is presumably self-perpetuating in contrast to a drug that has an effect while it is taken and usually requires long-term administration. These considerations might well add up to a favorable cost-benefit ratio favoring at least adjunctive, if not alternative, use. Presumably adjunctive use would lower the medication dose needed for optimal effect, similar to how parent training lowers the optimal dose of risperidone for irritability in autism,[5] thus lowering the risk of side effects.

There are different possible directions for future research. Specific to therapeutic horse riding, replication is obviously needed. It also would be desirable to have a comparator condition that involves grooming a horse without riding in addition to a non-horse condition to tease out how much is due to contact with the horse and how much to the riding. Another possible comparator is a mechanical "hobby horse" to investigate how much of the benefit is from the rhythmic rocking with vestibular-cerebellar stimulation; if a mechanical horse could do as well, then it might be easier and cheaper. Better blinding is always welcome, and one way to do this is to obtain ratings from someone at some distance from the treatment condition, such as a teacher or service provider not involved in the transportation to the treatment sessions. Another could be a videotaped standardized testing protocol by a blinded evaluator. The degree and type of training desirable for administrators of therapeutic horse riding is a useful target of investigation: Is it better to teach equestrians therapeutic principles for children with autism or teach qualified autism therapists horsemanship? Or possibly just let skilled equestrians handle their pupils as they normally would without over-sensitizing them to the "specialness" of the children? Ultimately a comparison of medication with horse riding for children who appear to be in need of medication could be feasible—or at least an adjunctive treatment study to see whether the addition of horse riding adds to the medication benefit or decreases the dose needed for optimal effect, as has been shown for parent training.[5] More generally for the CAT field, advocates and practitioners of promising CATs should join with established experts in clinical trials and statistics to mount credible randomized clinical trials and creatively develop as good blinding as possible. This would ensure the integrity of the treatment and the integrity of the science. A clinical trials expert could be a principal investigator, and a treatment expert could train therapists and monitor treatment fidelity.

We have few evidence-based treatments for autism. Further, those that exist are not universally effective and are laborious and expensive or risky (and expensive). We need good studies of safer, easier, and cost-effective treatments to fill the therapeutic gaps. In the absence of evidence, desperate parents are at the mercy of unsubstantiated claims and hopes. The report by Gabriels *et al.* is a welcome addition to the evidence base, showing that Silver is therapeutic for autistically alone rangers. &

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