



## Research

## Apparatus use in popular equestrian disciplines in Australia



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## ABSTRACT

The apparatus that riders use to restrain or communicate with horses have progressed over time. With the increased awareness of animal welfare, the use of some of these devices is now questioned more deeply. Many equestrian disciplines have rules about apparatus to which competitors must adhere. In this study we aimed to identify the routine use of various items of apparatus in particular disciplines. Using an online questionnaire, we surveyed the use of common bitted and bitless bridles, nosebands, whips, and spurs in relation to each of the 1,101 respondents' preferred disciplines. We also explored the use of nosebands, whips, and spurs in relation to preferred bridle type. We found that dressage riders were more likely to use a noseband and a whip but, possibly as a reflection of the rules, were unlikely to use a bitless bridle. Western performance riders were most likely to use a curb bit and spurs but do not often use nosebands or whips. These results provide no indication of the techniques associated with each piece of gear, the way in which they are used, or any welfare problems associated with them. Nevertheless, the results inform the growing debate about the mandatory use of apparatus, especially severe bits, in certain sports.

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## Introduction

Around the world, horses and ponies are commonly used in leisure, sport, companion, and working contexts. They are generally ridden with reins attached to a bit or to a bitless bridle, which allows the rider to train the horse using negative reinforcement (NR). NR is a training process that rewards an animal for a behavior by the removal or avoidance of an aversive stimulus. Reliance on NR is common in traditional horse training, (i.e., riders use pressure to create discomfort such that the horse seeks relief from that pressure; McGreevy and McLean, 2010; Christensen et al., 2012). Horse training equipment such as bits, spurs, and whips allows NR to communicate with the horse. They apply aversive pressure to the horse until the appropriate response is obtained, which leads to the removal of the stimulus (McGreevy and McLean, 2010).

Horses can readily habituate to pressure and exhibit a diminished response to aversive stimuli that are applied repeatedly. Riders of 'hard-mouthed' horses that habituate to bit pressure may

be tempted to use more severe bits (e.g., those that are thinner or rely on a lever action) to apply a more aversive signal to regain the NR response (McGreevy and McLean, 2010). The horse's mouth is highly sensitive and strongly implicated in the development of behavioral conflicts, such as the horse avoiding the equipment causing uncomfortable stimuli, arising from incorrect bit use (McLean, 2005). Almost any piece of equipment can be used abusively. However, some of the most severe bits can be extremely effective when used with great care, but it is important to recognize that severe bits can cause extensive damage to the tongue, bar and hard palate of a horse's mouth (Cook, 1999). Thus, any tendency toward severe bit use has the potential to compromise horse welfare. Because habituation is universal, welfare concerns can occur in any equestrian discipline, yet there are no scientific data to support discipline associated bit preferences as advocated in the lay literature. This study sought to redress this absence of data by describing the most popular bits used in common equestrian pursuits.

It is believed that nosebands were originally used to steer the horse, as an alternative to the bit, and as a means of restraining horses when stationary. Over time they became an accessory for bridle designs accompanying certain bits (Rotterman, 2012). However, contemporary designs, most notably the "crank noseband," can be tightened to restrict jaw movements in all directions (McGreevy

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et al., 2012). This noseband is the style most capable of achieving excessive tightening (McGreevy and McLean 2010). The International Society for Equitation Science has suggested that the use of such nosebands in this way may appeal to some riders because it masks conflict behaviors, albeit at the expense of the horse's welfare (ISES, 2012). Dressage riders lose points when their horse opens its mouth because mouth opening can be a sign of pain caused by the bit. The concern is that nosebands allow dressage riders to clamp the horse's mouth shut despite bit pain. The popularity of nosebands, especially the crank noseband, has not been carefully studied across disciplines, a gap we sought to redress.

Whips and spurs may be used to stimulate locomotion. They may stimulate horses that are habituated to leg-pressure cues or those which show unprompted deceleration, a possible effect of discomfort from the severe use of bits. Our survey sought to determine in which disciplines the use of whips, crops, or spurs is most commonly reported.

Our overall objective was to conduct an audit of the apparatus used to apply aversive stimuli to ridden horses and ponies. We anticipate 2 potential outcomes beneficial to equine welfare. Improved communication from rider to horse may emerge as an alternative to reliance on certain equipment. By establishing prevalence-of-use data, we create a benchmark that may help in the assessment of risk factors for rider safety and horse welfare.

## Materials and methods

The questionnaire was designed to explore the equestrian use of bits, nosebands, and whips and posted online for public access. The questionnaire was approved by the University of Sydney Human Ethics Committee (approval number 12396). To reduce skewing of data due to 1 person taking the test multiple times, we ensured that it could be completed only once from any given computer. The online link was sent to Australian universities and colleges, horse breed clubs, horse enthusiast magazines, and clubs for various equestrian disciplines. Our contacts forwarded the link to their members or students or posted it on their Web pages. The survey was open from 20 July, 2012, to 26 September, 2012.

Respondents were first asked to answer questions about age and gender, the horse they had ridden most in the past 12 months, how long they had been riding the horse, and in what discipline, if it was purebred, and if so, what breed it was.

### Bits and bridles

We were interested in the respondents' use of bits and bridles. Respondents were asked about the bit or bridle they most often used, including whether the horse was generally ridden in a bitless bridle including a hackamore, if a different bit was used for competitions, and whether it was a snaffle, curb, or combination of the 2.

### Nosebands, spurs, crops, and whips

We asked riders if they used nosebands, and if so, what design they used. Riders were asked whether they regularly used spurs, crops, or whips.

Once the survey had closed, data were downloaded into an Excel spreadsheet (Microsoft Corporation, One Microsoft Way, Redmond, WA) for subsequent analysis using the R statistical package (Team, 2005) and GenStat, version 13 (VSN International, Hemel Hempstead, the United Kingdom). Fisher exact tests of  $2 \times 2$  contingency tables were performed, and the probability of the observed table was calculated to identify all tables with marginal totals with small probabilities. The total of these probabilities is the reported *P* value.

For larger than  $2 \times 2$  tables, the package R was used in place of GenStat.

Chi-square tests were performed on the data with and without the bitless frequencies. These 2 tests were combined to make comparisons between bitless and bitted bridle use.

Several disciplines with small numbers of respondents listed as "other" were combined. These were "pleasure" ( $n = 24$ ), "education" ( $n = 6$ ), instruction ( $n = 1$ ), agistment ( $n = 1$ ), ground work ( $n = 1$ ), barrel racing ( $n = 2$ ), breaking ( $n = 5$ ), camps ( $n = 1$ ), carriage driving ( $n = 6$ ), casual lessons ( $n = 1$ ), home riding ( $n = 2$ ), cattle work ( $n = 1$ ), clerk-of-the-course and lead pony ( $n = 1$ ), competitive trail riding ( $n = 1$ ), cutting ( $n = 10$ ), driving ( $n = 1$ ), farm work ( $n = 3$ ), schooling ( $n = 2$ ), gymkhana ( $n = 1$ ), hacking ( $n = 4$ ), halter showing ( $n = 1$ ), harness racing ( $n = 1$ ), horsemanship or tricks or liberty work ( $n = 1$ ), hunters and jumpers ( $n = 1$ ), hunters ( $n = 8$ ), liberty ( $n = 4$ ), mounted games ( $n = 2$ ), mustering ( $n = 4$ ), natural horsemanship ( $n = 4$ ), polocrosse ( $n = 165$ ), racing ( $n = 2$ ), reining ( $n = 13$ ), returning after many years of not riding ( $n = 1$ ), team penning ( $n = 3$ ), trec obstacles ( $n = 1$ ), track work riding thoroughbred racehorses ( $n = 1$ ), training ( $n = 4$ ), trekking ( $n = 3$ ), Western pleasure ( $n = 1$ ), working and drafting ( $n = 1$ ), working cattle station ( $n = 1$ ), working young horses to pass on for competition ( $n = 1$ ), does not ride ( $n = 1$ ), those who said that they rode a large variety ( $n = 6$ ). We also pooled general purpose and trail riding ( $n = 149$ ) with "hacking-out", stock sports (such as camp drafting) and ball sports (such as polocrosse) with "working", Western pleasure with "Western performance," and combined competition training and pony club activities with "adult riding club activities." Carriage driving ( $n = 6$ ), hunting, liberty training, natural horsemanship, and racing were all assigned to "other." Twenty-one respondents specified no discipline.

Three bit types were considered in our analysis: bitless, snaffle, and curb (including a combination of curb and snaffle). In any case where a respondent gave more than 1 as a response, the most severe bit was recorded as any use of severe equipment is cause for concern. The use of different bitted and bitless bridles was examined using the Fisher exact test with R statistical package for any correlations with the disciplines they were used in (Team, 2005). The use of nosebands on horses listed as participating in dressage was examined against all other disciplines to identify any significant differences in type or presence, using the Fisher exact test. In any case where a respondent gave more than 1 as a response, the most restrictive noseband was recorded. The Fisher exact test was used to examine the use of whips, crops, and spurs in relation to the bit categories reported. A chi-square test was used to examine the use of whips or crops within each discipline.

To explore whip or crop use and bit category distributions refined to spur use, we used a generalization of the maximum likelihood chi-square test, a form of generalized linear regression in which it is assumed that the table entries are Poisson distributed. This analysis gives the same chi-square test and *P* values as the maximum likelihood chi-square test of a 2-way table.

## Results

A total of 1101 responses were received. Of these, 910 were from females and 188 from males (3 people provided no gender identification). Respondents participated in many different disciplines, 13 of which were included in our specified options in the survey, with the remainder grouped in the "other" category. The distribution of the respondent's disciplines was uneven. After "other," dressage was the largest specific category ( $n = 161$ , 14.6%), followed by a combined group of trail riding and hacking ( $n = 149$ , 13.5%) and a combined group of working and camp drafting ( $n = 101$ , 9%). At the lower end of the distribution came a combined group of adult riding

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