



## Original article

# Equine-assisted therapy intervention studies targeting physical symptoms in adults: A systematic review



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## 1. Introduction

Across the world it is estimated 15% of the population or 1 billion people live with disabilities (World Health Organization, 2011). Over \$19 billion is spent annually in the United States on rehabilitation of people with disabilities associated with multiple sclerosis, stroke, balance deficits, and spinal cord injuries (Centers for Disease Control and Prevention, 2012; Hersh & Fox, 2014; National Spinal Cord Injury Statistical Center, 2015; Noll, 2013). This rehabilitation is attempting to alleviate functional impairment, pain, balance deficits and decreased quality of life (Araujo, Silva, Costa, Pereira, & Safons, 2011; Beinotti, Christofletti, Correia, & Borges, 2013; Bronson, Brewerton, Ong, Palanca, & Sullivan, 2010; Hammer et al., 2005). Evidence supports the positive effects of equine-assisted therapy for children with disabilities (Benda, McGibbon, & Grant, 2003; McGibbon, Benda, Duncan, & Silkwood-Sherer, 2009) and the psychological well-being of both young and older individuals (Selby & Smith-Osborne, 2013). Equine-assisted therapy is defined as an intervention that uses unique qualities of horses for treatment purposes to improve social, gross motor, and self-help skills in individuals (Ratliffe & Sanekane, 2009). No published systematic review of equine-assisted therapy intervention studies focusing on physical disabilities in the adult population was found.

The purpose of this systematic review was to synthesize evidence and quality of equine-assisted therapy intervention studies. PRISMA guidelines for systematic review were followed (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

The following research questions were targeted: What are outcomes of equine-assisted therapy interventions studies in adults? What is the significance of these outcomes? What are various interventions, controls and comparisons that are identified? What is the quality, including internal/external validity, bias, power and reporting? What research designs are reported? What are study strengths and limitations? What theoretical/conceptual frameworks have been used to guide this

research? What doses, frequency and duration of equine-assisted interventions have been used?

## 2. Method

Data collected included: author/year, purpose, sample, interventions, measures, results, strengths/limitations. The search strategy included searching electronic databases of ProQuest (1872 to 2015), Cumulative Index of Nursing and Allied Health Literature (CINAHL) (1982 to 2015), Education Full Text (1944 to 2015), Medline (1950 to 2015), Google Scholar (2008 to 2015); Educational Resources Information Center (ERIC) (1964 to 2015); PEDro Database (1929 to 2015); Directory of Open Access Journals (DOAJ) (2003 to 2015); Cochrane; Psych Info (1806 to 2015), and Database of Abstract Review and Effects (DARE) (1993 to 2015). The following search terms were used: “equine assisted therapy”; “therapeutic horse riding”; “therapeutic horseback riding”; “hippotherapy”; “equine psychotherapy”; “equine facilitated therapy”; “horse riding for handicapped”, “equus”; “horse therapy”; and “guide horses”. The Pet Partner's (2013) list of equine research articles was accessed and reviewed in May 2014. Archival searching of reference lists was completed. Study eligibility criteria for this systematic review included: age 16 years of age or older, sample size five or greater, quasi-experimental or experimental design, intervention research involving a living horse or horses, and articles published in English.

## 3. Measures

The Checklist for the Assessment of the Methodological Quality of Both Randomized and Non-Randomized Studies of Health Care Interventions was used (Downs & Black, 1998). This is one of the two most useful tools for quality scoring (Higgins & Green, 2011). The quality domains assessed included: reporting, external validity, internal validity, and power. Data were reviewed and scored by two

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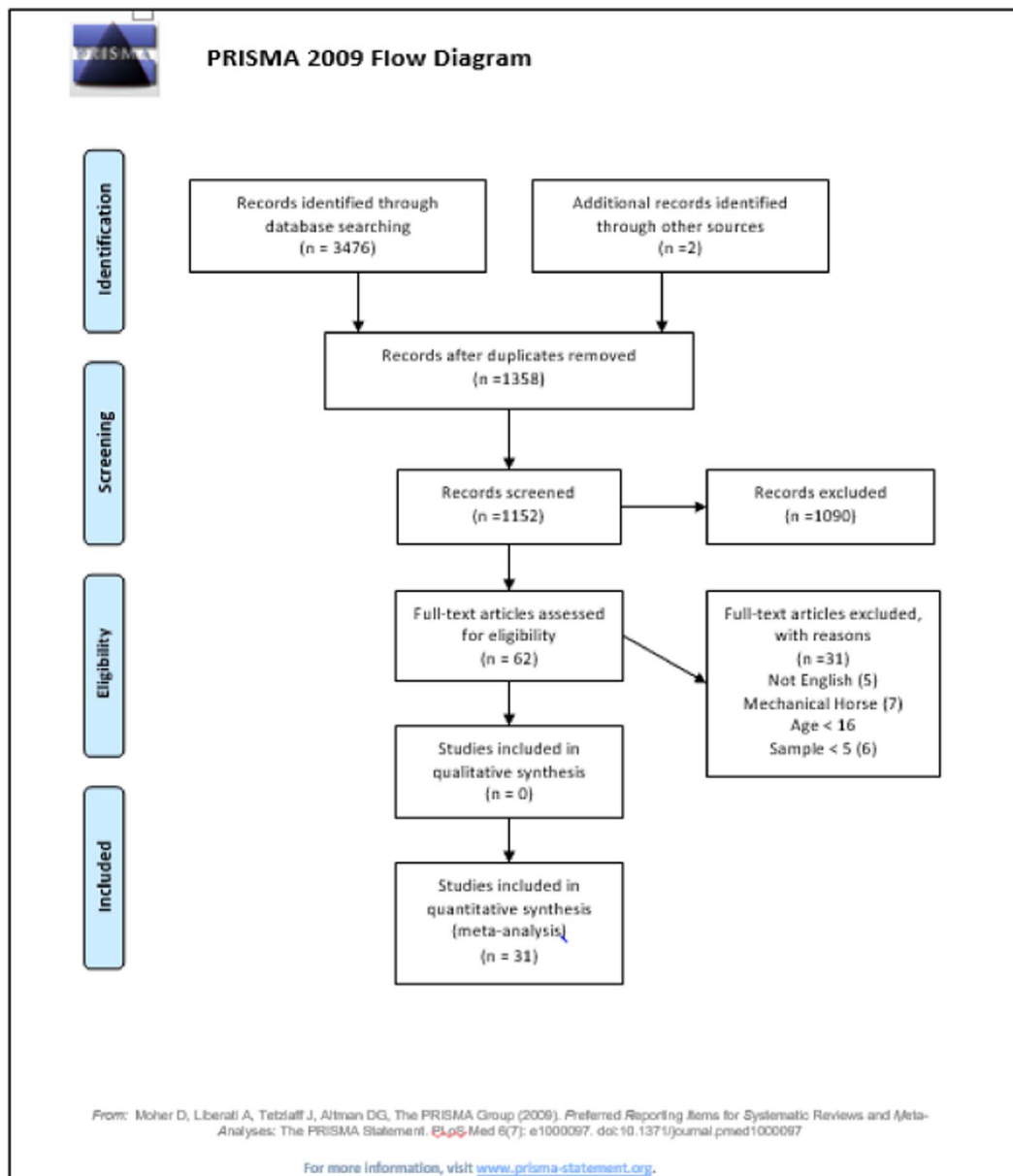


Fig. 1. PRISMA 2009 Flow Diagram.

independent reviewers (S. W. and C. R). Conflicts were communicated and mutually resolved. PRISMA guidelines were followed and reported in the PRISMA Flow Diagram (Fig. 1).

## 4. Results

### 4.1. Description of studies

Thirty one intervention studies met inclusion criteria. A total of 601 participants were included in these 31 studies. Publication dates ranged from 1988 (Brock, 1988; Mackay-Lyons, Conway, & Roberts, 1988) to 2015 (Aranda-Garcia, Iricibar, Planas, Prat-Subirana, & Angulo-Barroso, 2015; Cho, Kim, Kim, & Cho, 2015; Hwang, Lee, & Lee, 2015; Lee, Kim, & An, 2015) with 18 of the studies published since 2012 (Aranda-Garcia et al., 2015; Beinotti et al., 2013; Borioni et al., 2012; Cerulli et al., 2014; de Araújo et al., 2013; Frevel & Mäurer, 2014; T. Homnick, Henning, Swain, & Homnick, 2015; Hwang et al., 2015; H. S. Kim, Lee, & Lee, 2014; S. G. Kim & Lee, 2014; S.-R. Kim et al., 2015; Lee, Kim, & Yong, 2014; Lee et al., 2015; Menezes, Copetti, Wiest,

Trevisan, & Silveira, 2013; Sunwoo et al., 2012). Brock (1988) published two studies in the same article. Sample sizes ranged from 7 (Araujo et al., 2011; D. Homnick, Henning, Swain, & Homnick, 2013; Sunwoo et al., 2012) to 38 (Aranda-Garcia et al., 2015). Participants' ages ranged from 16 (Lechner et al., 2003) to 85 years old (Beinotti, Correia, Christofolletti, & Borges, 2010). Studies were conducted in 10 different countries: Korea (n = 8) (Cho et al., 2015; Hwang et al., 2015; H. S. Kim et al., 2014; S. G. Kim & Lee, 2014; S.-R. Kim et al., 2015; Lee et al., 2014, Lee et al., 2015; Sunwoo et al., 2012); the United States (n = 7) (Brock, 1988; Farias-Tomaszewski, Jenkins, & Keller, 2001; D. Homnick et al., 2013; T. Homnick, Henning, Swain, & Homnick, 2012; T. Homnick et al., 2015; Silkwood-Sherer & Warmbier, 2007); Brazil (n = 4) (Araujo et al., 2011; Beinotti et al., 2013, 2010; de Araújo et al., 2013); Germany (n = 3) (Boswell, Gusowski, Kaiser, & Flachenecker, 2009; Frevel & Mäurer, 2014; Sager, Drache, Schaar, & Pöhlau, 2008), Italy (n = 3) (Borioni et al., 2012; Cerulli et al., 2014; Muñoz-Lasa et al., 2011), Switzerland (n = 2) (Lechner et al., 2003; Lechner, Kakebeeke, Hegemann, & Baumberger, 2007). Single studies were conducted in Canada (Mackay-Lyons et al., 1988), Portugal (Menezes

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