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Hertfordshire AL4 8AN, UK  
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## ***The relationship between working horse welfare state and their owners' empathy level and perception of equine pain***

***D Luna<sup>‡</sup>, RA Vásquez<sup>§</sup>, JM Yáñez<sup>#</sup> and T Tadich<sup>\*†</sup>***

<sup>†</sup> Departamento de Fomento de la Producción Animal, Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile, Santa Rosa 11735, La Pintana, Santiago, Chile

<sup>‡</sup> Programa de Doctorado en Ciencias Silvoagropecuarias y Veterinarias, Facultad de Ciencias Agronómicas, Universidad de Chile, Santa Rosa 11315, La Pintana, Santiago, Chile

<sup>§</sup> Instituto de Ecología y Biodiversidad, Departamento de Ciencias Ecológicas, Facultad de Ciencias, Universidad de Chile, Las Palmeras 3425, Ñuñoa, Santiago, Chile

<sup>#</sup> Departamento de Medicina Preventiva Animal, Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile, Santa Rosa 11735, La Pintana, Santiago, Chile

\* Contact for correspondence and requests for reprints: tamaratadich@u.uchile.cl

### **Abstract**

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An understanding of the factors influencing the human-animal relationship is relevant in the development of welfare interventions for working equids. However, the link between the psychological attributes of animal owners, such as empathy level and pain perception, and the welfare state of working horses is yet to be studied. Here, we assessed working horse owners' empathy, their perception of equine pain and how these relate to the welfare state of their horses. The relationship between empathy and perception of equine pain was also explored. One hundred owners of working horses were studied, along with their working horses ( $n = 127$ ). Self-reported rating scales were used for measuring animal-oriented empathy, human-oriented empathy and owners' perception of equine pain; higher scores in the three scales indicated higher levels of empathy and higher perception of equine pain. An animal welfare index based on direct measures was applied where higher scores indicate a poorer welfare state. Most of the owners had high levels of empathy towards both animals and humans and a high perception of equine pain. According to the animal welfare index, 15.7% of horses had a poor welfare state. Higher levels of empathy and equine pain perception in owners were correlated with a better animal welfare condition, with owner's empathy level towards animals explaining over 60% of horses' welfare. Moreover, empathy towards animals was positively correlated with human-oriented empathy and perception of equine pain. We therefore suggest that strategies oriented to improve welfare of working horses should consider education programmes aimed at promoting the development of empathy in caretakers.

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**Keywords:** animal welfare, empathy, human-animal empathy, human-animal interactions, pain perception, working equid