

From Measurement to Meaning: Shifting Focus Toward Positive Welfare Indicators

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Over the past decade, equitation science has transitioned from a relatively fragmented, welfare-driven field into a methodologically sophisticated discipline spanning behavior, cognition, physiology, and technology. As societal expectations around animal use intensify, the field is moving beyond questions of how horses are trained or managed. Instead, the focus is shifting toward more fundamental questions of how horses experience their environment and how we, as their human caretakers, can both alleviate negative experiences and enhance well-being through positive interventions in their lives.

1. Technological Advances and the Measurement Revolution

The most visible advances in equitation science remain technological, marked by a decisive shift from controlled laboratory measurement toward field-deployable, continuous sensing systems. Inertial measurement units (IMUs) are now well validated for gait analysis and lameness detection, performing comparably to traditional laboratory methods while being deployable under real training conditions [1,2]. Networked sensor systems integrating GPS, heart rate monitoring, and movement data enable population-level welfare assessment, demonstrating measurable physiological responses to environmental stressors in situ [3]. Smart textiles further suggest that continuous, non-invasive monitoring of respiratory, cardiac, and locomotor parameters is becoming technically feasible [4]. Yet reviews in both the Equine Veterinary Journal and the Journal of Equine Veterinary Science converge on a more cautious conclusion: while technology is advancing rapidly, challenges remain in validation, durability, and the integration of physiological and psychological indicators [5,6]. The field has acquired the tools to measure, but is still refining how to interpret them. Future progress will depend not only on hardware refinement but also on developing robust interpretive frameworks that connect sensor outputs to meaningful welfare constructs.

2. Automated Welfare Assessment: Progress and Limitations

Parallel advances in automated welfare assessment are beginning to close the observation gap that has historically constrained behavioral research. Machine-learning approaches now allow high-accuracy classification of equine behavior from wearable sensors, while video- and accelerometry-based systems increasingly

detect pain-related behaviors, physiological stress responses, and changes associated with clinical conditions and sleep quality [7,8]. Despite this progress, most systems remain focused on detecting the absence of negative states rather than the presence of positive ones. This reflects a broader conceptual gap within equitation science, where research has historically prioritized negative welfare and affective states, partly because these are better studied and supported by more developed diagnostic tools.

Similar concerns within human psychology contributed to the emergence of "positive psychology" at the turn of the century [9], shifting attention beyond the treatment of pathology toward the conditions that enable a good life. While not all aspects of this framework translate directly to equitation science, the growing emphasis on positive welfare, agency, and behavioral flexibility suggests a comparable transition within the equine sector. The development of validated tools capable of identifying positive affective states will become increasingly important for a more comprehensive understanding of equine welfare.

3. The Critical Role of Horse–Human Interaction

The horse–human interaction literature highlights complementary concerns that extend beyond the animal itself. Horses are highly sensitive to human physiological and behavioral cues, responding to stress, posture, and emotional state in ways that directly affect interaction quality [10–12]. Experimental work demonstrates that human stress measurably alters horse behavior, reducing affiliative signals and increasing conflict-related responses [13]. Systematic reviews suggest that many ridden and handled contexts constrain horses to such an extent that genuine expressions of positive affect become difficult to detect [11], while in elite sport the horse–rider relationship is variably framed as central, secondary, or even conflicting with performance goals [14]. Industry expert perspectives often assume welfare is adequate where regulatory frameworks exist, focusing on veterinary or physical health aspects rather than the capacity to display natural behaviors, positive affective states, and species-typical interactions [15–17]. The critical influence of the human, shaping management, handling, and riding practices both implicitly and explicitly, remains systematically underplayed. Addressing this gap requires research designs that treat the horse–human relationship as a dynamic, bidirectional system rather than a unidirectional influence on an animal subject.

4. The Role of the Journal

Since its establishment, the **International Journal of Equine Science (IJES)** has emerged as an important platform for advancing interdisciplinary research across equine welfare, behavior, cognition, and the broader contexts in which horses are kept and used. Publication trends over recent years reflect the field's evolving priorities. Foundational work on welfare perceptions has highlighted how stakeholder assumptions surrounding equine welfare may overlook affective states, psychological health, and opportunities for species-typical behavior [18]. Research on training practices has identified inconsistencies in terminology and method reporting, reinforcing the need for greater standardization and clearer communication within the field [19]. The journal has also published work examining the psychological and occupational dimensions of equestrianism, including the relationship between technology, performance, and safety [20], injury experiences among racing staff [21], and workforce challenges affecting both human and equine welfare [22]. In parallel, research on coaching and education has explored how influential figures within equestrian communities perceive their role in shaping more sustainable futures for the sector [23], while studies on head–neck positions in ridden horses have contributed evidence relevant to welfare assessment and judging standards [24]. Collectively, these contributions illustrate the journal's capacity to connect empirical research with practical and regulatory concerns.

5. Conclusion

Equestrianism has been a late adopter of sports science integration and data-driven approaches compared to other sectors, likely due to deeply embedded traditional practices that do not align with modern shifts in societal attitudes toward animals in sport. This presents both a challenge and an opportunity: by embracing interdisciplinary research, open data, and transparent welfare frameworks, the equestrian sector can move from a posture of survival to one of thriving—demonstrating that horses can have a good life, not despite but because of their interaction with humans.

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How to Cite

Williams J, Wolframm I. From Measurement to Meaning: Shifting Focus Toward Positive Welfare Indicators. *Int J Equine Sci* 2026;5(1):1–2.