

## Review

Animal play and animal welfare

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Play has long been identified as a potential welfare indicator because it often disappears when animals are under fitness challenge and because it is thought to be accompanied by a pleasurable emotional experience. But animal play is a vexing behavioural phenomenon, characteristically flexible and variable within and between species, with its proximate mechanisms and ultimate functions still not fully understood. Its relationship to animal welfare is therefore complex and merits a focused theoretical investigation. We review evidence on four aspects of the play–welfare relationship: first, that play indicates the absence of fitness threats; second, that play acts as a reward and flags up the presence of opioid-mediated pleasurable emotional experiences; third, that play brings immediate psychological benefits and long-term fitness and health benefits, and thus improves current and future welfare; and finally, that play is socially contagious and therefore capable of spreading good welfare in groups. On this basis, we argue that play does indeed hold promise as a welfare indicator and also as a tool to improve it; but we also point to difficulties in its study and interpretation, and identify some unresolved questions. As a welfare indicator, play may signal both the absence of bad welfare and the presence of good welfare, thus covering a wide range of the welfare spectrum. However, play can also increase in stressful situations, in response to reduced parental care, or as a rebound after a period of deprivation and therefore does not consistently reflect favourable environmental conditions. A better fundamental understanding is needed of the varied ultimate functions and proximate mechanisms of play, and the species-specific play patterns of captive animals, in order to be able to explain exactly what an animal's play behaviour tells us about its welfare state, and whether and how play might be applied as a tool to improve welfare.

**Keywords:** animal play; animal welfare; captive animal

## Article Outline

[Animal play as indicating absence of fitness threats?](#)

[Animal play and experiencing 'pleasure'](#)

[Functions of play and associated welfare benefits](#)

[Animal play as spreading good welfare?](#)

[Variability of play: a stumbling block for use in animal welfare?](#)

[Final considerations](#)

[Play: a Pain or Pleasure for Ethologists?](#)

[In Conclusion](#)

[Acknowledgements](#)

[References](#)

Table 1. Examples from captive (domestic) animals to illustrate the three main types of play



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