

Abstracts Posters

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Non-sagittal shank and foot movements included in the kinematic articular chain of the swing phase of gait.

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Foot movements involved in the kinematic articular chain of the gait cycle in metatherians (marsupials) may be analysed in order to unravel eutherian bipedal gait. Historical footage shows thylacine feet positioned horizontally in sway. For a clearer image, we analysed an archived live videotape of a walking wombat, frame-by-frame. From take-off, the lateral side of the wombat foot stays continuously lifted, causing throughout everted foot positions during sway. Comparable foot positioning was observed in another metatherian, the common opossum *Didelphis marsupialis*. Here, biomechanical guidance by the cardan-like ankle joint transmits shank axial rotation to foot-eversion or foot-inversion (1). Only since recently, quantitative measurements in eutherians (e.g., primates, viz. man) allow extrapolating such data to bipedal gait. At the onset of sway, a short distinct foot eversion helps to clear the human foot from the walking surface (2). Very recently, sophisticated technology captured foot eversion at the end of swing, in a carnivore running at full speed (3). While doing so, this eutherian quadruped shows internal axial rotation of the lower leg and simultaneously heel-abduction, toe-extension and toe-abduction. This latter phenomenon might be universal, as it has been described in metatherians earlier (4).

References

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