

How does vertical loading rate and landing pattern alter in adult habitual shod runners when acutely trialling barefoot running? A literature review

Background: Running injuries are commonplace and are with a greater vertical loading rate (VLR). Barefoot running (BR) is reported to reduce VLR by promoting a forefoot strike landing, however, a synthesis of the research investigating how VLR and landing patterns (LP) alter in adult habitual shod runners when acutely trialling BR has yet to be conducted.

Objectives: To determine how VLR and LP alter in adult habitual shod runners acutely trialling BR.

Methods: Databases searched included SPORTDiscus, CINAHL Complete, Education Source, Environment Complete, PsycINFO and SocINDEX. Articles were limited to peer-reviewed in the English language assessing VLR and LP in adult habitual shod runners acutely trialling BR.

Results: Eight studies published between 2010 and 2018 matched inclusion criteria. Average group VLR was higher during BR in all but one of the studies assessing VLR irrespective of LP. VLR was lower during BR in runners displaying a non-rearfoot strike landing in all but one of the studies assessing VLR in regard to LP. Whilst the four studies assessing foot strike patterns found mixed adaptations to this variable during BR, all studies classifying LP via sagittal ankle angle at initial ground contact (IGC) showed participants landed with a more plantarflexed ankle at IGC during BR.

Conclusions: VLR mostly increases in adult habitual shod runners acutely trialling BR, irrespective of LP, yet mostly decreases when a non-rearfoot strike landing is observed. During BR, runners land with a more plantarflexed ankle at IGC yet demonstrate a mixture of adaptations in foot strike patterns.