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The Impact of Barefoot versus Shod Running on Lower Limb Gait Cycle Pattern among Recreational Club Runners in Durban, South Africa

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Abstract : Introduction: Despite health benefits that come with running, injuries are common with prevalence ranging between 18.2% and 92.4% worldwide. Differences in gait patterns between barefoot and shod running, can determine traits that could lead to running injuries. The aim was to assess and compare lower limb gait cycle patterns between barefoot and shod running among runners. Methods: An experimental same-subject study design was used. The study population consisted of male and female adult recreational runners who were injury free from a running club in Durban. A convenience sampling method was used and 14 participants were recruited. The study was conducted in the physiotherapy performance laboratory at the University of KwaZulu-Natal. A Woodway Desmo Treadmill and KinePro gait analysis system were used. Descriptive & inferential statistics were analysed using Microsoft Excel and Intercooled Stata. Results: Participants included a greater percentage of females (57.1%, n = 8) than males (42.9%, n = 6). The mean population age was 38.57. A significant difference ($p < 0.0009$) between barefoot cadence (177.9236steps/min) and shod cadence (171.9445steps/min) was observed. Right (0.261s) and left (0.257s) barefoot stand phase was shorter than right (0.273s) and left (0.270s) shod stand phase. Right barefoot swing phase exhibited less significant (0.420s) results when compared to right shod swing phase (0.427s), whereas left barefoot swing phase was quicker (0.416s) than left shod swing phase (0.432s). Significant differences between barefoot and shod stand ($p < 0.009$) and swing ($p < 0.040$) phase symmetry occurred. Conclusion: A considerable difference was found between barefoot and shod running gait cycle patterns among participants. This difference may play a role in prevention of running related injuries.

Keywords : barefoot running, shod running, gait cycle pattern, same-subject study design
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