



BOOK OF ABSTRACTS

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EFFECTS OF 30MIN DOWNHILL RUNNING ON MUSCLE DAMAGE MARKERS AND BIOMECHANICS IN FEMALE ROAD RUNNERS.

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INTRODUCTION: Downhill running (DR) can lead to exercise-induced muscle damage (EIMD) due to substantial eccentric loading. Whether the occurrence of EIMD is associated with changes in running biomechanics remains unclear. Moreover, most studies have focused on male participants, despite potential sex specific differences in responses to unaccustomed eccentric exercise. Therefore, this study aimed to examine changes in running pattern during a 30 min DR test and subsequent EIMD in female runners. **METHODS:** Female road runners ($n=15$; 23.3 ± 3 yrs, 57.2 ± 5.4 kg) underwent a treadmill VO₂max test to determine their maximal aerobic speed (MAS). After 2 days without training, participants performed a 30min DR protocol at 90% MAS on a -15% gradient. Spatiotemporal parameters (using a 3D motion capture) and lower limb muscle activity (surface electromyography) were recorded during DR. Plasma creatine kinase (CK), delayed-onset muscle soreness (DOMS), and maximal voluntary isometric contraction (MVIC) of the knee extensors were measured before, 24h and 48h after DR. **RESULTS:** Mean VO₂max and MAS were 46.4 ± 4.6 mlO₂/min.kg and 15.3 ± 0.7

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km/h, respectively. Plasma CK increased significantly at 24h and 48h post-exercise (892.3 ± 521.3 IU/l and 625.9 ± 643.5 IU/l, respectively) compared to baseline (131.3 ± 45.8 IU/l; $p<0.001$). Participants reported significant muscle soreness at 24 and 48h post-exercise ($p<0.001$), with the highest ratings for the gluteal and the knee extensor muscles (5.9 ± 2 a.u.; 5.9 ± 2.5 a.u, respectively). A significant decrease in MVIC was observed at 24h (-16%) and 48h (-13%) post-exercise to baseline ($p<0.05$). The spatiotemporal parameters remained unchanged during DR, while ankle dorsiflexion during the swing phase decreased. sEMG analysis showed reduced activation of the gastrocnemius lateralis and medialis muscles from the start to the end of DR. **CONCLUSION:** The DR test induced marked changes in EIMD markers, with similar response at 24h and 48h. The gastrocnemius muscles appeared particularly susceptible to fatigue during DR. Further correlation analyses could help to clarify the relationship between running biomechanics and subsequent EIMD.