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Does cycling effect motor coordination of the leg during running in elite triathletes?

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Triathletes report incoordination when running after cycling. We investigated the influence of the transition from cycling to running on leg movement and muscle recruitment during running in elite international level triathletes. Leg movement (three-dimensional kinematics) and tibialis anterior (TA) muscle activity (surface electromyography) were compared between a control-run (no prior exercise) and a 30-min transition-run (preceded by 20min of cycling; i.e., run versus cycle-run). The role of fatigue in motor changes was also investigated. Leg kinematics were not different between control- and transition-runs in any triathlete. Recruitment of TA was different in 5 of 14 triathletes, in whom altered TA recruitment patterns during the transition-run were more similar to recruitment patterns of TA during cycling. Changes in TA recruitment during the transition-run were not associated with altered force production of TA or other leg muscles during isometric fatigue testing, or myoelectric indicators of fatigue (median frequency, average rectified value). These findings suggest that short periods of cycling do not influence running kinematics or TA muscle activity in most elite triathletes. However, our findings are evidence that leg muscle activity during running is influenced by cycling in at least some elite triathletes despite their years of training. This influence is not related to kinematic variations and is unlikely related to fatigue but may be a direct effect of cycling on motor commands for running.