

スプリント走の加速局面における一流短距離選手のキネティクスに関する研究

小林海¹⁾, 土江寛裕²⁾, 松尾彰文³⁾, 彼末一之⁴⁾, 磯繁雄⁴⁾, 矢内利政⁴⁾,
金久博昭⁵⁾, 福永哲夫⁶⁾, 川上泰雄⁴⁾

¹⁾早稲田大学大学院スポーツ科学研究科

²⁾城西大学経営学部

³⁾国立スポーツ科学センター

⁴⁾早稲田大学スポーツ科学学術院

⁵⁾東京大学大学院総合文化研究科

⁶⁾鹿屋体育大学

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Abstract

The present study aimed to describe the changing pattern of the running velocity and kinetics, and to discuss the factors that determine the running velocity during the acceleration phase of the sprint running in elite sprinters. Five elite sprinters [100m best time: 10.23 ± 0.14 sec] (elite group) and five non-elite sprinters [100m best time: 11.38 ± 0.19 sec] (control group) repeated 50-m sprints from a crouching position on a starting block. Each sprint was recorded with 12 infrared cameras (120Hz), and the ground reaction force was obtained from six force platforms (600Hz). The reflective markers were placed on the lateral surfaces of selected joint centers. As the running velocity and the stride length increased throughout the distance, the stride frequency remained constant. After the 10th step, the elite group attained a higher running velocity and a longer stride length than the control group did. The changing pattern of the running velocity and the stride length was similar in both groups. In addition, the impulse of the ground reaction force recorded for the elite group was significantly greater than that for the control group, although the contact time was significantly shorter in elite group than in control group. The present results indicate that elite sprinters have ability to exert a force against the ground in short contact time to obtain higher running velocity.

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連絡先:小林海 〒359-1192 埼玉県所沢市三ヶ島2-579-15 早稲田大学スポーツ科学研究科

Tel & Fax: 04-2947-6932, E-mail: k-kai@toki.waseda.jp