Abstract

Acceleration and Maximum Running Phases in 60-m Sprint and Vertical Jump Performance [†]

Ilias Ntoumas *, Giorgos Nounos, Pavlos Ioannidis and Vasileios Voutselas

School of Physical Education and Sport Science, University of Thessaly, 42100 Trikala, Greece

* Correspondence: iliasdoumas@gmail.com

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Abstract: **AIM:** The purpose of the present study was to investigate the correlation between acceleration and maximum running phase in 60-m sprint and vertical jump performance. Furthermore, to investigate the factors that affect the acceleration phase, maximum running phase, and overall 60-m sprint performance. **MATERIAL & METHOD:** Participants were 25 young amateur athletes, aged 18 ± 1 years, with body mass 64.64 ± 13.39 kg and body height 1.71 ± 0.11 m. We examined the correlation between the acceleration phase (0–30 m) and maximum running phase (30–60 m) and 60-m sprint performance, measured with photocells (Optojump), and vertical jump performance (take-off velocity, jump height, maximal velocity, maximal power), measured with a force plate (Bertec). Pearson correlation was used to examine the correlation between the forementioned parameters (SPSS, v. 21). **RESULTS:** There was a correlation between jump height and 60-m sprint performance ($r = -0.713$, $p < 0.001$), maximum running phase ($r = -0.512$, $p = 0.15$), and a weak correlation with acceleration phase ($r = -0.495$, $p = 0.19$). There was a correlation between take-off velocity and 60-m sprint performance ($r = -0.732$, $p < 0.001$), maximum running phase ($r = -0.553$, $p = 0.08$), and a weak correlation with acceleration phase ($r = -0.472$, $p = 0.27$). There was a weak correlation between maximal velocity, acceleration phase ($r = 0.439$, $p = 0.41$), and 60-m sprint performance ($r = 0.438$, $p = 0.42$). There was a correlation between maximal power and 60-m sprint performance ($r = -0.739$, $p < 0.001$), acceleration phase ($r = -0.635$, $p = 0.02$), and a weak correlation with maximum running phase ($r = -0.437$, $p = 0.042$). There was a correlation between 60-m sprint performance and maximum running phase ($r = 0.792$, $p < 0.001$) and acceleration phase ($r = 0.596$, $p = 0.03$). Finally, there was a correlation between body height and 60-m sprint performance ($r = -0.738$, $p = 0.02$) and maximum running phase ($r = -0.666$, $p = 0.07$). **CONCLUSIONS:** According to our results, 60-m sprint performance was highly correlated with body height, maximum running phase and all the vertical jump parameters (*explosive power*), except for maximal power, which had a high correlation with the acceleration phase (sprint acceleration).

Keywords: acceleration; sprint; vertical jump

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