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Ground Contact Times and Flight Times at Different Running Speeds in Novice and Competitive Runners

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While there is a known relationship between ground contact time (CT) and flight time (FT) at different running speeds, it is unknown if this pattern differs between experienced and novice runners. **PURPOSE:** To determine if the pattern of changing ground contact times and flight times as running speeds increase differs between novice and experienced runners. **METHODS:** Two expert men (184.8±3.2 cm, 79.5±5.4 kg), 2 novice men (173.1±2.2 cm, 75.3±0.6 kg), and 4 expert women (168.8±2.9 cm, 66.2±9.0 kg) were recorded at 240 frames per second while running 50 m on a rubber track at speeds of 3.0 m·s⁻¹, 4.5 m·s⁻¹, and 6.0 m·s⁻¹. The videos were analyzed to measure CT and FT for both the right and left legs, and the averages of both legs were used for further analysis. Comparisons were made using a 2-way (group x speed) repeated measures ANOVA. **RESULTS:** As running speed increased, CT decreased similarly for all runners from 279.5±26.4 ms at 3.0 m·s⁻¹, to 208.5±22.6 ms at 4.5 m·s⁻¹, and 168.0±17.1 ms at 6.0 m·s⁻¹. There were significant differences in CT between speeds in all groups (p<0.0001), but no differences between groups (p=0.3815) and no significant group x speed interaction (p=0.8282). FT increased from 98.0±31.4 ms at 3.0 m·s⁻¹ to 143.3±17.1 ms at 4.5 m·s⁻¹ and 139.0±15.2 ms at 6.0 m·s⁻¹, but these differences were not statistically significant (p=0.0699). There were no significant differences in FT between groups (p=0.5980) and no significant group x speed interaction (p=0.0715). **CONCLUSIONS:** Novice and experienced runners do not appear to differ significantly in their patterns of CT and FT across the range of speeds used in this study.

