

Age-related differences during specific athletic events highlighting strength and speed characteristics in well-trained male and female adolescents

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Subjects:

600 young track and field athletes (300 females and 300 males) aged 10-15 years old.



Observation technique:

From each year group (U10, U11, U12, U13, U14, U15) the top 50 performance results from the final round of the national annual athletics tournament "Shipovka Yunykh" in 2017-2019 were analyzed. The winners were determined by the sum of three sporting disciplines, namely: 60-m sprint, 600-m, and long jump.



Outcome Measures:

The outcome measurements were results in 60-m sprint, 600-m run and long jump. The results were measured by FinishLynx electronic timing system. ANOVA was used to compare the results for boys and girls of the same age, followed by (if necessary, the number of compared variables is more than 2 and the differences are significant) Tukey post-hoc analysis.



Results:

Statistically significant differences are evident in boys at 12 years old from the 60-m sprint. However, in strength qualities as measured by the long jump, differences are contradictory.

In boys, at 11-12 and 14-15 years, there are statistically significant differences, however, in girls statistically significant differences were only observed at 13 years old. However, the effects of chronological age in boys and girls were significantly different in several age groups and in varying athletic events, thus the current results may be affected. For example, in boys at 13 years, the best physical performance was in the 60-m sprint, on average four months older than girls. While the best long jump performance in girls was observed at 13 years old, on average two months older than male peers.

Conclusions:

In this current cohort of well-trained adolescents, differences in strength and speed commenced at 11-12 years old. For an accurate interpretation of the data, it is important to consider the exact chronological age at the time of performance rather than the year of birth.



Age group	Sprint			Bounce		
	Boys	Girls	p	Boys	Girls	p
10 years	9.19±0.20, n=92	9.17±0.19, n=96	0.48	403±22, n=111	403±19, n=104	0.98
11 years	8.93±0.21, n=104	8.93±0.19, n=102	0.83	434±22, n=90	423±19, n=125	<0.001
12 years	8.48±0.19, n=94	8.64±0.15, n=144	<0.001	460±22, n=92	448±18.5, n=111	<0.001
13 years	8.01±0.15, n=108	8.85±0.36, n=63	<0.001	450±54.9, n=58	476±18, n=117	0.002
14 years	7.76±0.15, n=148	8.40±0.14, n=185	<0.001	559±30, n=78	493±17.5, n=95	<0.001
15 years	7.64±0.14, n=155	8.33±0.15, n=116	<0.001	594±30, n=79	489±22, n=86	<0.001