

DARWINIAN THEORIES APPLIED TO SPORT:

SOMATOTYPE AND ITS CHANGES ACROSS A DII TRACK & FIELD COMPETITIVE OUTDOOR SEASON

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Purpose

1. Establish somatotype profile for T&F athletes by sex, class, and event
2. Determine if somatotype changed across a competitive outdoor season
3. Determine if somatotype changes differ based on class and/or sex
4. Ascertain if there was a difference in somatotype between sexes competing in similar events nearing conference championship

Take Aways

1. DII T&F team was primarily endomorphic; although the team did manage to qualify 6 athletes across 9 events, the Team results were disappointing and did not meet the coach's expectations.
2. There were no differences in somatotype classification between sex, class level, or event.
3. Known or unbeknownst, purposeful or not, the somatotype of an athlete may change during a competitive outdoor season.

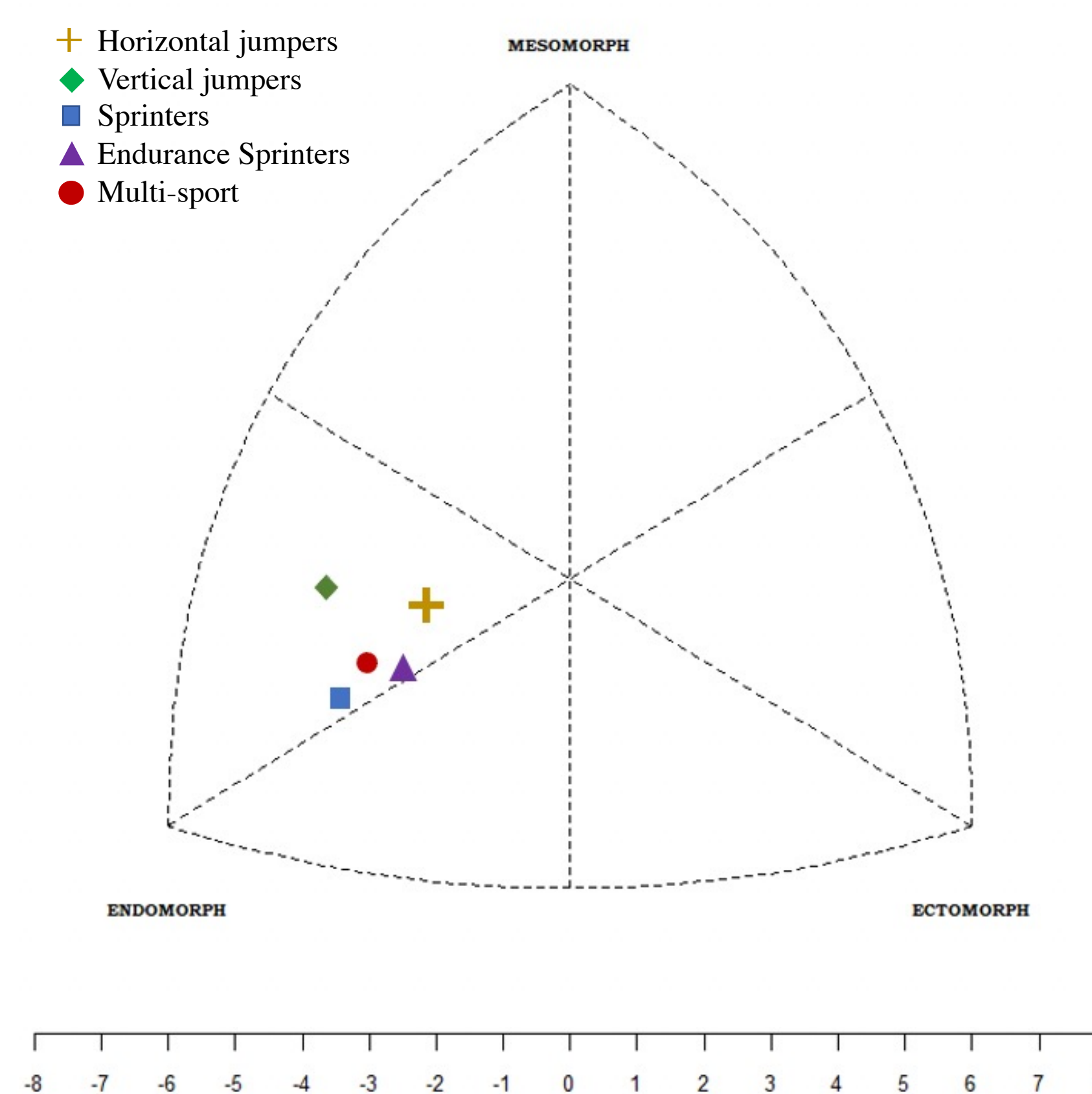


Figure 1. Baseline somatotype based on athletes' primary event. data points calculated using the following equations: X axis = Ecto - Endo. Y axis = 2(meso) - (endo + ecto).

Table 1. Absolute Demographic Data for Division II Track and Field Team at Baseline (N = 54)

	Age	Height	Weight	Body Fat	ENDO	MESO	ECTO
Males (n=33)	20.0 ± 1.2	181.8 ± 5.8	76.1 ± 6.4	8.9 ± 3.2	4.8 ± 0.8	4.2 ± 0.8	2.7 ± 1.0
Females (n=21)	19.9 ± 1.2	170.7 ± 6.1	63.6 ± 6.1	18.6 ± 4.1	7.8 ± 1.1	2.8 ± 1.3	2.8 ± 1.1

*Comparison of Final Team Standings for Indoor and Outdoor Seasons Prior to and During Study

2018 Season (Immediately Prior to Study)				2019 Season (During Study)			
Indoor (Final Standing)		Outdoor (Final Standing)		Indoor (Final Standing)		Outdoor (Final Standing)	
Males	Females	Males	Females	Males	Females	Males	Females
26 ^a	43 ^a	21 ^a	71 ^a	7 ^a	44 ^a	31 ^a	Unranked

Note: Data are presented as mean ± SD; age in years; height in centimeters; weight in kilograms; body fat in percent; ENDO = endomorph; MESO = mesomorph; ECTO = ectomorph; all somatotype scores were calculated following the Heath-Carter manual.

*Includes athletes not participating in the study.

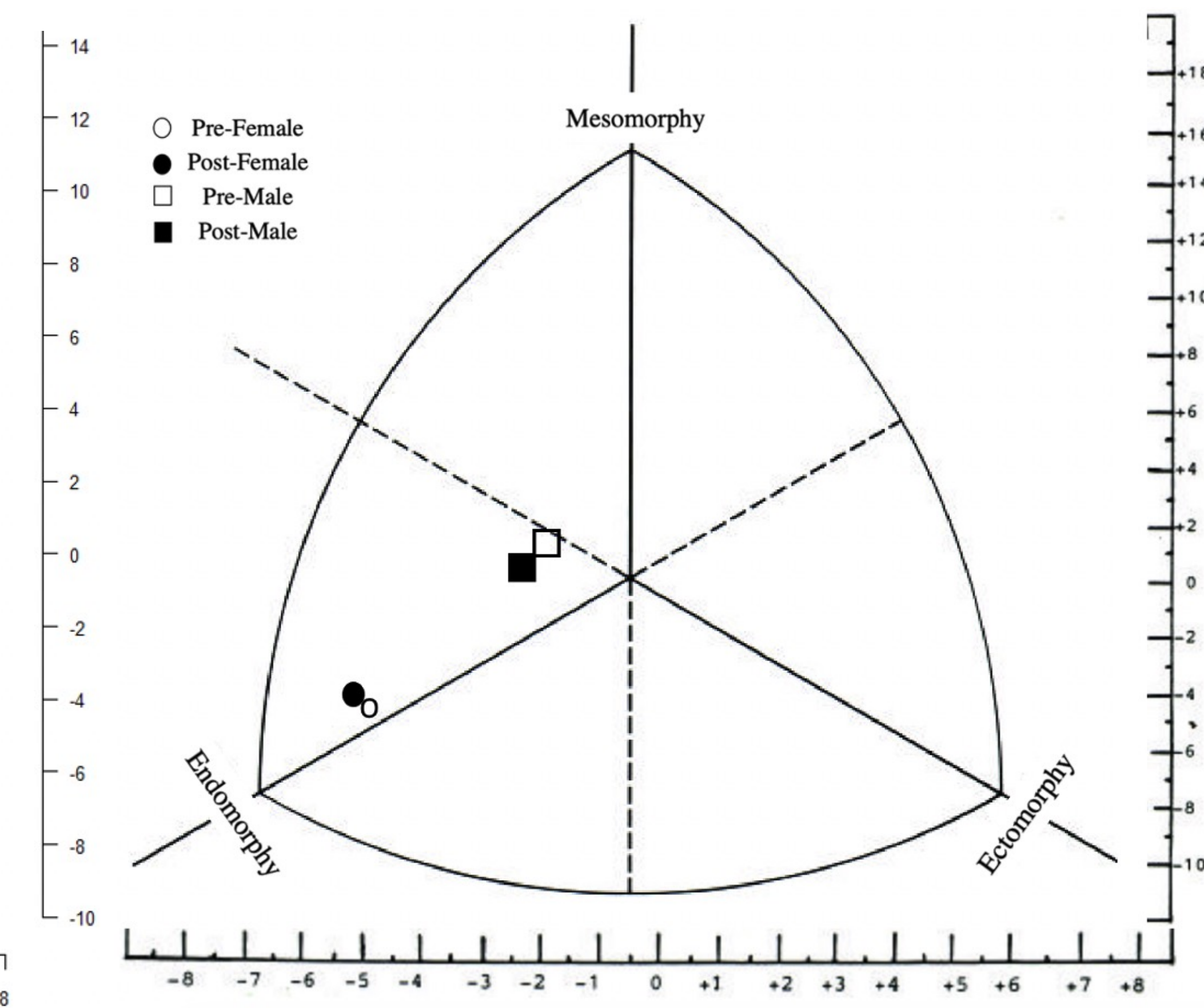


Figure 2. Somatotype for males and females (both pre and post testing) across the competitive season. Statistically, there was a greater decrease in female ENDO scores pre- to post-season compared to males.

Table 2. Baseline Somatotype Profile for Division II Track and Field Athletes Participating in Events (n=47)

	Height (cm)	Weight (kg)	Body Fat (%)	ENDO	MESO	ECTO
Sex						
Males (n = 28)	182.8 ± 5.1	76.4 ± 6.6	8.2 ± 2.3	4.7 ± 0.7	4.1 ± 0.8	3.0 ± 0.7
Females (n = 19)	170.4 ± 6.3	62.9 ± 6.1	18.3 ± 4.3	7.7 ± 1.1	2.9 ± 1.3	2.9 ± 1.1
Class						
Under Class (n = 16)	176.3 ± 8.6	70.0 ± 8.9	12.7 ± 6.1	5.8 ± 1.5	3.8 ± 0.8	2.8 ± 0.8
Upper Class (n = 31)	178.5 ± 8.2	71.4 ± 9.4	12.2 ± 6.0	6.0 ± 1.9	3.5 ± 1.3	3.0 ± 0.9
Event (n = 44)						
100m (n = 4)	168.0 ± 7.6	61.3 ± 7.9	14.0 ± 6.2	6.9 ± 1.2	3.3 ± 0.9	2.7 ± 0.8
200m (n = 1)	181.3 ± 0.0	68.3 ± 0.0	7.1 ± 0.0	4.0 ± 0.0	3.4 ± 0.0	3.9 ± 0.0
400m (n = 11)	176.2 ± 9.6	67.1 ± 9.1	11.4 ± 5.7	5.7 ± 1.7	3.2 ± 1.0	3.2 ± 0.7
800m (n = 4)	177.8 ± 11.4	70.9 ± 10.1	10.7 ± 8.2	5.5 ± 2.2	3.8 ± 0.4	2.9 ± 0.8
100/110m Hurdle (n = 2)	178.6 ± 7.7	68.5 ± 12.4	14.6 ± 7.2	5.4 ± 1.7	2.4 ± 2.0	3.5 ± 0.6
High Jump (n = 3)	178.4 ± 2.4	68.7 ± 7.4	11.9 ± 6.1	6.0 ± 1.6	3.4 ± 1.4	3.4 ± 0.7
Long Jump (n = 4)	182.0 ± 3.2	73.7 ± 5.1	10.4 ± 1.8	5.6 ± 1.0	3.9 ± 0.7	3.2 ± 0.6
Triple Jump (n = 2)	182.3 ± 0.0	81.4 ± 7.8	7.2 ± 0.0	4.3 ± 1.1	5.3 ± 0.5	2.2 ± 1.0
Pole Vault (n = 5)	173.5 ± 10.8	72.2 ± 8.9	14.8 ± 7.4	6.4 ± 2.4	4.8 ± 0.8	2.1 ± 1.0
Heptathlon (n = 3)	175.6 ± 3.7	68.4 ± 8.1	18.1 ± 3.2	8.3 ± 1.0	2.8 ± 1.4	2.9 ± 1.6
Decathlon (n = 5)	184.34 ± 3.3	77.6 ± 4.7	8.5 ± 2.4	4.8 ± 0.8	4.0 ± 0.6	3.1 ± 0.5

Note: Data are presented as mean ± SD; Cm=centimeters; kg=kilograms; ENDO=endomorph; MESO=mesomorph; ECTO=ectomorph; m=meters.