PROFESSIONAL vs. ELITE FEMALE SOCCER ATHLETES: PHYSICAL AND TECHNICAL PERFORMANCE CHARACTERISTICS

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PURPOSE

To explore physical and technical female-specific variables that predict a successful transition to the professional level after a DI collegiate career.

Table 1. Participant demographics (mean ± SD)

Thirty-nine NCAA Division I (DI) women's soccer athletes were included in the study

Age (yrs)	Height (cm)	Weight (kg)	BF%
20.3 ± 1.3	166.6 ± 5.9	63.9 ± 6.5	23.1 ± 4.2

METHODS

All outcomes were evaluated prior to the beginning of each collegiate competitive season from 2018-2023. The sample was divided into players that successfully transitioned to a professional career after college (n=27) and players who finished their elite career in college (n=16).

Athletic performance

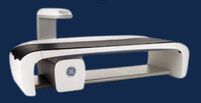
Yo-yo Intermittent Fitness Test Level 1 (YYIFTL1; m)
10m sprint (ACC; m/s)
30m sprint (MS; m/s)
Illinois Agility Test (IAT; sec)
Vertical jump (VJ; in)

Technical performance

Serve distance (SD) and accuracy (ACU; au)*
Receiving (REC; au)*
Heading for distance (HD; yd)
Shooting power (SP; mph)
Figure 8's (F8; sec)
*0-3point scale, higher number represents a better outcome

Body Composition

Fat-free mass index (FFMI; kg/m^2)
Bone mineral density (BMD; g/cm^2)



A binomial generalized linear model was used to ascertain the effects of physical and technical variables on the likelihood of playing at the professional level after college.

CONCLUSION

The strongest predictors of professional status were MS and SP.
Players that make it to the professional stage had better left SD, YYIFTL1, and IAT scores. The sample is in the 40th FFMI percentile for collegiate female soccer athletes; understanding normative FFMI and BMD values may provide healthy benchmarks for aspiring soccer players.

RESULTS

The model with maximal speed [odds ratio (OR): 673.64, b: 6.51, p=0.017] and right SP (OR: 1.40, b: 0.34, p=0.014) (Deviance Goodness of Fit: p=0.54) explained 50% (Nagelkerke R^2) of the variance in collegiate athletes who continued to play at the professional level and correctly classified professional status in 59% of cases.

There were no significant body composition differences (mean ± SD: FFMI:17.8 ± 1.3 kg/m^2, BMD: 1.2 ± 0.1 g/cm^2).

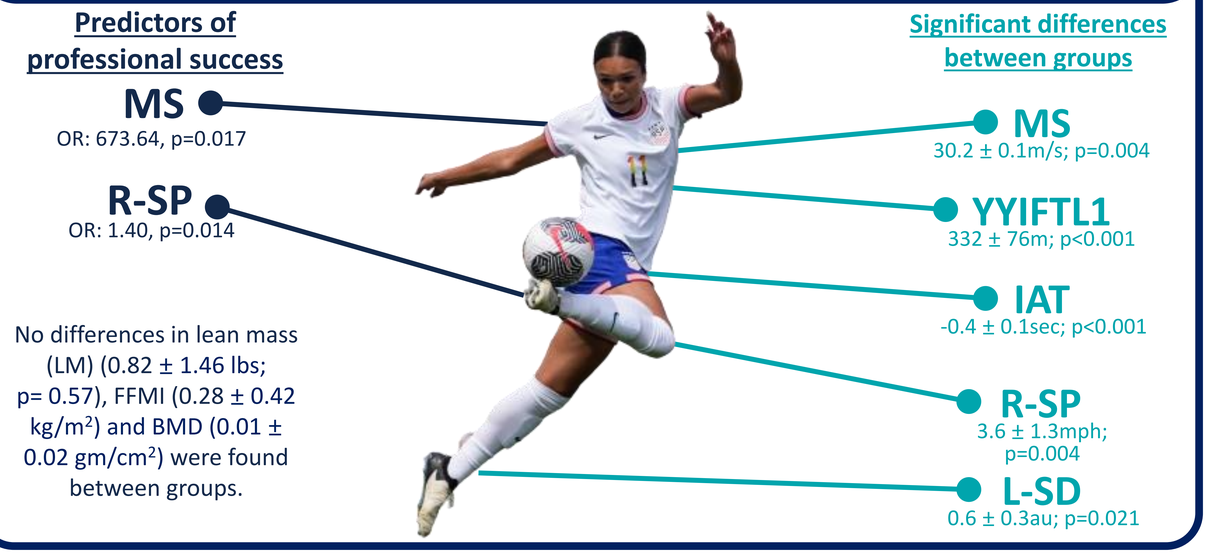


Figure 1. Predictors of professional success and nonsignificant body composition differences (left), significant differences (mean difference ± SE [professional-elite] (right).

PRACTICAL APPLICATION

Maximum speed (target: 6.9 ± 0.2 m/s) and shooting power (target: right leg 60.9 ± 3.7mph) may be ideal focal points of training for collegiate soccer players that want to play at the professional level.

A collaboration with the professional league to prioritize power exercises that directly improve maximum speed and shooting power, as well as understanding the physical qualities needed for the technical demands of the game is a promising approach for optimal development in elite female players.