



PURPOSE

- To profile anthropometric and physical fitness characteristics of collegiate American football athletes.
- To examine differences in general measures of body composition, movement capacity, muscular strength, and muscular power across position groups.

METHODS

- Sixteen NCAA Division-II American football athletes participated in this study which included measurements of body composition, movement capacity, isometric muscular strength, and muscular power characteristics.
- Descriptive statistics, means and standard deviations were calculated for each variable. Kruskal-Wallis one-way analysis of variance by ranks test with Dunn test post-hoc adjustments were used to examine position differences between position groups with α priori set at $p < 0.05$.

RESULTS

- Significant differences in measures of body composition ($p = 0.004$) between position groups were observed.
- Significant differences in muscular strength ($p = 0.01$) power ($p = 0.03$) between position groups were observed.
- However, no significant differences were observed in movement capacity as assessed by the bilateral squat test ($p > 0.05$).

CONCLUSIONS

- The results of this study suggest that significant differences exist between position groups for football-specific measures of body composition, muscular strength, and muscular power.
- These findings may be useful for the development and implementation of specific sports performance and recovery approaches for the collegiate American football athlete.
- Furthermore, the development of the questions to be answered and scientific approaches utilized to collect this data highlight the importance of interdisciplinary collaboration.

PRACTICAL APPLICATIONS

- Interdisciplinary collaboration is critical for athlete health, well-being, development, and performance.
- Findings from this investigation suggests that jumping velocity, jump-phase specific power and force, and kinematic sequencing should be emphasized and potentially made specific within strength and conditioning programs for the American football athlete if the goal is to improve CMJ performance, which may subsequently improve athletic potential and performance.

ACKNOWLEDGEMENTS

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Collaboration is critical. American football is a dynamic, intermittent, high-intensity collision sport which often requires athletes to block, tackle, sprint, jump, and change directions to succeed. Support from an interdisciplinary team is critical for player health, development, and performance.

Figure 1. Illustration of an Interdisciplinary Team for Collegiate American Football

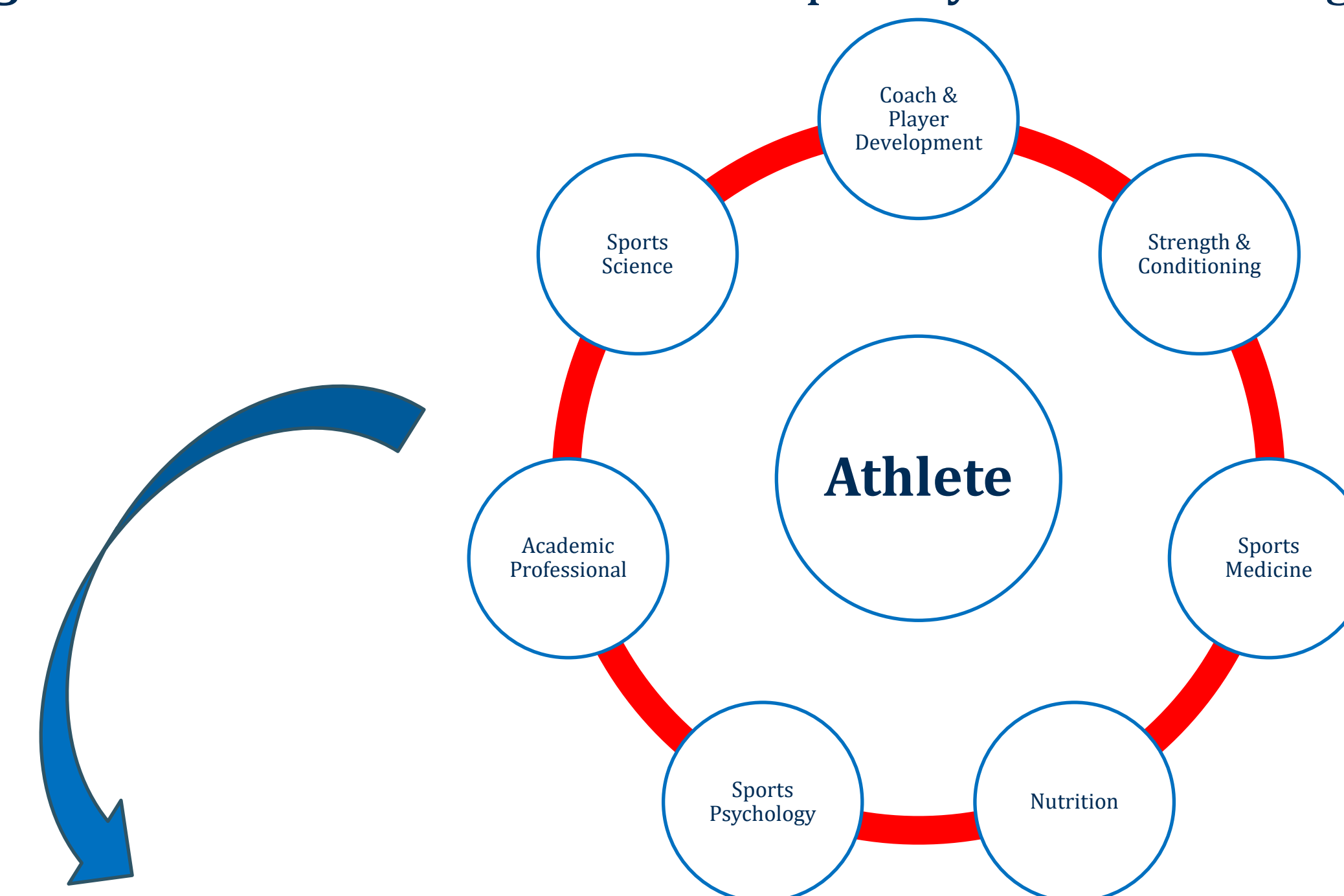


Figure 2. Example of Collaboration to Profile Performance Contributors

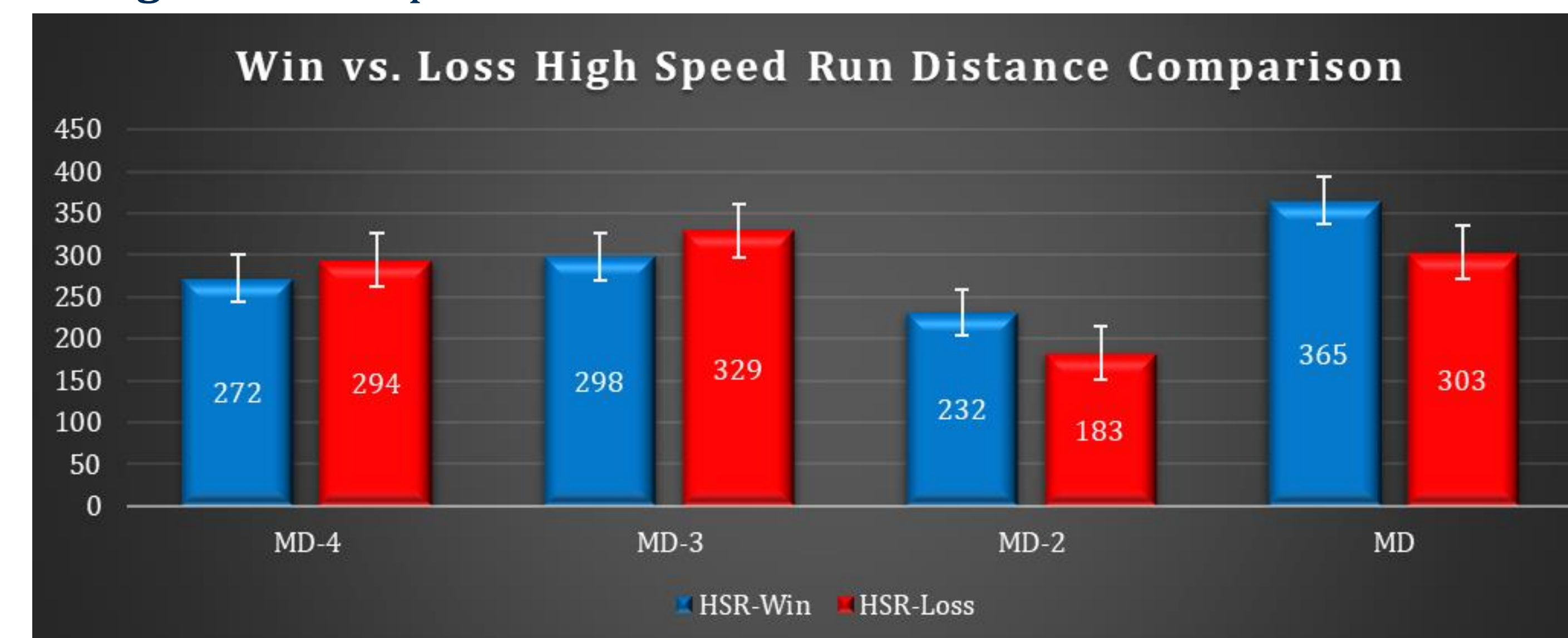


Table 1. Descriptive statistics, means and standard deviations ($\bar{x} \pm SD$), for demographic and body composition variables.

Variable	Team	Line	Big Skill	Skill	p
Age (yrs)	22.25 \pm 1.13	22.33 \pm 0.58	22.67 \pm 1.03	21.86 \pm 1.35	0.445
Height (cm)	183.75 \pm 7.84	192.19 \pm 3.88*	183.73 \pm 6.76	180.16 \pm 7.74	0.049
Weight (kg)	97.22 \pm 20.39	131.60 \pm 12.13*	99.93 \pm 3.91*	80.16 \pm 6.35	0.002
BFM (kg)	16.34 \pm 11.68	35.56 \pm 13.35*	15.60 \pm 4.58	8.75 \pm 3.30	0.004
LBM (kg)	80.87 \pm 10.75	96.01 \pm 2.25*	84.33 \pm 5.55	71.42 \pm 5.53	0.004
SMM (kg)	46.74 \pm 6.33	55.60 \pm 1.14*	48.72 \pm 3.37	41.24 \pm 3.43	0.004

BFM; = body fat mass; LBM = lean body mass; SMM = skeletal muscle mass; * = significantly different when compared to skill ($p < 0.05$)

Table 2. Descriptive statistics, means and standard deviations ($\bar{x} \pm SD$), for kinematic, muscular strength, and muscular power variables

Variable	Team	Line	Big Skill	Skill	p
Squat Depth (cm)	60.76 \pm 7.47	55.71 \pm 9.38	59.65 \pm 6.30	63.87 \pm 7.19	0.238
PF (N)	3540.95 \pm 581.74	3993.17 \pm 703.31	3745.00 \pm 273.74	3172.95 \pm 562.35	0.071
F50ms (N)	1822.30 \pm 435.63	2242.83 \pm 538.76*	2003.3 \pm 313.13*	1486.48 \pm 207.42	0.010
F250ms (N)	2533.66 \pm 623.86	2978.33 \pm 368.48	2941.31 \pm 357.95*	1993.67 \pm 464.48	0.011
JH (cm)	53.22 \pm 9.14	37.78 \pm 6.18*	55.20 \pm 5.48	58.14 \pm 4.46	0.023
PPP (W)	7295.21 \pm 791.88	7865.35 \pm 619.62	7668.03 \pm 538.80	6731.30 \pm 724.75	0.034
Avg. RSI of Top 3 Jumps	2.50 \pm 0.41	2.16 \pm 0.28	2.30 \pm 0.34	2.82 \pm 0.27	0.022

PF = peak force; F50ms = force at 50ms; F250ms = force at 250ms; JH = jump height; PPP = peak propulsive power; RSI = reactive strength index; * = significantly different when compared to skill ($p < 0.05$)

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