SEASONAL CHANGES IN BODY COMPOSITION IN COLLEGIATE WOMEN ATHLETES

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BACKGROUND

- Assessing body composition in athletes is beneficial to determine changes in fat free mass and body fat percentage
- These changes may impact speed, power, and endurance performance.
- There is a lack of research exploring seasonal changes in body composition across collegiate women's sports.
- Understanding these changes can offer valuable insight into training and nutrition programming.

PURPOSE

- To assess changes in body composition from pre- to post-season in collegiate women team sport athletes.

METHODS

- A total of 43 National Collegiate Athletic Association Division I women athletes from volleyball (n=12; mean+SD; age: 19.66 + 1.37 yrs; body mass: 75.79 + 8.34 kg; height: 178.46 + 6.44 cm; body fat: 28.69 + 3.93 %), lacrosse (n=22; age: 19.36 + 0.85 yrs; body mass: 66.27 + 12.88 kg; height: 165.47 + 7.67 cm; body fat: 27.22 + 4.24 %) and basketball (n=9; age: 19 + 1.22 yrs; body mass: 72.88 + 8.59 kg; height: 174.75 + 7.51 cm; body fat: 24.54 + 2.67 %) participated.
- Body composition was assessed using dual-energy x-ray absorptiometry (DXA) prior to the start and upon finishing the competitive sport season.
- The following metrics were recorded: body mass (BM, kg), body fat percentage (BF%), fat free mass (FFM, kg), and fat mass (FM, kg).
- A 2 (time) x 3 (sport) x 7 (body composition metrics) repeated measures MANOVA was conducted to determine changes in body composition from pre- to post-season.

KEY FINDINGS

NCAA DI Women's lacrosse and volleyball athletes are susceptible to in-season body composition changes

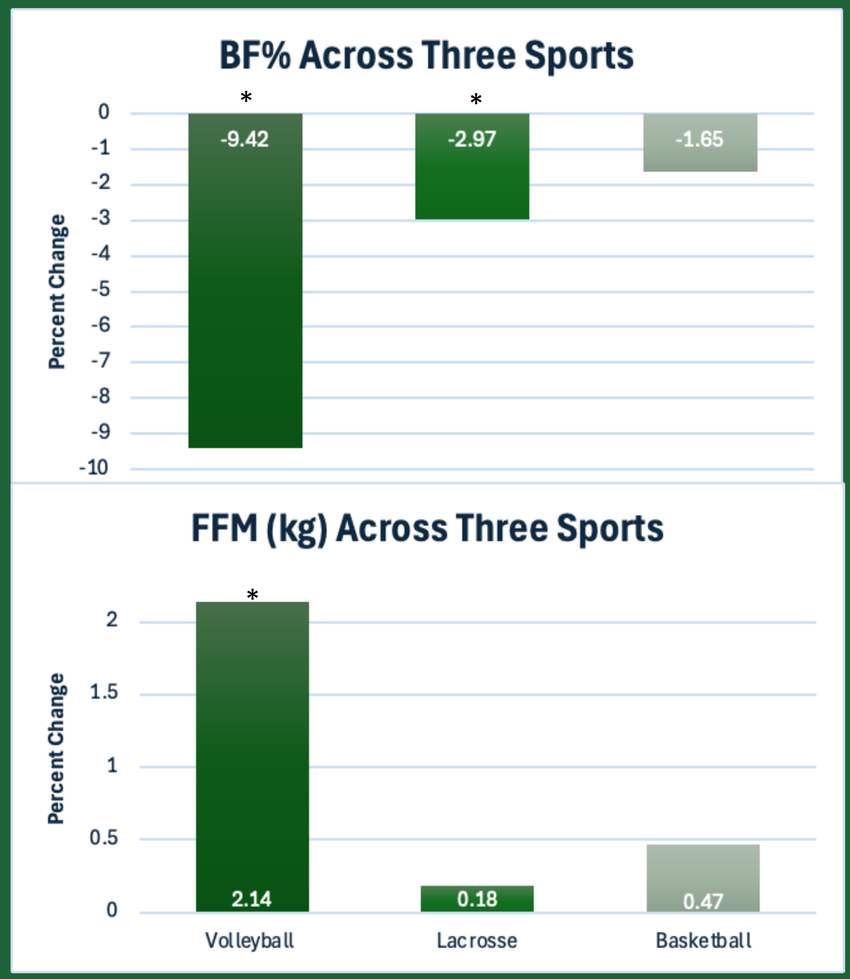

Table 1. Seasonal changes in body composition by sport

	Pre-Season	Post-Season	p-value	Cohen's D	% Change
Volleyball (n=12)					
BM (kg)	75.79	74.4	0.035*	0.69	-1.68
BF%	28.69	25.95	0.001*	2.45	-9.42
FM (kg)	20.18	19.42	0.77	0.09	5.46
FFM (kg)	53.87	54.98	0.002*	1.21	2.14
Lacrosse (n=22)					
BM (kg)	66.27	65.55	0.047*	0.45	-0.98
BF%	27.22	26.39	0.002*	0.72	-2.97
FM (kg)	18.38	17.6	0.003*	0.7	-3.91
FFM (kg)	47.88	47.94	0.81	0.05	0.18
Basketball (n=9)					
BM (kg)	72.88	72.75	0.92	0.04	-0.17
BF%	24.54	24	0.61	0.18	-1.65
FM (kg)	18.06	17.62	0.67	0.15	-1.44
FFM (kg)	54.83	55.13	0.64	0.16	0.47

Note: BM: body mass; BF%: body fat percentage; FM: fat mass; FFM: fat free mass; * p≤0.05

Figure 1. DXA Machine

RESULTS

- At baseline no differences in BF% (p=0.165), FFM (p=0.499), or FM (p=0.686) were observed across sports. Changes in body composition by sport are included in Table 1.
- Volleyball athletes experienced significant changes in BM (%Δ = -1.68), BF% (%Δ = -9.42) and FFM (%Δ = 2.14).
- Lacrosse athletes experienced significant changes in BM (%Δ = -0.98), BF% (%Δ = -2.97), and FM (%Δ = -3.91).
- Basketball athletes experienced no significant changes in any body composition metrics.

CONCLUSIONS and PRACTICAL APPLICATIONS

- Women athletes were susceptible to seasonal body composition changes, with volleyball and lacrosse athletes losing BF% and maintaining or improving FFM.
- Due to possible body composition changes with in-season women sports, it is suggested practitioners focus on resistance training and nutrition programming in-season to support maintenance of FFM in collegiate women team sport athletes.

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