



Physical Attributes of Competitive Collegiate Co-ed Men, Base/Backspots, Flyers, and Tumblers



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Introduction

- Cheerleading at the collegiate level, has evolved into a highly competitive sport demanding diverse physical capabilities from its athlete.
- This study aims to provide valuable data to inform training and recruitment for cheerleading programs, as well as lay the groundwork for future research.

Purpose

This study aims to fill this gap by investigating the physical attributes of cheerleaders at Lindenwood University, focusing on four key roles: co-ed male cheerleaders, bases/backspots, flyers, and tumblers.

Methods

Subjects

- 41 competitive cheerleaders (73% female; age: 20.3±2.1 years) grouped by position of Base/Backspot, Co-ed stunter, Flyer, and Tumbler

Body Composition

- Measured via bioelectrical impedance analysis

Warm-Up Protocol

- All participants followed a standardized warm-up

Power Testing

- Power assessed using countermovement jump (CMJ) and squat jump (SJ) on dual force plates
- Peak propulsive force (PPF) were recorded

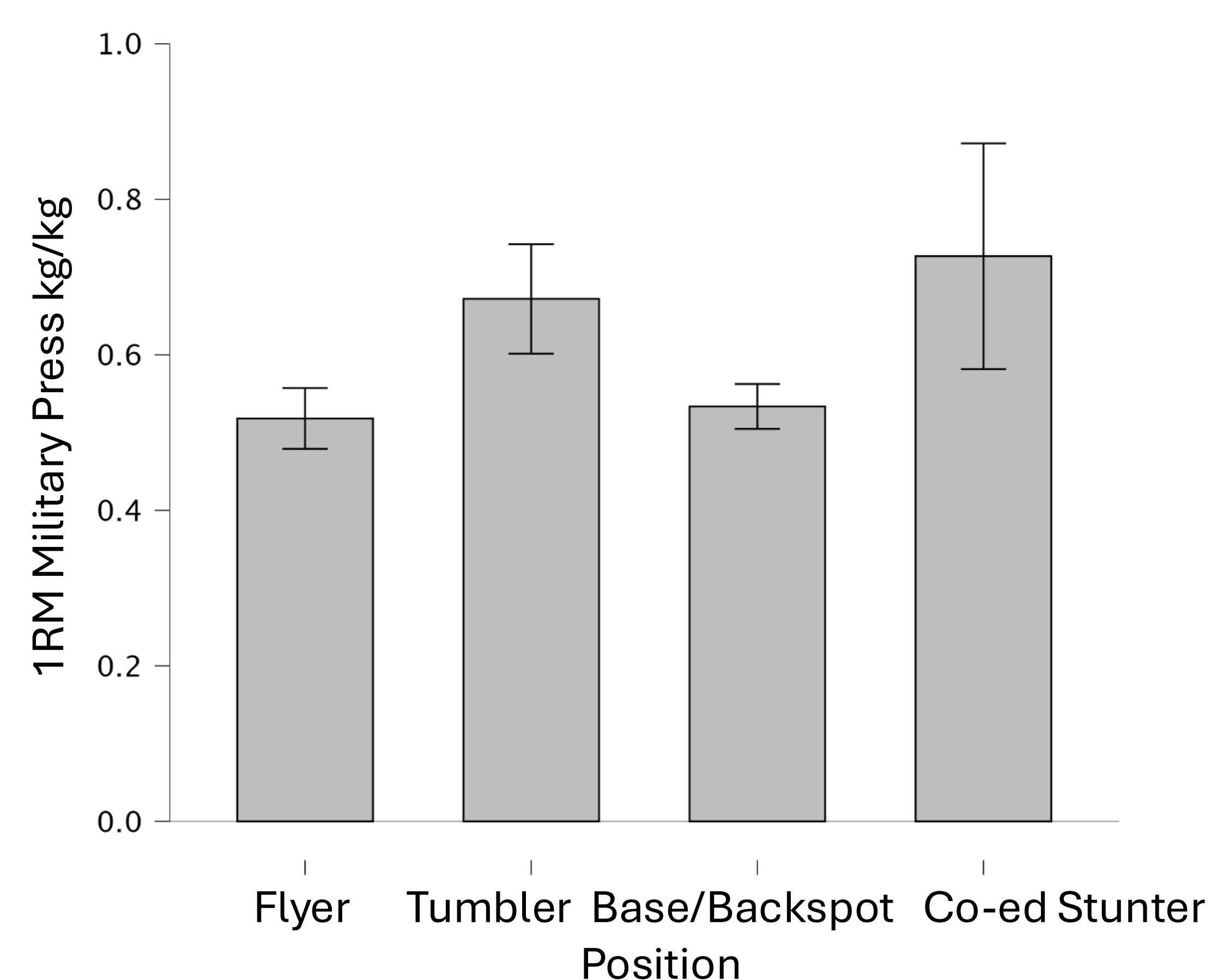
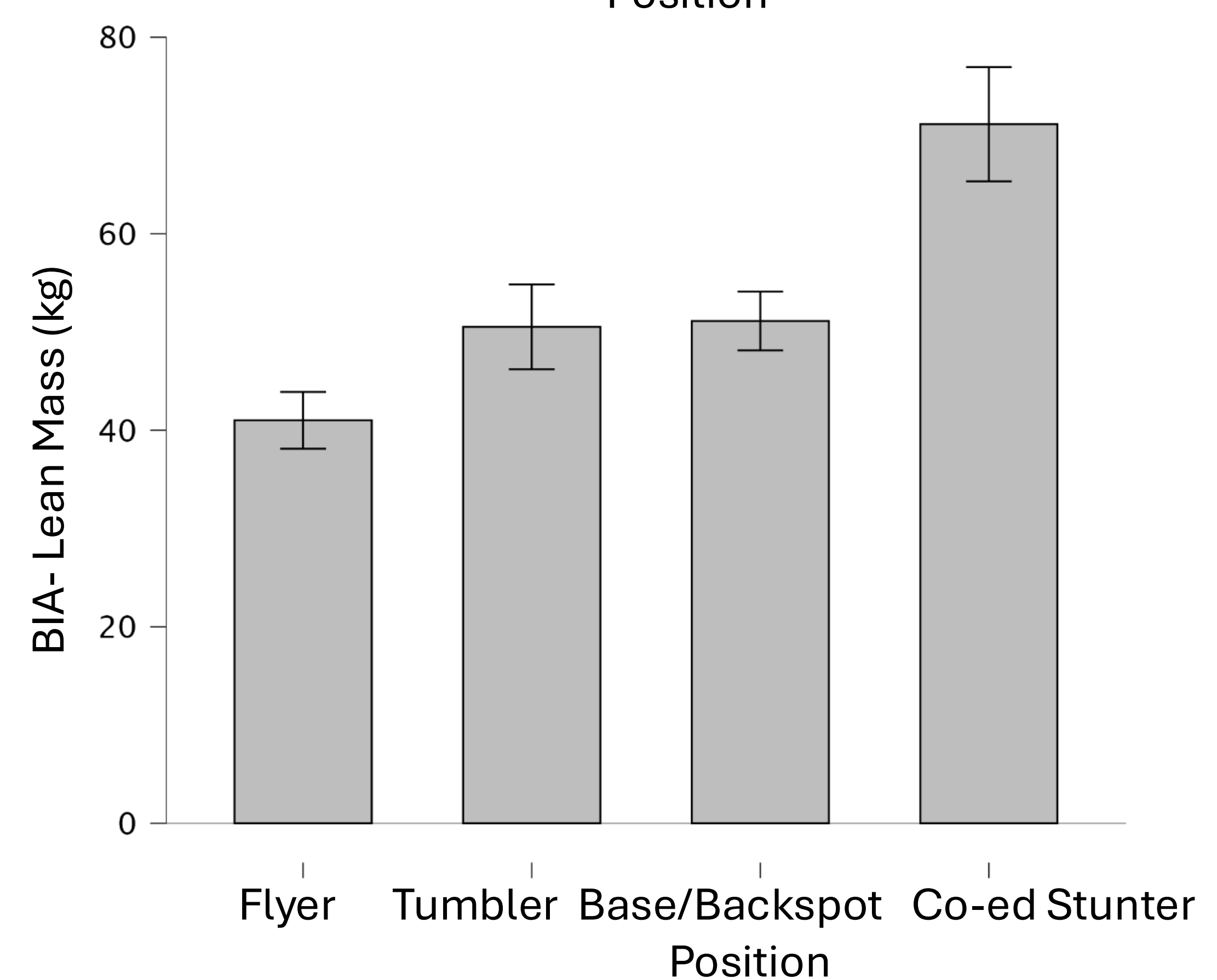
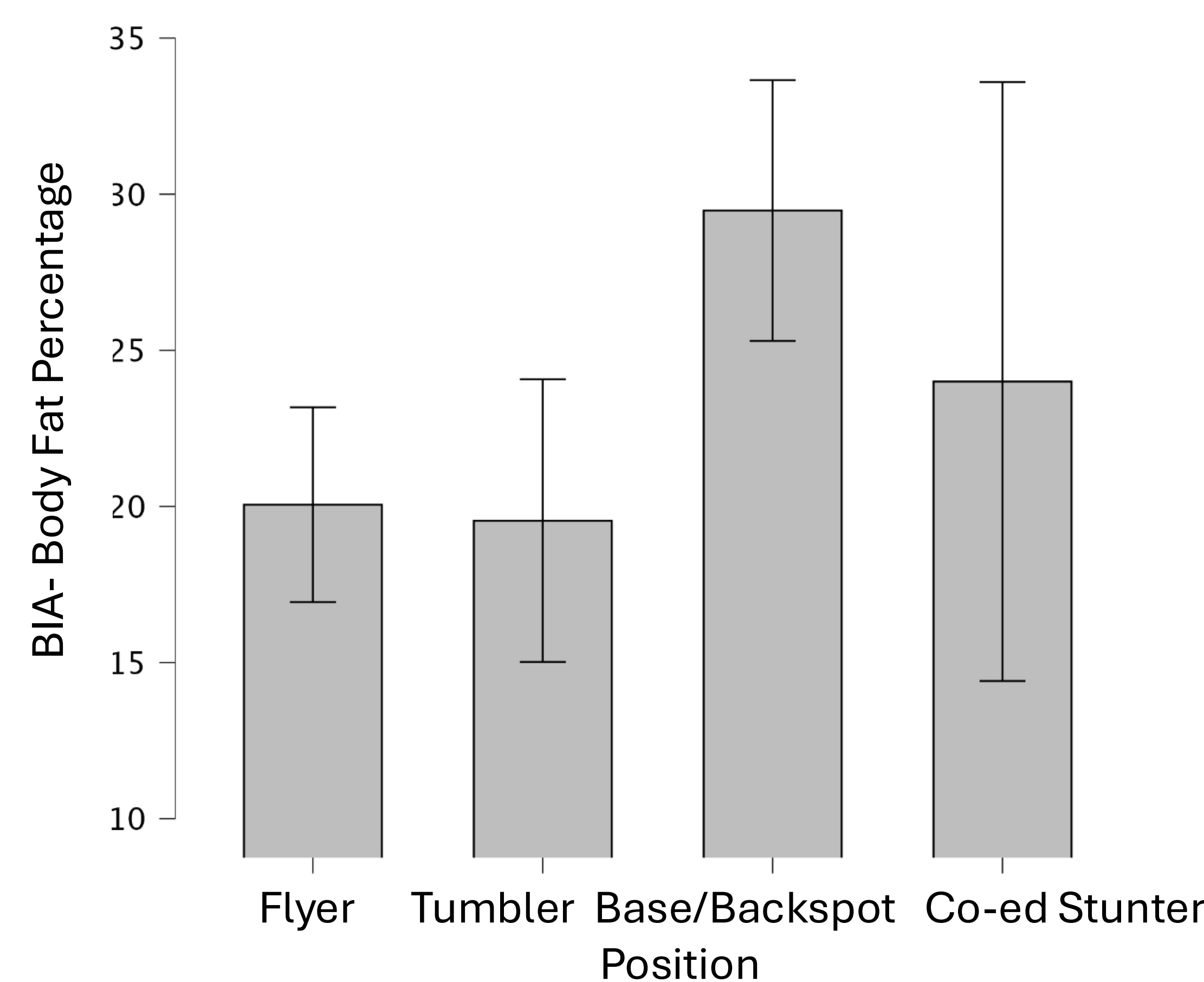
Muscular Strength Testing

- Isometric midhigh pull (IMTP) was performed on dual force platforms
- 1RM seated military press was performed using a barbell

Statistical Analysis

- Power and strength measures were calculated relative to body mass
- Data were analyzed using ANOVA with gender adjustment followed by Bonferroni-adjusted post-hoc tests ($\alpha=0.05$)

Results



	Base/Backspot	Tumbler	Flyer	Co-ed Stunter
Sample Size (% female)	14 (100%)	11 (64%)	9 (100%)	7 (0%)
Height (cm)	163 ± 4.6	165 ± 7.4	159 ± 5.9	177 ± 5.9
Body Mass (kg)	73.7 ± 15.0	63.2 ± 9.3	51.5 ± 5.0	95.1 ± 15.6
Body Fat (%)	29.5 ± 7.2	19.5 ± 6.7	20.1 ± 4.1	24.0 ± 10.4
Lean Mass (kg)	51.1 ± 5.2	50.5 ± 6.4	41.0 ± 3.8	71.1 ± 6.3
Relative CMJ PPF (N/kg)	25.3 ± 2.6	26.5 ± 2.8	25.4 ± 2.7	27.0 ± 6.0
Relative SJ PPF (N/kg)	23.3 ± 3.9	26.9 ± 2.7	23.0 ± 3.1	23.9 ± 4.5
Relative IMTP Peak Force (N/kg)	24.5 ± 3.8	25.1 ± 4.5	26.2 ± 2.8	27.9 ± 3.6
Relative 1RM Seated Military Press (kg/kg)	0.53 ± 0.05	0.67 ± 0.10	0.518 ± 0.05	0.73 ± 0.14

Body Composition

- Significant differences in body fat percentage ($P < 0.003$)
 - Bases/backspots higher body fat percentage compared to flyers ($P = 0.016$)
- Significant differences in lean mass ($P < 0.001$)
 - Co-ed stunters higher lean mass compared to all other positions ($P < 0.018$)

Power Testing (CMJ and SJ)

- No significant positional effects in CMJ ($P > 0.10$) or SJ ($P > 0.10$)

Muscular Strength (IMTP)

- No significant positional effects for IMTP ($P > 0.10$)

1RM Military Press

- Significant differences in relative 1RM military press between positions ($P < 0.001$)
 - Co-ed stunters greater relative strength compared to other positions ($P < 0.003$)

Conclusions

- Body composition and relative upper body strength differ between positions.
- These findings highlight the importance of muscle mass and function in co-ed stunters and bases/backspots.
- Developing upper body strength and lean mass in these athletes may enhance performance.
- Strength and Conditioning coaches could target specific physical demands of each position, i.e., strength training for co-ed stunters and bases/backspots, while potentially focusing on explosive power for flyers and tumblers.

Acknowledgments

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