

GREATER SPORTS PARTICIPATION IN ADOLESCENCE IS
ASSOCIATED WITH DEVELOPMENT OF CAM
MORPHOLOGY:
A PROSPECTIVE EVALUATION OF 313 INDIVIDUALS



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DISCLOSURES

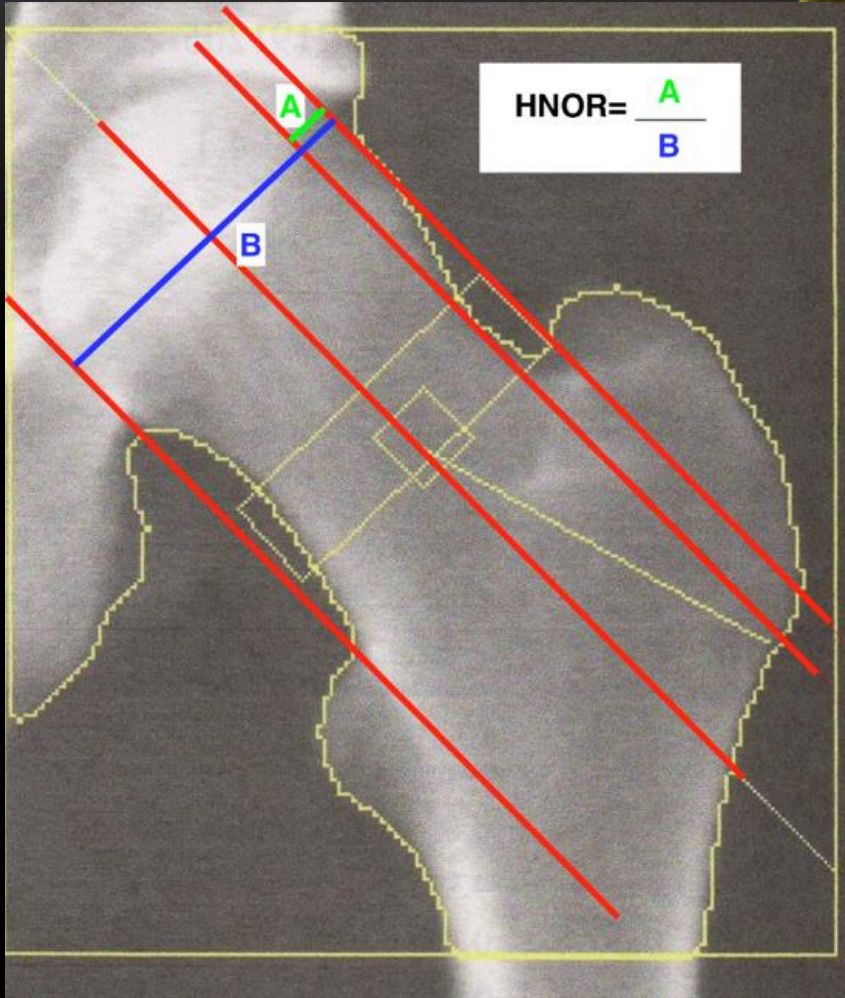
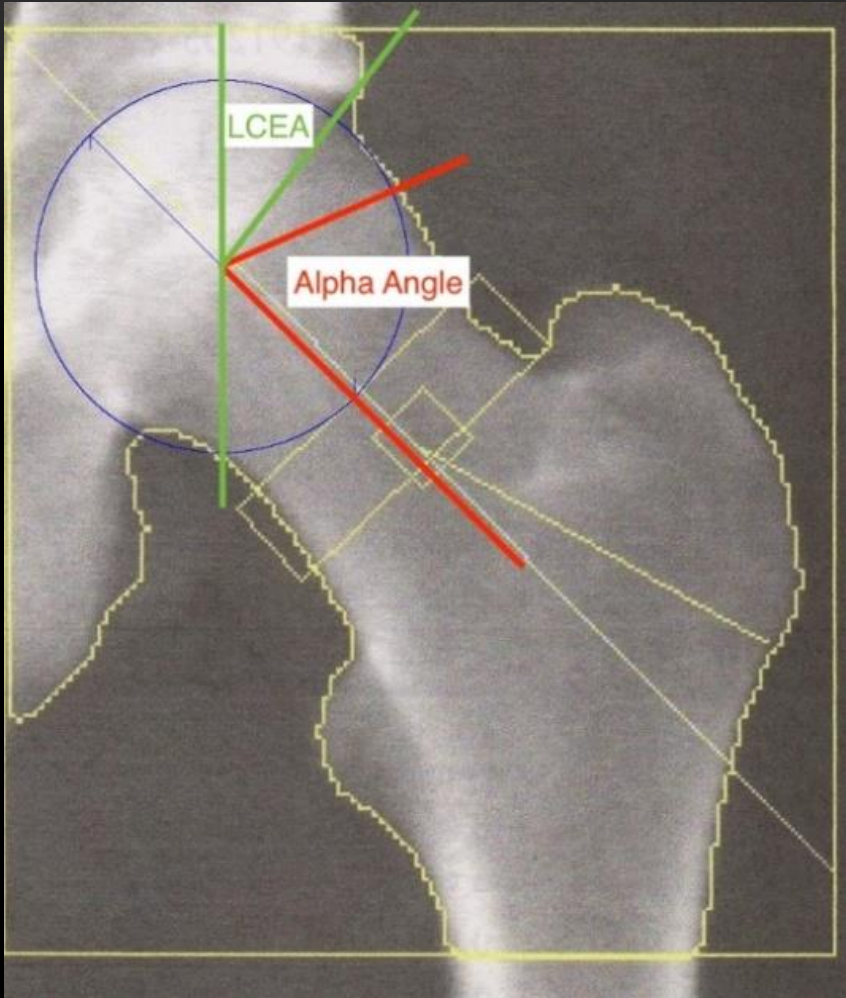
- Consultant – Smith and Nephew
- Consultant – Conmed
- Consultant – Responsive Arthroscopy
- Research Support – Smith and Nephew
R2018120186
- Research Support – DOD (ANCHOR GROUP)
W81XWH-18-PRORP-CTRA
- Editorial Board - Arthroscopy Journal
- Editorial Board – AJSM
- Committee - AOSSM



INTRODUCTION

- **High levels of physical activity** during skeletal maturation is a commonly accepted etiology of **femoral cam development**
- The impact of physical activity on **acetabular morphology** is less understood
- **Sport choice** and **high levels of physical activity** may both play a role, but more data is needed to understand how each contributes
- **Purpose:** To evaluate role of activity level and sports with elevated flexed hip-loading (“**powersports**”) versus “**non-powersports**” on the development of cam morphology & acetabular dysplasia

METHODS





METHODS

- **IBDS study participants**
 - Longitudinal: Ages 17, 19, 23
 - PAQ-A survey, DEXA Scan
- **Athletes: 2+ seasons of HS sports**
 - Powersport Athlete (PS)
 - Non-Powersport Athlete (NPS)
 - Non-Athlete (NA)
- **Measurements (DEXA)**
 - Alpha Angle (AA)
 - HNOR (<0.17)
 - LCEA



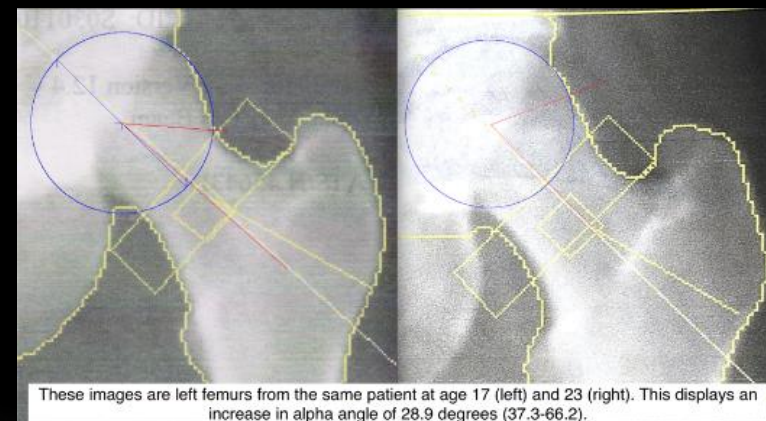
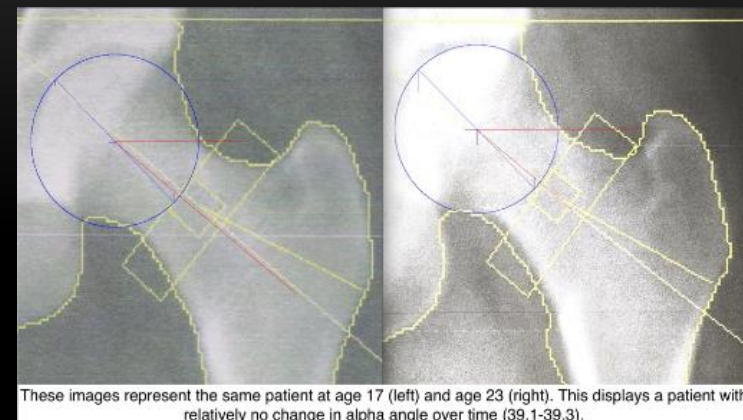
RESULTS

- 317 individuals analyzed
- NSD in baseline characteristics except height (athletes > nonathletes)
- Inter-rater ICCs: 0.91-0.99 (0.82-0.99)
- **LCEA: No difference** between groups at any timepoint ($p>0.05$)



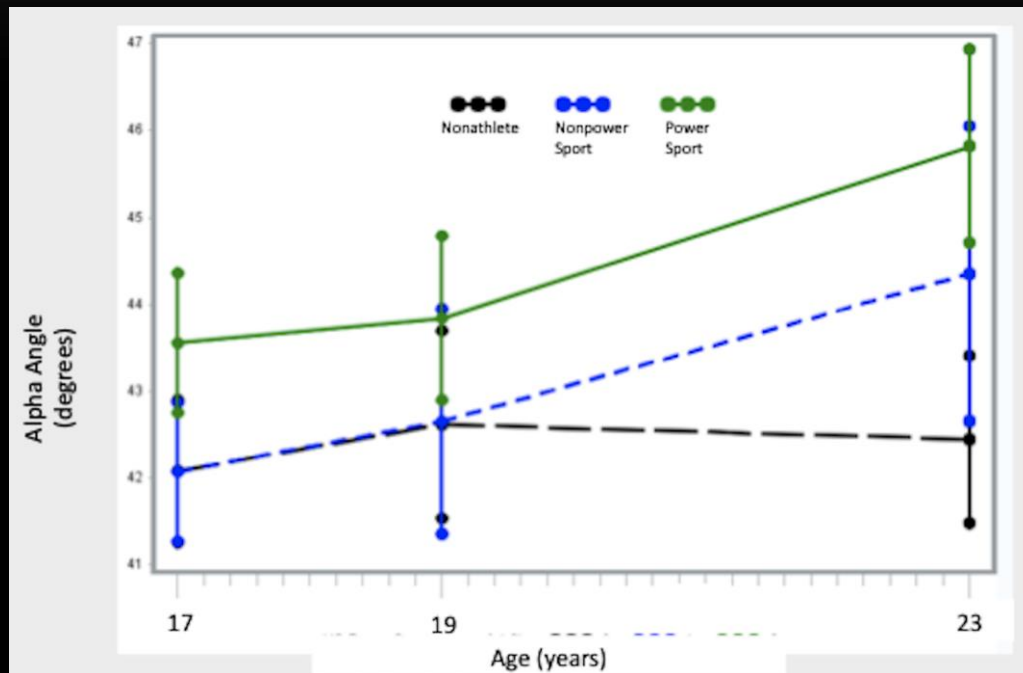
RESULTS

- **Activity: Higher PAQ score (age 17) was associated with**
 - **Higher AA at age 23** ($\text{beta} \pm \text{SE} = 0.77 \pm 0.30$, $p = 0.01$)
 - **Lower HNOR at age 23** ($\text{beta} \pm \text{SE} = -0.003 \pm 0.001$, $p < 0.01$)
- **Powersports (PSA) had greater odds of CAM morphology compared to non-athletes (HNOR and AA)...**





RESULTS



High School Activity	Alpha Angle (AA) at age 23		Unadjusted OR (95%CI)	Adjusted for sex OR (95%CI)
	Normal AA < 55° n (%)	CAM AA ≥ 55° n (%)		
Nonathlete	87 (94%)	5 (5%)		
Non-Power Sports	45 (90%)	5 (10%)	1.93 (0.53-7.03) NS	2.29 (0.61-8.60) NS
Power Sports	101 (85%)	17 (14%)	2.93 (1.04-8.27) p=0.04	2.93 (1.02-8.41) p=0.04
Trend			0.03	0.04

HNOR < 0.17:

OR=1.74, 95% CI=1.00-3.03, p=0.04



DISCUSSION

- High-school participants in “**Powersports**” were more likely to have **cam deformity** at age 23 ($AA > 55^\circ$, $HNOR < 0.17$), adjusted for sex
- **High activity levels** (PAQ-A score) also associated with cam development
- No relationship observed between acetabular morphology (LCEA) and athletics or physical activity ($p > 0.05$) in late adolescence

These findings further support that development of FAI morphology is influenced by repetitive hip loading in flexion just prior to skeletal maturity

THANK YOU

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