ISAKOS CONGRESS 2023

Boston
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Are There Sex-Based Differences in Outcomes After Hip Arthroscopy?

A Systematic Review

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Introduction

- Last decade has seen more refined indications for hip arthroscopy:
  - Femoroacetabular impingement
  - Labral tears
  - Borderline dysplasia
- Number of hip arthroscopies being performed continues to expand[1]
- Increased reporting of outcomes in different population groups
  - Novel patient reported outcomes measures for non-arthritic hip population (HOS, iHOT, HAGOS)[2, 3]
- Reporting of outcomes in different population groups [6, 7]
  - Sex
  - Increased BMI
  - Age
- Differences in hip morphology exist between sexes [4, 5]
  - Increased hip range of motion in females
  - Increased alpha angle in males
- Reporting on revision arthroscopy rates and conversion to total hip arthroplasty show no clear consensus

Purpose

To assess differences in outcomes between males and females following hip arthroscopy.

Hypothesis: there will be no differences between sexes with respect to postoperative PROMs, revision arthroscopy, conversion to total hip arthroplasty, or complications

Methods

Study Design:

- Systematic review performed according to PRISMA guidelines

Inclusion criteria:

- Studies that reported outcomes following primary hip arthroscopy with a sex-specific analysis

Exclusion criteria:

- Not in the English language
- Fewer than ten subjects or cadaveric studies
- Review articles, book chapters, technique reports, abstracts and case reports

Search strategy:

- MEDLINE, Embase, Cochrane and PubMed databases
- “hip,” “arthroscopy,” “outcome,” “gender difference,” “gender,” “sex,” and “patient reported outcome”.

Methods

Data collection

- **study descriptors**
  - level of evidence, sample size
- **patient demographics**
  - age, number of hips, sex, follow-up time, indication for surgery
- **outcomes**
  - PROMs, MCIDs, PASS
  - conversion to total hip arthroplasty
  - rates of revision arthroscopy
  - complications

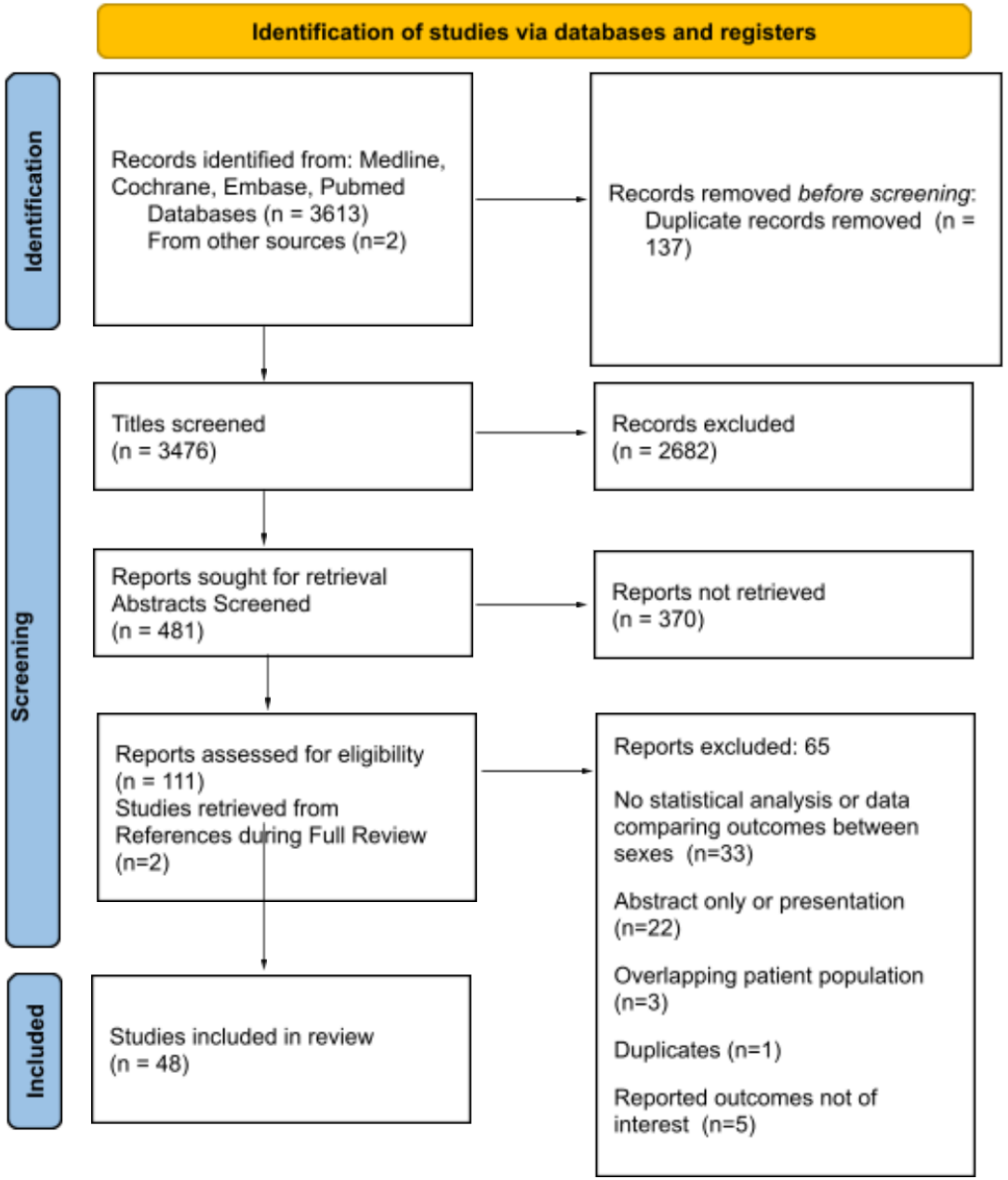
Data analysis

- Forest plots generated in cases with at least three studies reporting an outcome and when absolute numbers of patients were available
- pooled mean differences for continuous variables and pooled odds ratio for binary outcomes

Results

- 48 studies included
- 58544 hips (54% female)
- Average age: 39.4
- Mean follow-up: 39.8 months
- Mean MINORS score: 11.8

PRISMA Flow Chart



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Results

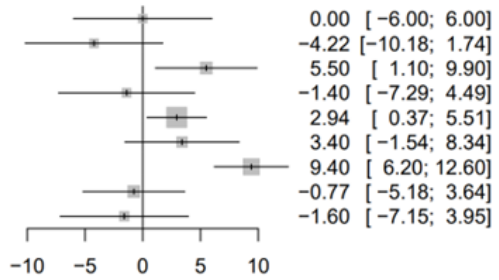
Patient Reported Outcome Measures

- 21 studies, 30 different PROMs reported
- Forest plots generated for mHHS, HOS-SSS, HOS-ADL, NAHS
- No sex based differences in post-operative outcomes

Modified Harris Hip Score

Study	Male Total	Male Mean	Male SD	Female Total	Female Mean	Female SD	MD	95%−CI
Beck et al.	72	83.70	18.3000	71	83.70	18.3000	0.00	[−6.00; 6.00]
Ben Tov et al.	6	84.23	7.0000	14	88.45	3.8700	−4.22	[−10.18; 1.74]
Chandrasekaran et al.	13	94.30	6.7800	77	88.80	10.7900	5.50	[1.10; 9.90]
Flores et al.	57	84.40	17.6000	72	85.80	16.1000	−1.40	[−7.29; 4.49]
Frank et al.	75	83.37	7.1500	75	80.43	8.8000	2.94	[0.37; 5.51]
Glein et al.	73	89.00	13.5000	73	85.60	16.8000	3.40	[−1.54; 8.34]
Maerz et al.	269	90.80	17.9300	352	81.40	22.8100	9.40	[6.20; 12.60]
Saks et al.	102	84.20	17.5600	95	84.97	13.9000	−0.77	[−5.18; 3.64]
Shibata et al.	54	96.30	20.2000	42	97.90	4.4000	−1.60	[−7.15; 3.95]

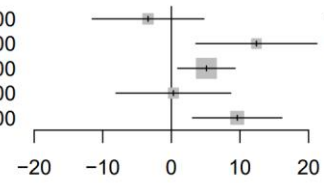
Heterogeneity: I^2 = 74%, τ^2 = 13.4845, p < 0.01



Hip Outcome Score- Sport Specific Subscale

Study	Male Total	Male Mean	Male SD	Female Total	Female Mean	Female SD	MD	95%−CI
Beck et al.	72	73.30	28.7000	71	76.70	20.4000	−3.40	[−11.55; 4.75]
Chandresekaran et al.	13	91.00	13.6000	77	78.60	21.6000	12.40	[3.57; 21.23]
Frank et al.	75	86.29	11.5500	75	81.18	14.4800	5.11	[0.92; 9.30]
Glein et al.	73	78.30	26.0000	73	78.00	25.6000	0.30	[−8.07; 8.67]
Martinez et al.	104	72.20	20.2000	52	62.60	19.3000	9.60	[3.07; 16.13]

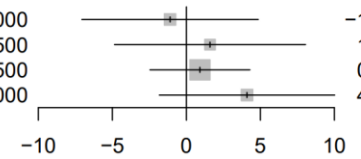
Heterogeneity: I^2 = 60%, τ^2 = 20.7641, p = 0.04



Hip Outcome Score- Activity of Daily Living

Study	Male Total	Male Mean	Male SD	Female Total	Female Mean	Female SD	MD	95%−CI
Beck et al.	72	85.60	17.2000	71	86.70	19.1000	−1.10	[−7.06; 4.86]
Chandrasekaran et al.	13	93.40	11.2500	77	91.80	9.2500	1.60	[−4.86; 8.06]
Frank et al.	75	90.57	10.2400	75	89.65	10.8500	0.92	[−2.46; 4.30]
Martinez et al.	104	87.00	17.6000	52	82.90	17.9000	4.10	[−1.83; 10.03]

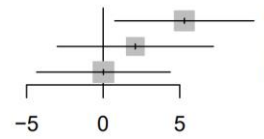
Heterogeneity: I^2 = 0%, τ^2 = 0, p = 0.67



Non-Arthritic Hip Score

Study	Male Total	Male Mean	Male SD	Female Total	Female Mean	Female SD	MD	95%−CI
Chandresekaran et al.	13	94.50	7.3000	77	89.20	9.9000	5.30	[0.76; 9.84]
Glein et al.	73	88.40	14.9000	73	86.30	16.5000	2.10	[−3.00; 7.20]
Saks et al.	102	85.10	16.7600	95	85.08	14.4600	0.02	[−4.34; 4.38]

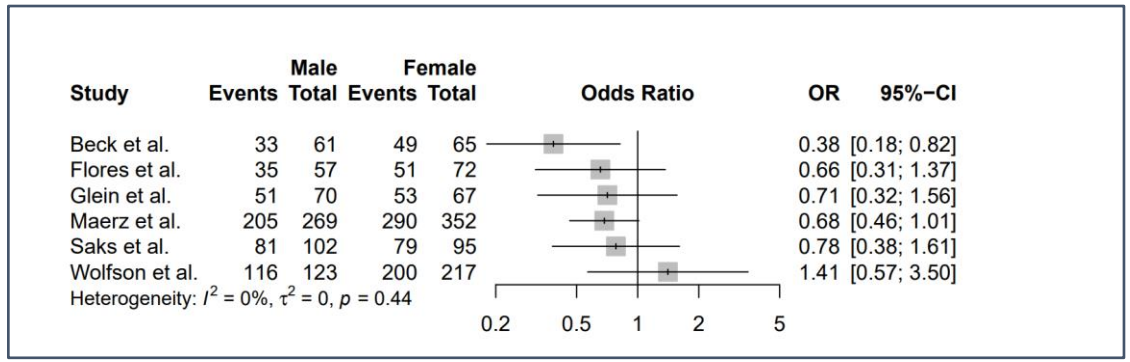
Heterogeneity: I^2 = 27%, τ^2 = 2.3126, p = 0.26



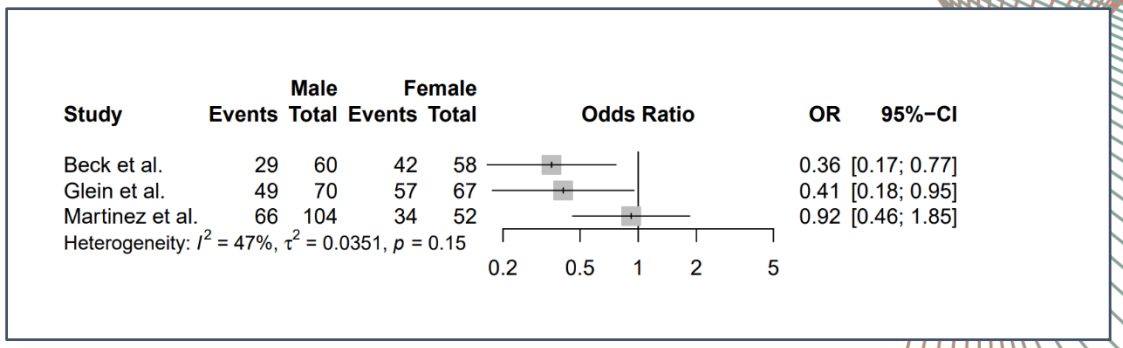
Results

Minimal Clinically Important Difference (MCID)

Modified Harris Hip Score

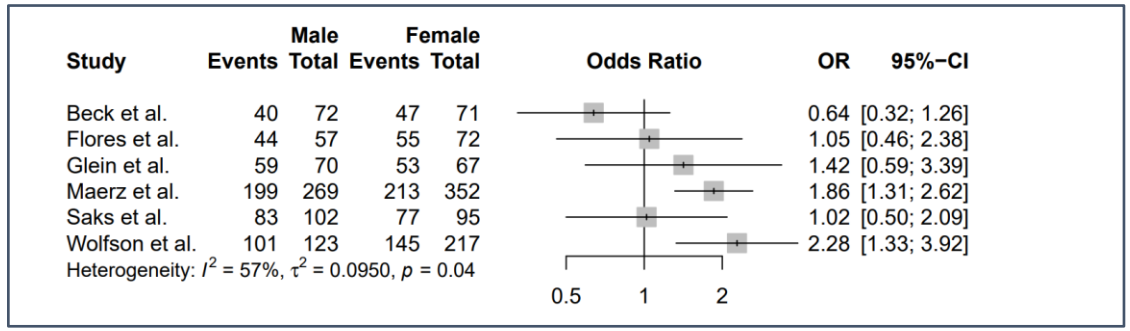


Hip Outcome Score- Sport Specific Subscale

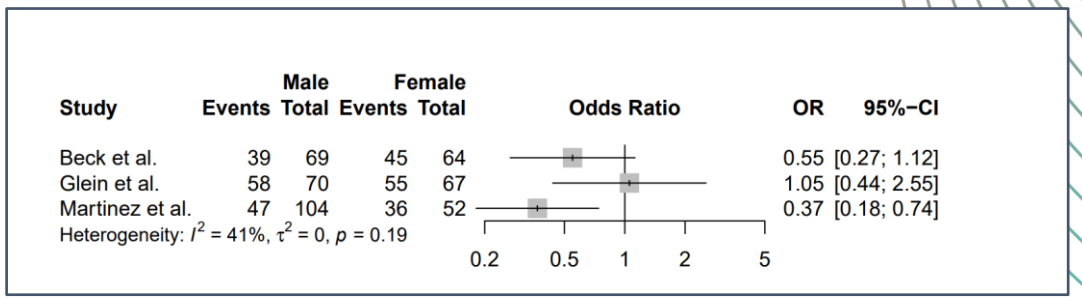


Patient Acceptable Symptom State (PASS)

Modified Harris Hip Score



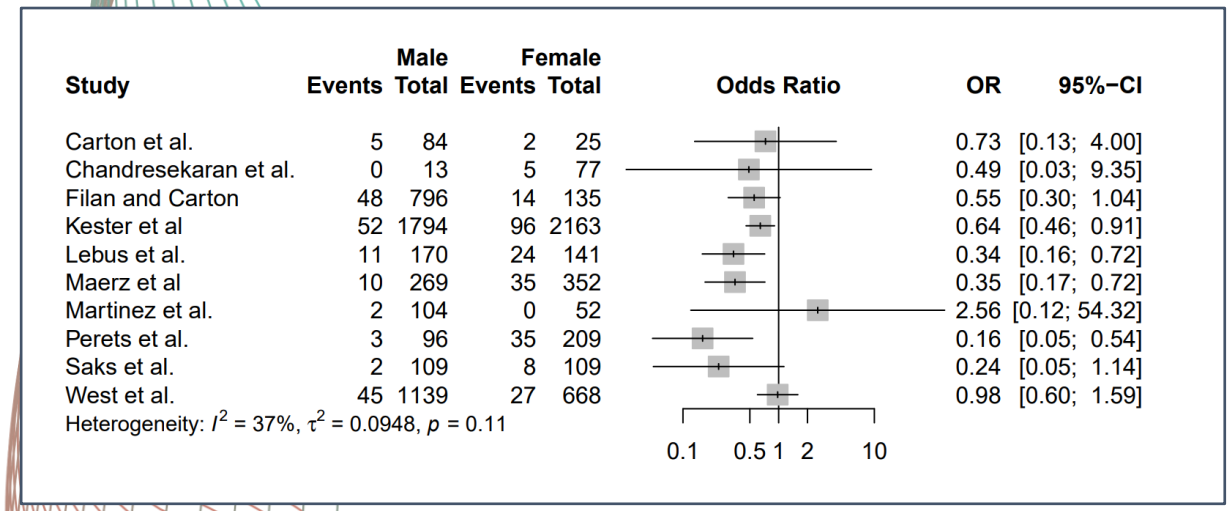
Hip Outcome Score- Sport Specific Subscale



Results

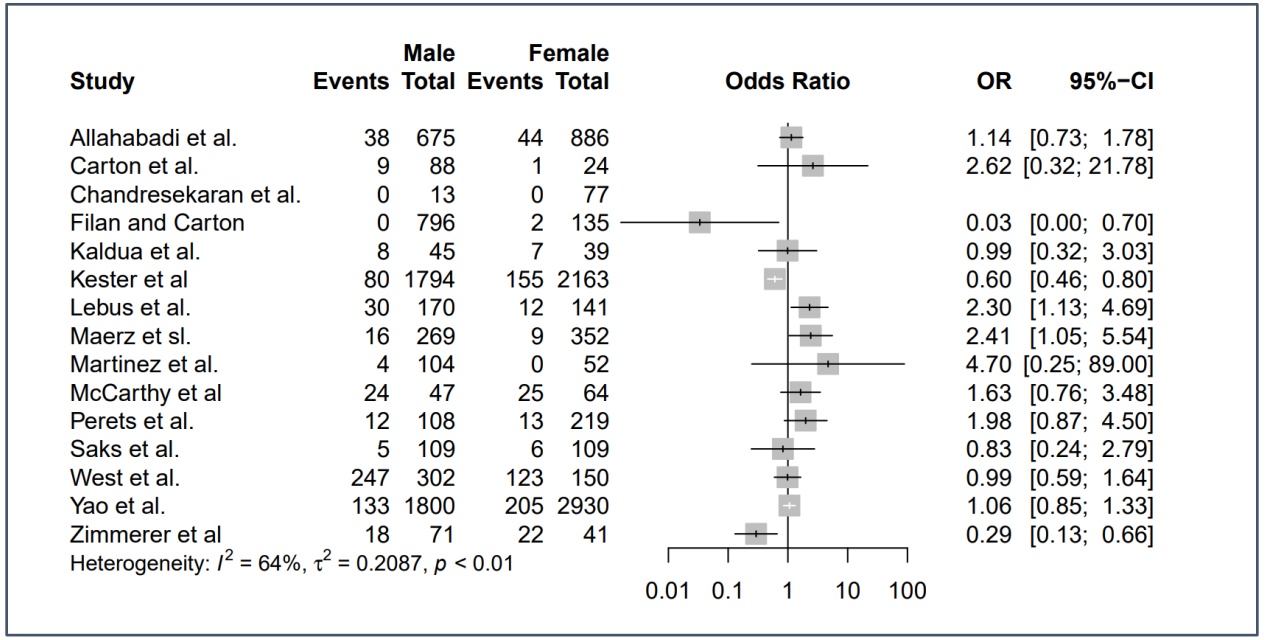
Revision Arthroscopy

- Trend towards females having higher rate of revision



Conversion to Total Hip Arthroplasty

- No difference between sexes



Results

- **Complications**
  - 3 studies reporting complications
  - nerve injury, thromboembolic events and wound issues
  - No clear differences between sexes

Conclusions

Patient Reported Outcome Measures	Significant improvements from pre- to post-operative scores for both sexes. MCID and PASS: trend towards females reaching MCID at higher rates than males, no differences for PASS
Revision Arthroscopy	Trend towards females being more likely to undergo RA than males
Conversion to total hip arthroplasty	No difference between sexes
Complications	No difference between sexes

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