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Return to sports after unilateral medial opening wedge high tibial osteotomy in highly active patients -Analysis of factors affecting functional recovery-

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Faculty Disclosure Information

- There are no COI with regard to this presentation.



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Return to Sports after Osteotomy

In previous reports about RTS after osteotomy,

Studies included

- ✓ Low activity patients
- ✓ Low-impact sports
- ✓ Surgery on both knees

However, for athletes participating in high-level sports, a detailed return to sports rate and the timing are unknown.



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Purpose

To examine the outcomes following open-wedge HTO (OWHTO) or open-wedge distal tuberosity osteotomy (OWDTO) focusing on return to sports in a consecutive series of highly active patients who underwent a unilateral osteotomy procedure



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Flowchart for Patient Selection

617 knees undergoing OWHTO or OWDTO during the time period from Jan. 2010 to May 2020

Exclusions (554 knees)

- Concomitant ligament surgery
- Bilateral osteotomy procedures
- Lower activity level (Tegner Activity Score $4 \leq$ points)
- Follow-up period < 2 years

63 patients (63 knees) with **Tegner activity score ≥ 5 points** were eligible for this study.



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Patient-Demographics

Total patients, <i>n</i>	63
Total knees, <i>n</i>	63
OWHTO, <i>n</i>	45
OWDTO, <i>n</i>	18
Sex	Male 44/ Female 19
Side	Right 34/ Left 29
Age at surgery (years)	55.8 ± 10.1 [range, 31-75]
BMI (kg/m ²)	24.3 ± 2.8 [range, 18.1-31.0]
Mean time between the surgery and the follow-up (months)	61.4 ± 20.3 [range, 24-102]
Concomitant procedures during osteotomy	
Any, <i>n</i> (%)	36 (54.5%)
Meniscal, <i>n</i>	33
Debridement	23
Repair	10
Chondral, <i>n</i>	9
Microfracture	6
Osteochondral autograft transfer	3
Wedge size (mm)	7.9 ± 2.9 [range, 4-15]
Pre-symptomatic sports activity level based on the Tegner's scale	5.3 ± 0.6 [range, 5-7]



Assessment of Return to Sports

- ✓ The rate of return to sports
- ✓ The time to return to sports
- ✓ Clinical results (KOOS, IKDC subjective score)
- ✓ Radiological parameters
- ✓ Potential prognostic risk factors

Comparative Analysis

Failure to return to sports was defined:

- ✓ Postoperative reduction in activity level on the Tegner activity score
- ✓ Inability to return to sports

- ✓ Univariate analysis of the potential risk factors
Fisher's exact test
- ✓ Multivariate logistic regression analysis
Assessment of statistical significance
- ✓ Mann-Whitney U test were conducted.



Potential Prognostic Factors

- Age ≥ 70
- Body mass index (BMI) > 25
- Postoperative HKAA $> 3^\circ$ valgus
- Postoperative HKAA $< 0^\circ$ varus
- Postoperative mMPTA $> 90^\circ$
- Opening gap > 10 mm
- K-L grade 4

- ✓ mMPTA: mechanical medial proximal tibial angle
- ✓ HKAA: hip-knee-ankle angle

Return to Sports

- 50 knees (**79.4 %**) returned to high-impact sports activities at the pre-symptomatic level
- Mean duration to return: **8.0±2.4 months** (6 months ~14 months)

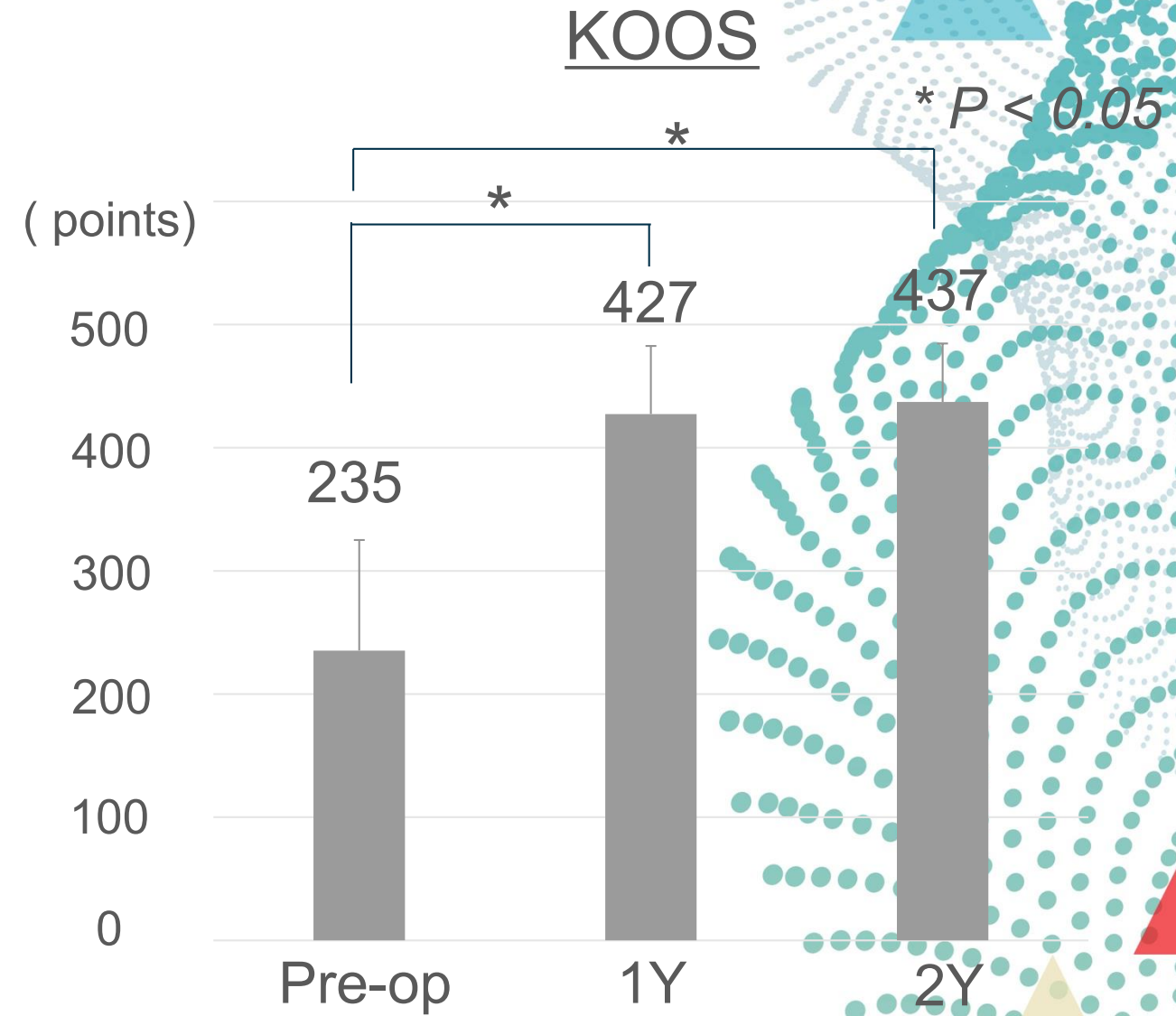
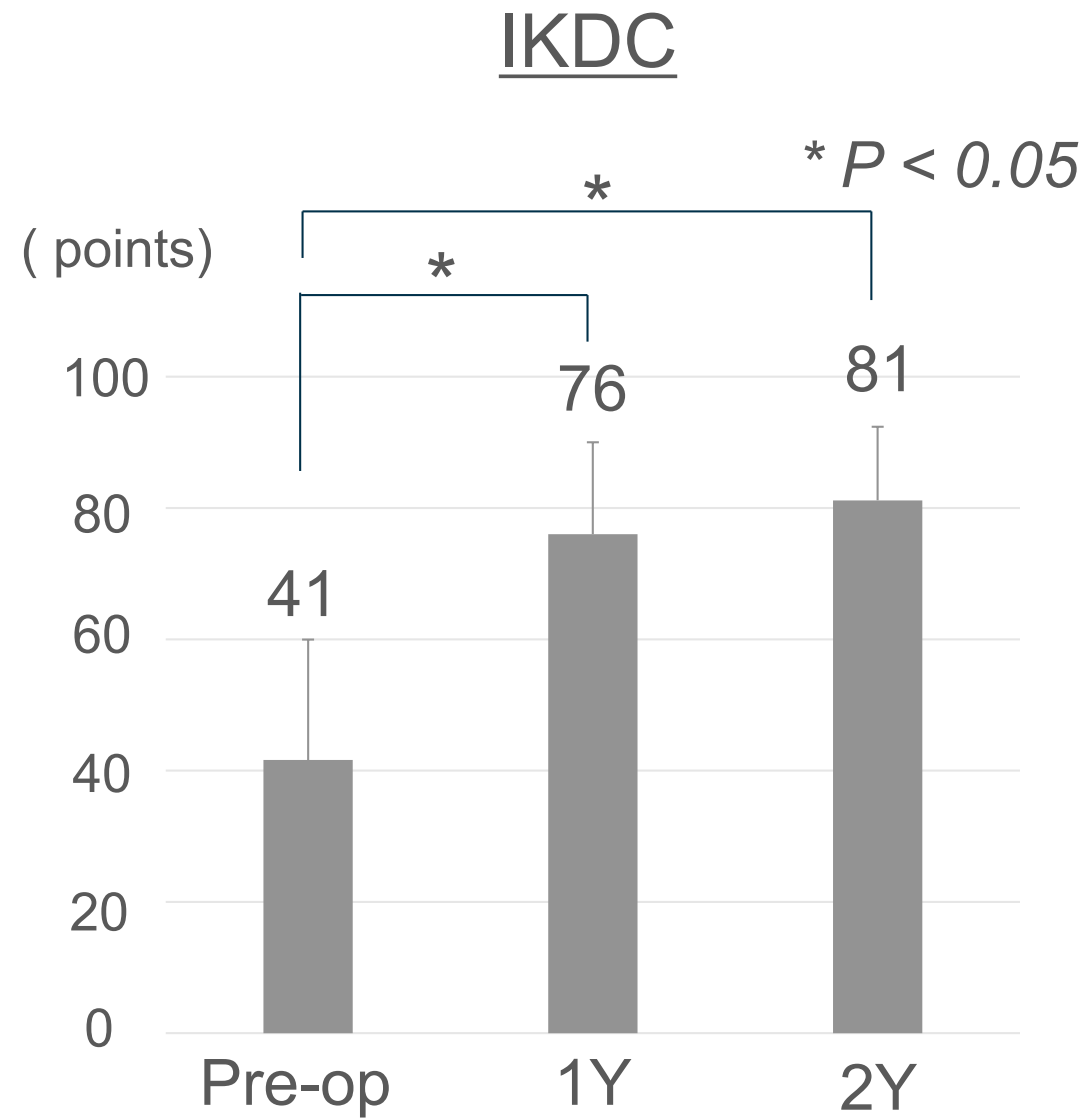


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Clinical Scores



Analysis of Potential Risk Factors

- Multivariate logistic regression analysis -

Based on the multivariate logistic regression analysis for potential risk factors, all factors were identified as predictors of poor prognosis.

Factors	<i>P</i> value	Odds ratio	95%CI
Postoperative HKAA > 3°valgus	0.008	23.6	2.2-242.7
Opening gap > 10 mm	0.002	22.6	3.2-160.1
K-L grade 4	0.006	45.9	2.9-714.8



Return to Sports after HTO in Athletes

-From This Study-

Failure group risk factors

- ✓ Opening gap > 10 mm
- ✓ Postoperative HKAA > 3° valgus
- ✓ K-L grade 4

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