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NBA Combine Scores Are Associated With Lower Limb Surgery: A Retrospective Review Over Ten Consecutive Seasons (2010-2020)

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No financial disclosures

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Financial Disclosures

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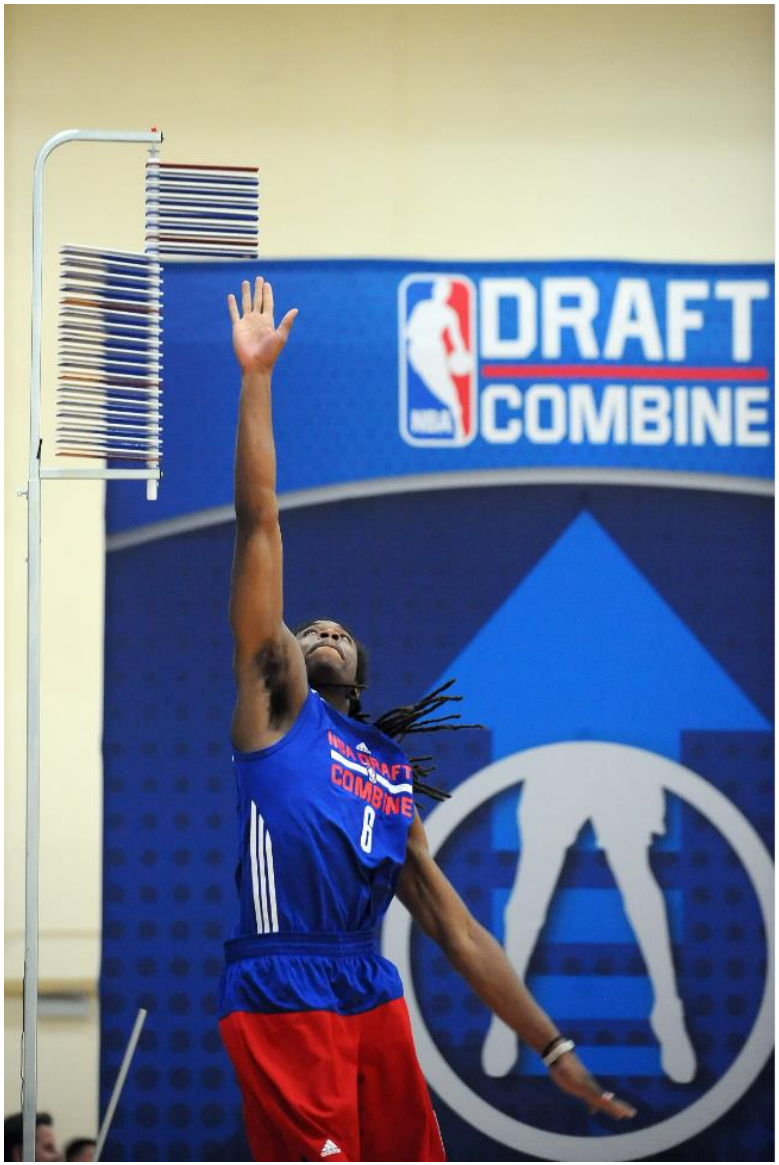
Background

- Metrics predicting injury risk in NBA athletes are in high demand by both teams and players[1-2]
  - Most common injuries are knee (namely ACL) and ankle[3-4]
- The annual NBA combine assigns standardized scores for athlete agility, strength, athleticism, etc.
  - Questionable association with performance/value added[5]
  - Literature established NFL combine scores as an indicator for injury risk[6]



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Objective

To determine a relationship between NBA combine scores and future lower extremity surgical risk so as to identify players in need of increased injury prevention efforts

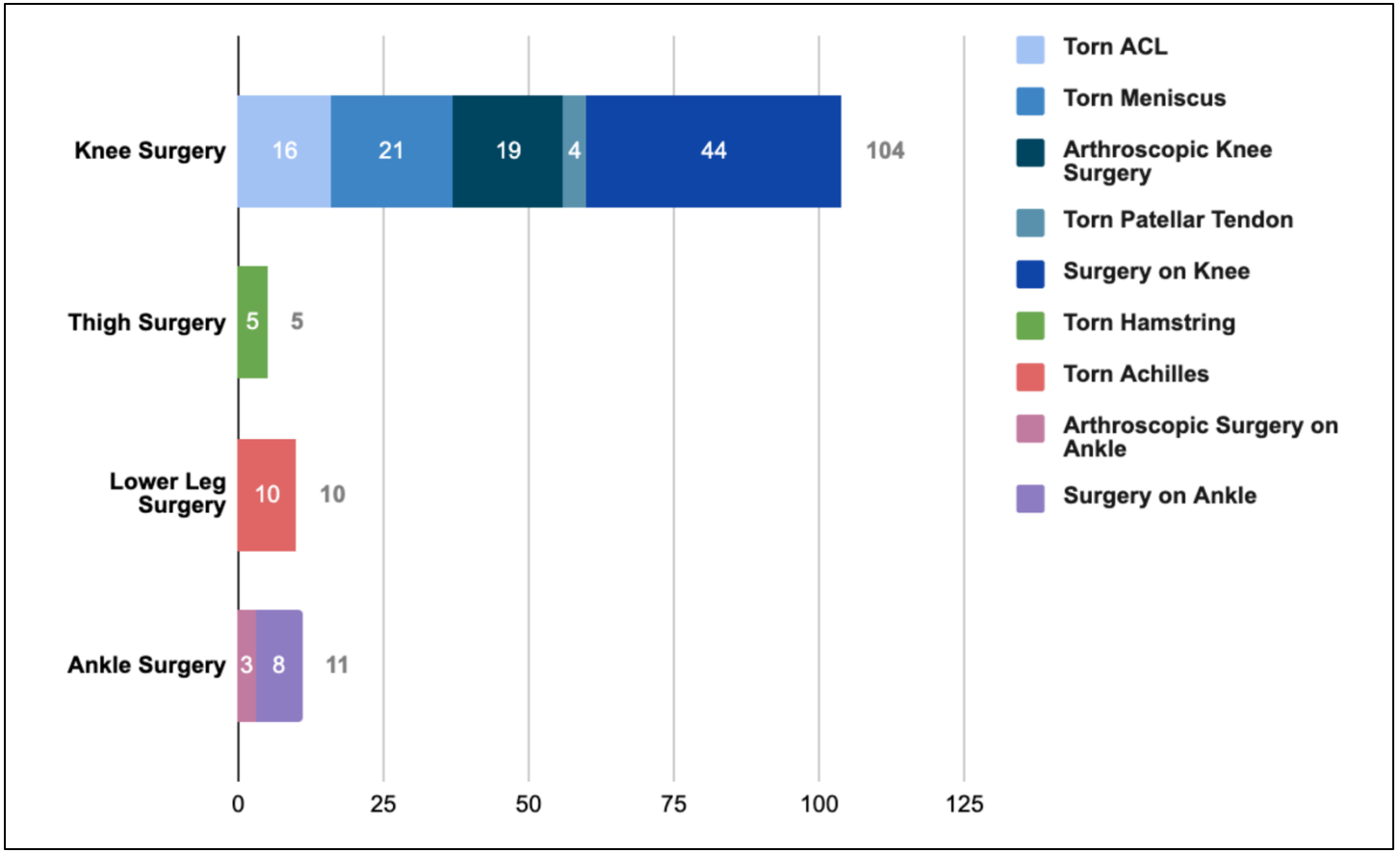
Methods

- Injuries and combine scores from the 2010-2020 NBA seasons obtained from public databases
- Injury data included lower extremity injuries requiring surgery
- Surgical and non-surgical cohorts compared across combine metrics using t-tests for significance

Results

Summary Statistics for NBA Surgical Lower Extremity Injuries in 2010-2020

130 surgical lower extremity injuries identified in this timeframe, of which knee injuries were most common, namely ACL and meniscal tears



Results

Combine Scores across Injured and Non-Injured Cohorts

Athletes recording higher vertical jumps, both standing and maximum, were at a statistically significant increased risk of sustaining a surgical lower extremity injury throughout the course of their career

Characteristic	Noninjured Group[a]	SD[b]	Injured Group	SD	p-value
Anthropometric Stats					
Weight (lbs)	215.96	26.60	218.76	26.15	0.254
Body Fat %	7.66	2.93	7.51	3.12	0.602
Height (in)	75.64	12.6	77.38	7.41	0.123
Strength & Agility Stats					
Lane Agility Time (s)	11.45	0.62	11.34	0.52	0.08
Three Quarter Sprint (s)	3.29	0.13	3.28	0.13	0.33
Standing Vertical (in)	29.08	3.08	29.92	3.06	**0.005***
Max Vertical (in)	34.21	3.69	35.16	3.61	**0.009***
Max Bench (Reps)	10.69	5.28	10.80	5.09	0.85

[a]Mean of Variable, [b]SD= Standard Deviation

*Statistically significant ($p<0.05$)

Discussion

Making Sense of the Relationship between Combine Scores and Injury

- Players identified as being high risk based on vertical scores may be enrolled in injury prevention programs which improve knee strength / flexibility
- For athletes participating in the combine after a surgical lower extremity injury, there is minimal difference in scores relative to their uninjured peers[2, 7]
- Potential mechanisms for effect of increased vertical on injury risk are debated in the literature, with evidence suggesting that it is not a result of increased load on the leg[7-8]

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Conclusion

1. NBA Combine Scores, namely **increased standing and maximum vertical leap**, were demonstrated to have a **statistically significant association with future lower extremity surgical risk** in an athlete's career
2. Due to limited effect size, these results suggest the need for further research into additional predictors of injury risk (e.g. play style)

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