

The Relationship Between The NBA Draft Combine Tests, Advanced Performance Metrics, And Perceived Performance In NCAA Division I Men's Basketball

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Key Points

- Question**
Do anthropometric and physical tests predict performance on an Division I Men's Basketball Team?
- Meaning**
Combine Anthropometric and Physical tests are predictors of performance and guides in training specifically for basketball.
- Findings**
Combine data predicted performance on this team in several variables.

Purpose of the Study

The purpose of this investigation was to conduct an NBA Draft Combine with an NCAA Division I Men's Basketball Team.

The study explored the relationships between the NBA Draft Combine Data, Advanced Performance Metrics and Perceptions of Performance.

Definition of Terms

Anthropometric & Physical Data

The NBA Draft Combine consisted of Anthropometric and Physical data collection.

Performance Metrics

Advanced Performance metrics were used to measure the athletes contributions to basketball.

Player Efficiency Rating (PER) measured all the positive attributes a player contributes such as points, rebounds, assists, and blocks. The metric then subtracts the negative aspects, such as turnovers, missed shots, and personal fouls creating a single metric.

Win Share Per 40 minutes (WS/40) assigns a value to a players contribution to the team and winning. The metric gives credit for individual play and how that play helps the team win.

Perceived Performance

Data was collected via questionnaire from players and coaches.

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Methods

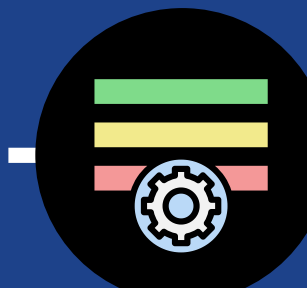
This study was approved by the Concordia University Chicago Institutional Review Board and participant consent was obtained.



Participants

Thirteen scholarship athletes from a NCAA Division I Men's Basketball Team participated in the study.

Age = 20.1 ± 0.64 yrs
Height = 1.9 ± 0.1 m
Mass = 93.9 ± 10.9 kg



Independent Variables

Anthropometrics
Height - Weight - Wingspan
Wingspan to Height
Standing Reach - Hand Size
Body Composition
Physical
3/4 Court Sprint
Lane Agility Drill
No Step Vertical Jump
Maximum Vertical Jump
Raw No Step Vertical Jump
Raw Maximum Vertical Jump
Raw = Place in space athlete touches

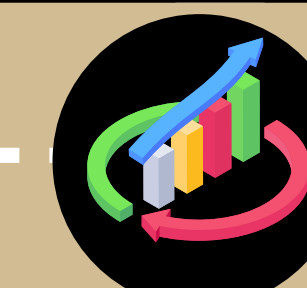


Dependent Variables

Performance
Win Share /40 (WS/40)
Player Efficiency Rating (PER)

Perceived Performance
Players ranked best player to least best player by position creating the Player Rank

Coaches ranked best player to least best player by position creating the Coach Rank



Statistical Analysis

A Spearman's Rank Correlation was performed using PER, WS/40, Player Rank and Coach Rank as the dependent variables.

The Anthropometric and Physical data for all players were inserted as the independent variables.

Statistical significance was set a priori at $p \leq 0.05$.



Predictive Component

A Stepwise Linear Regression explored predictive components after significant correlation was observed between variables.

Results

Spearman's Rank Correlation

Win Share/40 - Maximum Vertical Jump

-Significant correlation was observed between WS/40 and Maximum Vertical Jump with a Rho value = 0.589, $p \leq 0.05$.

Hand Length - Player Rank

-Significant correlation was observed between Hand Length and Player Rank with a Rho value = 0.633, $p \leq 0.05$.

Stepwise Linear Regression

Win Share/40 - Maximum Vertical Jump - Body Composition

-There was a significant relationship between WS/40, the athletes Maximum Vertical Jump ($t = 2.322, p = .043$) and the athletes Body Composition ($t = -2.483, p = .035$) explaining 61.4% of the variability in WS/40.
-Each one unit increase in WS/40 is associated with an increase in one unit of Maximum Vertical Jump and Body Composition, on average.
-The regression equation was : Estimated WS/40 = $.765 + .09*(\text{Maximum Vertical Jump}) + .888 + -0.23 (\text{Body Composition})$.

Win Share/40 - Player Efficiency Rating (PER) - Raw No Step Vertical Jump

-There was a significant relationship between WS/40, the athletes PER ($t = -5.798, p = .010$) and the athletes Raw No Step Vertical Jump ($t = 2.711, p = .024$) explaining 87.4% of the variability in WS/40.
-Each additional increment of WS/40 is associated with and increase of one unit of PER and Raw No Step Vertical Jump on average.
-The regression equation was : Estimated WS/40 = $.080 + .011*(\text{PER}) + 1.017 + -0.03 (\text{Raw No Step Vertical Jump})$.

Win Share/40 - Coach Rank - Standing Reach

-There was a significant relationship between WS/40, the Coach Rank ($t = -3.406, p = .007$) and the athletes Standing Reach ($t = 2.644, p = .027$) explaining 73.9% of the variability in WS/40.
-Each one unit increase in WS/40 is associated with an increase in one unit of Coach Rank and Standing Reach, on average.
-The regression equation was : Estimated WS/40 = $.216 + -.104*(\text{Coach Rank}) + -.097 + -.005 (\text{Standing Reach})$.

PER - Coaches Rank

-There was a significant relationship between PER and the Coach Rank ($t = -4.228, p = .02$) explaining 64.1% of the variability in Coach Rank.
-Each additional increment of PER is associated with an increase of one unit of Coach Rank, on average.
-The regression equation was : Estimated PER = $26.504 + -9.198 (\text{Coach Rank})$.

Conclusions & Practical Applications

While there are a myriad of factors which are likely to contribute to basketball ability at the collegiate level, our data suggests that lower body muscular power and body composition are associated.

As such, coaches wishing to assess player performance and to project future contributions may wish to prioritize Vertical Jump metrics and Body Composition in comparison to other metrics assessed in the NBA Draft Combine.

