Comparison of BMI Between University and Professional Soccer Players

Jeff G. Konin[1], Kenzo Koike[1], Jason Meredith[1], Brian Goodstein[2]

[1]Department of Orthopaedics & Sports Medicine, College of Medicine
University of South Florida, Tampa, Florida USA
[2]D.C. United Professional Soccer Club, Washington, DC, USA

Background

Transitioning from university level soccer to professional level requires increased technical skill and understanding of the game. Oftentimes physiological measurements are not considered if an individual can successfully compete at a higher level. The purpose of this research is to compare the body mass index (BMI) of University and professional level soccer players in an effort to identify comparisons between the different level of players.

Design

Team rosters made available by the Major League Soccer organization, FIFA, and the University level Big East Conference were used to gather data. Teams representing the Big East Conference are located within the United States, teams representing MLS are within the United States and Canada, and teams representing FIFA are comprised worldwide. All participants were listed as active members of one of the thirteen professional Major League Soccer teams (N = 366), sixteen University teams (N = 388), and 32 FIFA countries (N = 736) and were purposefully categorized by position (defenders, forwards, goalies, and midfielders). The variables measured included height and weight, and each calculated formula was descriptively grouped by team and position. Standardized and internationally accepted formula to calculate body mass index was used. (Figure 1)

$$\frac{\text{Weight in pounds}}{(\text{Ht in inches})(\text{Ht in inches})} \times 703$$

Under 20	= Underweight
20 - 24.99	= Normal
25 - 29.99	= Overweight
30 - 34.99	= Obese 1
35 - 39.99	= Obese 2
Over 40	= Morbid

Figure 1. Body Mass Index Calculation

Results

League-wide BMI for Major League Soccer players was 23.6 and average BMI's of position players calculated at defenders (23.6 +/- 1.33), forwards (23.6 +/- 0.55), goalies (25.2 +/- 5.27), and midfielders (23.2 +/- 1.45). University-wide BMI was 23.5 and average BMI's of position players calculated at defenders (23.4 +/- 1.46), forwards (23.5 +/- 1.17), goalies (23.9 +/- 3.27), and midfielders (23.4 +/-1.49). League-wide BMI for FIFA was 23.2 and average BMI's of position players calculated as defenders (23.3 +/- 1.7), forwards (23.2 +/- 1.2), goalies (23.6 +/- 4.3), and midfielders (23.0 +/- 1.7). (Figure 2)

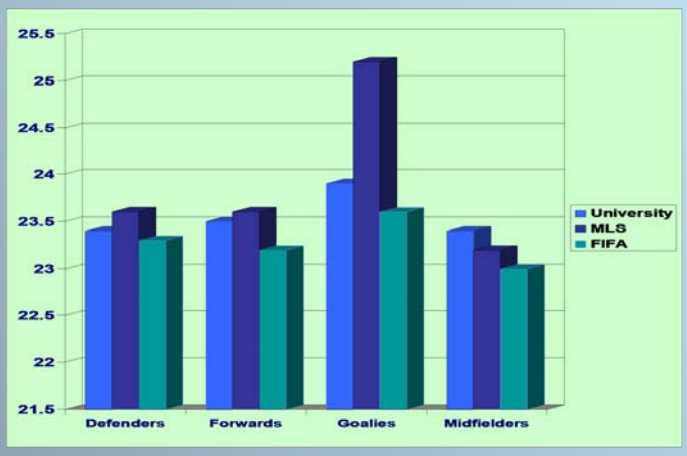

Figure 2. Average BMI by player position comparing MLS, FIFA and University.

Discussion

The overall body mass index calculations for University, Major League Soccer, and FIFA players by position were all relatively similar with the exception of MLS goalies whose BMI appears to be slightly higher and more variant than all others. This group of individuals also represented the only player positions from all three groups to have an average overall BMI that fell in the "overweight" category. Overall, goalies had the largest BMI for each group by position, but no trends could be identified either between or within each of the groups. Despite these findings, the results continue to reflect the possible inaccuracy of using body mass index as a method of assessing one's physiological composition. This statement is made on the basis of essential ranges for body mass index for all groups to be found between 23.0 and 25.2, considered to be a "normal" range. Such elite endurance athletes would be expected to be in excellent physiological condition, possessing lower body mass index calculations, inverse of what is found in obese populations. While it is clear BMI may not be the best method for assessment, it remains commonly used in many settings for all populations including athletes.

Conclusions

Body mass index for professional soccer players in the MLS, FIFA, and University players appear to be very similar, with all falling in a normal range minus MLS goalies, whose average is overweight. These findings continue to support whether or not BMI should be used as a standard basis for any body composition assessment. Future research should focus on comparative formulas that can be simply applied with greater accuracy.

JUNE 26-28 2008
WORLD CONGRESS
ON SPORTS INJURY
PREVENTION
TROMSØ NORWAY

References

1. Cantor E, Konin JG. Body Mass Index for FIFA World Cup Professional Soccer Players. Presented at University of South Florida Health Research Day held in Tampa, Florida Feb 2008.

2. Konin JG, Koike K. Body Mass Index in Men's Collegiate Athletics Compared Between University and Conference Teams. Presented at University of South Florida Health Research Day held in Tampa, Florida Feb 2008.