

# Fat-Free Mass Index in NCAA Division I and II Collegiate American Football Players

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## Introduction

The purpose of this study was to characterize Fat-free Mass Index (FFMI) in collegiate American football players and to determine if FFMI varies with different position, division or age groups. According to earlier research FFMI is a height-adjusted assessment of fat-free mass (FFM), which is derived by dividing FFM (in kilograms) by height (in square meters). Further research suggested a natural upper limit of 25 kg·m<sup>-2</sup> in resistance trained male athletes. At first FFMI was used as a diagnostic value to identify protein-energy malnutrition in those with low FFM but now it is believed that this value may have valuable applications to a variety of sports. It is believed that FFMI may assist in distinguishing interposition differences comparable to metrics like weight, body mass index, and body fat percentage but may relate more directly to the ability of a player for strength and power.

## Methods

- Upper limits for FFMI were assessed to evaluate the differences between positions, divisions, and age groups for a sample size of n=235.
- FFMI and Cross-sectional body composition assessment was performed on 2 National Collegiate Athletic Association (NCAA) Division I teams (n=78 and n=69) and 1 Division II team (n=88) using dual-energy x-ray absorption.
- Group mean comparisons were performed to determine if FFMI differentiates between playing positions, divisions or age group.

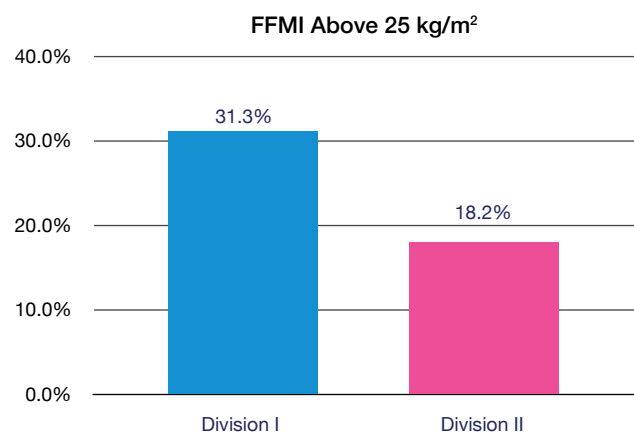
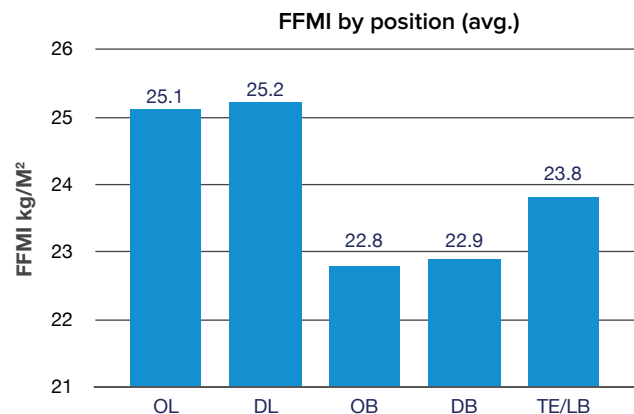
## Results

- This study proposed that the natural FFMI limit in American collegiate football players is higher than 25 kg·m<sup>2</sup> irrespective of which height adjustment equation was used.
- Mean FFMI greatly varied between different position groups which reflects the unique physical demands of different position.
- Division I players FFMI were observed to be higher than to Division II players.
- FFMI did not differ between different age groups.

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## Conclusion

- Practitioners and coaches can use FFMI to help them evaluate the recruiting process by using FFMI values to determine the suitability for a particular player for a given position.
- FFMI can also assist practitioners to determine an athlete's potential to gain lean mass and potential to change positions over time.
- Practitioners can use this metric in strength-power sports, as well as weight in weight class sports to assist them in selection of appropriate athletes.