

# Prevalence of Metabolic Syndrome in a Division III Football Team

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## Introduction:

- Football players, especially linemen, strive for an increase in mass and strength to increase performance which may be associated with increased abdominal fat stores (1).
- Metabolic syndrome [MS] is a clustering of clinical symptoms including increased abdominal obesity, high systolic blood pressure [SBP], elevated triglycerides [TG], low high density lipoproteins [HDLs], and elevated fasting glucose [FBG].
- Three of these five criteria must be present in order for MS to be clinically diagnosed according to the American Heart Association and National Heart, Lung, and Blood Institute.
- MS increases the risk of cardiovascular disease and diabetes (2).

## Purpose:

- The purpose of this study was to examine the prevalence of MS in a young, athletic, Division III collegiate football cohort.



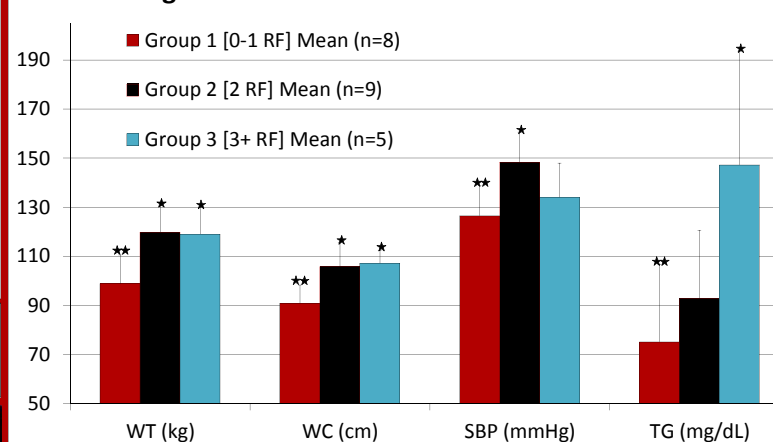
## Methods:

- IRB approval and informed consent was obtained for each of the 22 DIII football players (linemen, n = 15; non-linemen, n = 7).
- Subjects completed a three-day food log to record food and beverage intake.
- Height, weight [WT], waist circumference [WC], BP, FBG and lipids were measured.
- Diet records were analyzed using Diet Analysis Plus 10.0 to determine macro and micronutrient intakes.
- Individual subjects were categorized into three separate groups based upon MS risk factor [RF] prevalence (Group 1=0, 1 RF, Group 2=2 RF, Group 3=3+ RF).

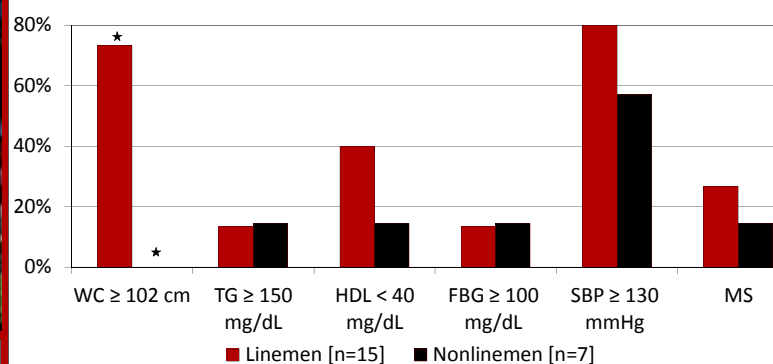
## Acknowledgments:

- We would like to thank head coach Gary Fasching, Richard Wielkiewicz, and the involved Saint John's football players for their participation and cooperation.

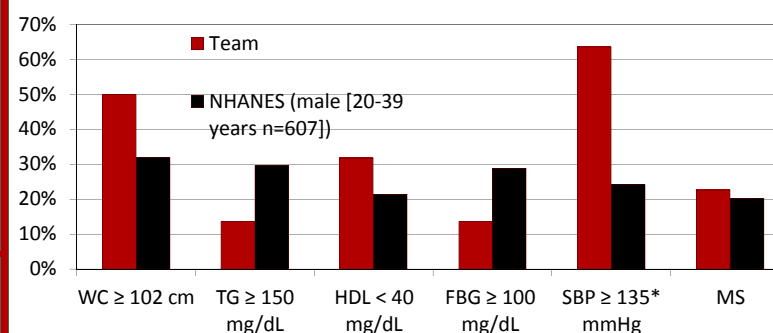
## Significant MS Risk Factor ANOVA Measures



## Linemen and Nonlinemen Risk Factor Prevalence



## Team and NHANES Risk Factor Prevalence



## Results:

- Prevalence of MS within this cohort was 23% (5 of 22); 27% (4 of 15) of linemen and 14% of non-linemen (1 of 7).
- Pearson correlation coefficients and an analysis of variance were used for statistical analyses.
- Significant ANOVA variations between groups include WT ( $p = .002$ ), WC ( $p = .002$ ), SBP ( $p = .015$ ), and TG ( $p = .005$ ).
- Linemen compared to non-linemen met MS criteria for WC [73% vs. 0%], HDL [40% vs. 14%], and SBP [80% vs. 57%].
- WT significantly correlated with WC ( $r = .898$   $p = .000$ ) and SBP ( $r = .494$   $p = .019$ ). SBP significantly correlated with dietary total fat ( $r = .439$   $p = .041$ ) and saturated fat intake ( $r = .427$   $p = .047$ ).
- SBP for all subjects averaged 40% higher than an age matched cohort from NHANES.



## Conclusions:

- Despite being physically active, the prevalence of MS amongst linemen was 27% and 14% among non-linemen.
- Linemen were larger and had more MS risk factors within this cohort.
- These results may predict future health problems in DIII football players since the MS prevalence in NFL linemen retirees is ~60% (3).
- Nutritional counseling may help reduce cardiometabolic risk factors given their WT and WC, and the significant correlation with dietary total and saturated fat and SBP.
- Future research should examine whether the presence of MS risk factors also affects performance.

## References:

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