Associations of Aerobic Capacity and Dietary Attitudes to Metabolic Syndrome

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BACKGROUND AND PURPOSE

- NFL linemen have a 52% higher risk of cardiovascular disease (CVD) mortality than the general population1.
- Heart disease mortality is 3.7X more likely among offensive and defensive linemen than other football players.
- Previous studies of cardiometabolic risk for professional and college linemen have not addressed dietary habits2-4.
- The purpose of our study was to determine whether or not an association exists among performance capabilities, dietary attitudes, and metabolic status among college football linemen.

PARTICIPANTS AND PROCEDURES

- 13 NCAA Division I-FCS football players: 8 offensive linemen (OL) and 5 defensive linemen (DL)
- Age (20.6 ± 1.6 yrs), Height (188.9 ± 6.0 cm), Weight (126.6 ± 9.8 kg)
- VO2Max was estimated using the Uth-Sørensen-Overgaard-Pedersen equation: VO2Max = 15 * (HRmax/HRrest) - 4 mph with a 6% grade; increased 1 mph and 2% every 3 minutes to fatigue.
- Blood analysis: Cholestech LDX® blood analyzer (Alere, Inc., Waltham, MA)
- The EAT-40 survey was designed to assess eating disorder risk, but also appears to have MetS screening value
- ATP-III definition: ≥ 3 positive factors7
- Dichotomized EAT-40 responses for items #1, #18, and #25 yielded an alternative 3-factor model
- Alternative prediction models were evaluated to potentially simplify screening (Figure 4)

RESULTS

- 62% of linemen (8/13) had MetS, which is associated with elevated cardiometabolic risk
- VO2Max < 40 mL/kg/min predicted 75% of MetS cases; associated with 4.5X greater odds for MetS (Figure 1)
- Logistic regression yielded a 2-factor prediction model (Nagelkerke R2 = 0.118) (Table 2)
- Systolic and diastolic BP (SBP & DBP)
- Metabolic syndrome (MetS) testing performed same day as dietary habits and attitudes analysis
- The EAT-40 survey was designed to assess eating disorder risk, but also appears to have MetS screening value
- Dichotomized EAT-40 responses for 3 items provided 90% sensitivity

REFERENCES


Table 1

<table>
<thead>
<tr>
<th>EAT-40 Item</th>
<th>Score</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Like eating with other people</td>
<td>≤ 3</td>
<td>7.00*</td>
</tr>
<tr>
<td>2. Cut my food into small pieces</td>
<td>≤ 1</td>
<td>4.50</td>
</tr>
<tr>
<td>3. Feel bloated after meals</td>
<td>≤ 1</td>
<td>4.00</td>
</tr>
<tr>
<td>4. Like my clothes to fit tightly</td>
<td>≤ 2</td>
<td>12.14*</td>
</tr>
<tr>
<td>5. Think about food or weight</td>
<td>≤ 1</td>
<td>4.67</td>
</tr>
<tr>
<td>6. Feel uncomfortable after eating sweets</td>
<td>≤ 0</td>
<td>4.50</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Factor</th>
<th>Univariable OR</th>
<th>Adjusted OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat-7 ≤ 12</td>
<td>10.50</td>
<td>9.40</td>
</tr>
<tr>
<td>VO2Max ≤ 40</td>
<td>4.50</td>
<td>5.59</td>
</tr>
<tr>
<td>Fruits/Veg ≥ 1</td>
<td>2.00</td>
<td>2.06</td>
</tr>
</tbody>
</table>

* Estimated OR: 0.05 added to each 2X2 cell to avoid division by zero.