NATA/NWCA
Assessor Training

Optimal Performance Calculator

Indianapolis 2005
National Athletic Trainers
Annual Meeting 2005

Eileen Bowker ATC
Mike Moyer
Alan Utter

Indianapolis 2005
Background
1997 three college wrestlers died while engaged in unsafe “weight loss” activities.

Immediately the NCAA implemented sweeping rule changes. The NWCA and the NCAA Wrestling Committee worked closely with the NCAA Medical Advisory Committee to establish a gold standard weight certification program to determine the lowest allowable weight class for each wrestler.
– 1999-2000
  The Optimal Performance Calculator was approved and used for all collegiate wrestling programs.

– Also during this time the NFHS Medical Advisory Committee released a “strong recommendation” that all 50 state athletic committees and high school athletic associations have a comprehensive weight management program.
2001 NWCA collaborated with the NFHS medical advisory team to establish a weight management program consisting of:

- Hydration testing
- Body composition assessment
- Establishment of a lowest allowable weight class for each wrestler
- Establishment of a weight loss plan for each wrestler
- Establishment of a nutritional education program specific to wrestling
2004 NATA Drafts a Cooperative Agreement With the NWCA

In this agreement the NATA will develop comprehensive educational content to help coaches, wrestlers, parents, and administrators use the Optimal Performance Calculator as an effective tool to administrate the NFHS Wrestling Weight Management Program.
Components

- Protocol for assessing hydration
- Protocol for assessing body fat
- Protocol for assessing weight
- Protocol for monitoring weight loss
Implementation

Implement a co-branded program to assist state high school associations implement the new NFHS Weight Management Program in schools utilizing the Optimal Performance Calculator.
Protocols

- Local/institutional testing
- Regional testing
- Human resource
- Assistance to HS athletic associations
Regulations

-The establishment of a minimum wrestling weight based on 7% body fat for males and 12% body fat for females.

-Hydration level of 1.025 depending on state association rules.

-Weight loss no greater than 1.5% per week of the athlete’s body weight.
Certified Athletic Trainers who belong to the NATA receive free access to the Optimal Performance Calculator to administer any state or nationally mandated wrestling weight management program.
Establishing Minimum Weights
Weight Certification Preparation Guidelines

1. No vigorous activity on the evening before and the day of the testing.
2. Avoid any caffeinated beverages on the day before and day of the testing.
3. On the day of testing, drink 500ml (17 oz.) of fluid. (A sports drink is an excellent choice).
4. Avoid any vitamin or mineral supplements two days before and the day of testing.
5. Be awake three hours prior to testing.
6. Do not eat two hours prior to testing.
Step 1 - Assessment of Hydration Status
1. Completion of a hydration test should be required before any wrestler can undergo a body composition or weight assessment.

2. Purpose is twofold.
   1. Dehydration will significantly affect the body composition measure which will result in an invalid percent body fat.
   2. Dehydration or loss of water weight will directly affect minimal wrestling weight.
Step 1 - Assessment of Hydration Status

- Two methods commonly used to assess urine specific gravity (Usg) are: 1) reagent test strips and 2) refractometer.

- Refractometry is considered the gold standard and reagent strips are an acceptable alternative in most state associations.

The average cost of a refractometer is around $150.00-$200.00 and reagent strips average about $20.00 for a package of 100.
Step 1 - Assessment of Hydration

Instruments

- Refractometer
- Urine Test Strips
Step 1 - Assessment of Hydration Status

- If a wrestler has a urine specific gravity above 1.025 (as set by the NFHS – might be 1.020 in some states), they should not be allowed to undergo the body composition assessment.

- If wrestler fails the hydration test they should not be assessed again for 24 hours (they are still bound to the weekly 1.5% rule when being retested).

- In preparation for the hydration test the athletes should be instructed to consume 2-4 cups of water in 1-2 hour period immediately preceding the test.
Step 1 - Assessment of Hydration Status: Protocol

1) Evaluator assistant wears rubber gloves during the assessment.

2) Subject is provided a cup (marked by name or identification number). Sample should never leave the possession of the subject.

3) Subject is then instructed to provide a 2-3 oz. urine sample (mid-stream) in the urinal/bathroom under supervision.
Step #1 Assessment of Hydration Status: Protocol

4) Practice and enforce secure procedures during urine collection.

5) Urine specific gravity is then measured by reagent strips or a refractometer. (follow manufacturer's guidelines)

6) Upon successful completion of the hydration test the subject should dispose of sample and then proceed to the body weight and body composition assessment stations.
Step 2 Assessment of Height
Step 3 – Assessment of Body Composition

Skin calipers, bio-impedance, hydrostatic weighing, and BodPod are all currently approved by the NFHS medical advisory committee. The NCAA approves all measures except bio-impedance. Each state association has the autonomy to make the final decision.
Step 3 – Assessment of Body Composition

- This measurement should ideally be taken prior to the first practice but must be performed prior to the first competition.
Step 3 - Assessment of Body Composition

- Two methods commonly used to assess body fat with the critical masses are: 1) skinfold analysis and 2) bioelectrical impedance analysis (BIA).

- All personnel conducting the body composition assessment should have advanced training and education in whichever method is being employed.

- The average cost of skinfold calipers is around $150.00-$200.00.
Lange Skinfold Calipers
As shown below, the goal is to measure a double fold of skin and subcutaneous tissue (with sides of skinfold approximately parallel). The thicker the fat layer, the wider the fold.
Basic Rules for Taking Skinfolds

• Take skinfold measurements on the right side of the body (most skinfold equations were developed from measurements on the right side).

• Do not take measurements when the subject's skin is moist (ensure that the skin is dry, and has no lotion). Also do not take measurements immediately after exercise.

• To reduce error during the learning phase, skinfold sites should be precisely determined, marked, and verified by a trained instructor. The largest source of error in skinfold testing is inaccurate site selection.
Skinfold Rules (continued)

- Firmly grasp the skinfold with the thumb and index finger of the left hand, and pull away.

- Hold the caliper in the right hand, perpendicular to the skinfold and with the skinfold dial facing up and easily readable. Place the caliper heads ¼-½ inch away from the fingers holding the skinfold. Try to visualize where a true double-fold of skin thickness is, and place the caliper heads there.
Skinfoold Rules (continued)

- Read the caliper dial to the nearest 1 millimeter within 4 seconds. During the measurement, ensure that the left thumb and forefinger maintains the shape of the skinfold.

- Take a minimum of 3 measurements at each site (at least 15 seconds apart).
Triceps Skinfold

Vertical fold on posterior aspect of arm, midway between lateral projection of acromion process and inferior margin of olecranon process. Flex the elbow to 90 degrees to identify the landmarks.
Abdomen Skinfold Site

Vertical fold, one inch to the right side of and ½ inch below the navel.

The Jackson-Pollock procedure uses a vertical fold 2 cm to the right of the umbilicus.
Subscapular Skinfold

Diagonal fold just below the inferior angle of scapula.
Assessment of Body Composition: Bioelectrical Impedance Analysis (BIA)

- A safe electrical signal is generated and passed through the wrestler being measured.

- BIA measures the impedance or resistance to the electrical signal as it travels throughout the body. Resistance to the electrical signal is greater in fat mass than muscle mass, simply because fat mass is not a good conductor of electricity due to its relatively low water content.

- The average cost of a BIA machine is around $1,700.
Leg-to-Leg BIA
(Tanita Corporation)
Assessment of Body Composition: Bioelectrical Impedance Analysis (BIA)

- BIA does not require a high degree of technician skill and therefore is easy to use, and provides simultaneous measurements of body weight and body composition in a short time period.

- Wrestler simply stands on the scale after entering a few pieces of information (age, gender, height) and results are generated in less than 1 minute.

- Body fat results are then entered into the Initial Assessment page for calculation of minimal wrestling weight.
Body Density

- Skinfold Measurements
- Or
- Bio Impedance
- Hydrostatic Weighing
- Bod Pod
Practice Lab
Step 4 Entering the Data
Step 4 – Entering the Data

- Results of the hydration, height and body weight assessment will be entered into the NWCA weight certification internet calculator on the Initial Assessment page at the NWCA website (www.nwcaonline.com).

- It is recommended that all assessment data for each wrestler is initially recorded on an index card so a “hard copy” backup system is available in case of data entry error.
ISSUES/ACTION:
The NWCA is uniquely positioned to be the "voice" of scholastic/collegiate wrestling coaches. Among our 34 member Board of Directors are some of our nation's top scholastic/collegiate wrestling coaches, and representatives of the National Federation of State High School Associations (NFHS) and the National Collegiate Athletic Association (NCAA) Wrestling Rules Committee. This section will soon contain important surveys aimed at allowing our membership to voice your opinion on many pressing issues directly to the above-mentioned governing bodies.

COACHING EDUCATION:
The cornerstone of the NWCA mission is our gold standard education programs specifically designed for scholastic/collegiate coaches and wrestlers. Our flagship programs are specific to weight management and leadership training.

EVENTS:
Each year the NWCA sponsors several premier events for the wrestling community including but not limited to the following: NWCA/Ciffl Keen National Duals (60-collegiate teams), NWCA All-Star Classic, NWCA Scholastic Showdown and the NWCA...
Click on Scholastic Link

Welcome to the National Wrestling Coaches Association Optimal Performance Calculator

Note: This site is optimized for the Microsoft Internet Explorer browser, version 5.0 or newer. Click the icon to the right to download IE 6.0 now.

To select the correct option, please read the following:

Collegiate Wrestling Edition - All college head coaches should select this link to complete their team weight certification assessment. The head coach’s NWCA card number is the only number that has access to enter the official assessment data into the collegiate edition. Student-athletes on the collegiate level should also enter here to view their assessments and build their customized diet.

Scholastic Wrestling Edition - All other NWCA membership types (Scholastic Coach, Fan/Parent, Allied Group, Assistant College Coach, Honorary and Referee) will click on the Scholastic Wrestling Edition link to access the Optimal Performance Calculator program. The user will use their card number as the initial login and password.

Schools with state mandated wrestling weight certification programs must access the Optimal Performance Calculator through the scholastic wrestling edition link. Coaches in state mandated programs have “viewer access only” to the weight certification data of their respective teams. They are prohibited from entering/manipulating data due to compliance requirements. The NWCA will assign unique access codes to the assessors who can then enter data into the Optimal Performance Calculator.

All other NWCA members (other than head high school wrestling coaches), regardless of whether your state mandates a wrestling weight certification program, have unrestricted access to the Optimal Performance Calculator.

If you do not have an active membership, you can purchase one through any of the following convenient methods:

1. Visit www.nwcaonline.com and join online.
2. Call the NWCA office at 717-653-8809 and join with a master card or visa credit card.

Questions: Please feel free to call the NWCA office at 717-653-8809 or e-mail us at stoecci@nwca.org with any questions you may have.
Scholastic OPC Home Page

Welcome to the Scholastic Edition of the National Wrestling Coaches Association Optimal Performance Calculator (OPC). Since the early 1990's, the NWCA has collaborated with nationally renowned experts within the sport science community to implement an ambitious educational initiative aimed at helping high school wrestlers maintain an optimal weight for the purpose of maximizing performance. To date, this initiative has included the production of two educational videotapes (Championship Performance and Safe Weight Management & Maximizing Performance Through Healthy Eating) (click here for NFHS position or weight management).

In addition, the NWCA has worked closely with the medical advisory committees of the National Federation of State High School Associations (NFHS) and the National Collegiate Athletic Association (NCAA) to develop and deliver a "turn key" web-based program, commonly known as the NWCA Optimal Performance Calculator (OPC) to accomplish the following objectives:

- Determine a lowest allowable weight class for each wrestler.
- Establish a safe weight loss/weight gain plan.
- Produce all necessary compliance forms.
- Deliver the program to the scholastic and collegiate community for nominal cost.
- Provide an opportunity for wrestlers to build a customized diet that honors their weight loss/weight gain plan.

Through the generosity of Tanita, BodPod, the Gatorade Sports Science Institute, United States Marine Corps and the National Honey Board, we have been able to deliver this gold standard program to the high school wrestling community for a very nominal $30 NWCA membership fee. That's right, for the average high school wrestling team, this equates to about $10 per wrestler per year for complete access to the program! If you are not currently a member, you can join by doing the following:

We invite you to join the 4000 coaches and 40,000 high school wrestlers of the fifteen state high school athletic associations and all of the collegiate governing bodies who have exposed their wrestlers to the latest and greatest sport science techniques for maximizing performance through proper nutrition.

To gain access to the program, you must be an active member of the NWCA. If you are not currently a member, you can join through one of the following convenient methods:

1. Visit www.nwcaonline.com and join online.
Login Page

Assessor Code
Login Page

NWCA Coach Log In

You are attempting to access a secured area of Scholastic Weight Certification Calculator. A Current NWCA membership is required to proceed beyond this point. If you have already registered on-line, use the Card Number you were assigned and the password you supplied during the registration process. If you have not yet registered, you must do so in order to proceed beyond this point.

NWCA Membership Card #: 
Password: 

Forgot your password? Enter your Card Number above, then Click here for a reminder!

Log In!
Entering the Data

- Name, Class, etc.
- Urine specific gravity
- Alpha body weight
Step 3  Percentage of Body Fat
Step 4  Fat Weight
Step 5  Fat Free Weight
Step 6  Minimum Wrestling Weight
Female Wrestlers

- Click on the Add female wrestler link of the initial assessment page.

- Only the triceps and subscapular skinfolds will be entered.

- Minimal wrestling weight will be calculated at 12%.
Skinfold data then entered into the Initial Assessment form for the calculation of minimal wrestling weight.

**NWCA Wrestling Weight Certification**

**2004-05 Initial Assessment to Determine Minimum Wrestling Weight**

**Name of Student-Athlete**

Mike

**School Name**

Michigan State University

**Grade**

10

**Gender**

Male

**Calculation of Minimum Wrestling Weight**

**STEP 1. ALPHA BODY WEIGHT (BW)**

<table>
<thead>
<tr>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Median Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triceps (T)</td>
<td>11.0</td>
<td>11.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Subscapular (S)</td>
<td>11.0</td>
<td>11.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Abdominal (A)</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**Skinfold Data**

Calculate body density by SKINFOLD, HYDROSTATIC, BOD-POL, or BIOIMPEEDANCE WEIGHING technique.

**CALCULATION OF MINIMUM WRESTLING WEIGHT**

**Alpha Date:** 10/16/2004

**UR**

1.1

**BW**

170

**DO**

1.086

**Step 2. Body Density (BD)**

**Step 3. Percentage of Body Fat (%BF)**

%BF = 49.57/0.4914 + 1427/10

%BF = 12.981

**Step 4. Fat Weight (FW)**

FW = 170 - (12.981 * 170)

FW = 22.847

**Step 5. Fat Free Weight (FFW)**

FFW = 170 - 170 * 0.12981

FFW = 153.133

**Step 6. Minimum Wrestling Weight (MWW)**

MWW = FFW * 1.06

MWW = 164.511

**Certification**

We have reviewed and comprehended our state association’s guidelines governing proper weight management. We certify that the skinfold/hydrostatic weighing, body density, and minimal wrestling weight are calculated in accordance with the enclosed instructions. We certify that the athlete will achieve any weight loss at a rate not to exceed 0.5% of original hydrated body weight per week.

**Signatures Required**

Student-Athlete: Mike

Athletic Administrator:

Sponsor or coach/affiliated trainer has reviewed the NCAA weight management rules handbook and rules video information during the pre-season meeting.

Athletic Trainer:

Head Wrestling Coach:

**Note:** This form MUST be printed, signed, and mailed to the appropriate state association office. It is NOT transmitted to the state office directly via this web site. Please use the Print & Save button below to generate a printed certification.
Appeal process for body composition assessment:

- If the wrestler is dissatisfied with his or her body fat measurement they should be given the opportunity to appeal their results.

- It is recommended that either hydrostatic weighing or air displacement (BODPOD) be used for the appeal process.
Hydrostatic Weighing for Appeal Process
Air displacement plethysmography (BOD POD) for appeal process.
Other forms generated by the NWCA Optimal Performance Calculator Program

http://www.nwcaonline.com
# NWCA Wrestling Weight Certification

**Alpha Master Report**

**Date:** 9/9/2004

**Coaches:** Supply a copy of this report to each opponent coach or the tournament manager when more than four teams are involved on a date of competition. Retain a master copy in your files and include a copy with both your individual and team entry blank.

**School:** Tennessee Test High School  
Anystreet  
Anytown, TN. 55555

---

## WRESTLER NAME

<table>
<thead>
<tr>
<th>Wrestler Name</th>
<th>Alpha Date</th>
<th>Alpha Weight</th>
<th>Alpha % Body Fat</th>
<th>Min WR Weight</th>
<th>Min Wgt Class</th>
<th>1st Date at Min Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angelo, Nico</td>
<td>10/1/2004</td>
<td>105.0</td>
<td>10.56</td>
<td>104.83</td>
<td>112</td>
<td>10/16/2004</td>
</tr>
<tr>
<td>Aument, Greg</td>
<td>10/15/2004</td>
<td>196.0</td>
<td>15.99</td>
<td>176.06</td>
<td>189</td>
<td>11/12/2004</td>
</tr>
<tr>
<td>Bowyer, Jeff</td>
<td>10/15/2004</td>
<td>146.0</td>
<td>13.20</td>
<td>136.14</td>
<td>140</td>
<td>11/5/2004</td>
</tr>
<tr>
<td>Moyer, Mike</td>
<td>10/16/2004</td>
<td>176.0</td>
<td>11.17</td>
<td>168.12</td>
<td>171</td>
<td>10/26/2004</td>
</tr>
<tr>
<td>Tocci, Pat</td>
<td>10/15/2004</td>
<td>141.0</td>
<td>11.47</td>
<td>134.23</td>
<td>135</td>
<td>11/5/2004</td>
</tr>
</tbody>
</table>

---

**CERTIFICATION**

We have reviewed and comprehend our state association's principles governing proper weight management. We certify that the skin-fold/hydraulic weight, body density, % body fat, and minimum wrestling weight are calculated in accordance with the enclosed instructions. We certify that the athlete will achieve any weight loss at a rate not to exceed 10% of original hydrated body weight per week.

**Signatures Required**

Athletic Trainer: ___________________________  Head Wrestling Coach: ___________________________
Wrestler Access Report

NWCA Wrestling Weight Certification
Wrestler Access Report

Date: 9/9/2004

School: Tennessee Test High School
Anystreet
Anytown, TN 55555

Wrestling coaches: Share the Login ID and and Password with each individual wrestler to allow access to Diet Program.

<table>
<thead>
<tr>
<th>WRESTLER NAME</th>
<th>Alpha Date</th>
<th>Alpha Weight</th>
<th>Login ID</th>
<th>Login Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angelo, Nico</td>
<td>10/15/2004</td>
<td>109.0</td>
<td>8196-05</td>
<td>gna0459</td>
</tr>
<tr>
<td>Angelo, Nico</td>
<td>11/1/2004</td>
<td>107.0</td>
<td>8196-05</td>
<td>gna0459</td>
</tr>
<tr>
<td>Aurnett, Greg</td>
<td>10/15/2004</td>
<td>196.0</td>
<td>8196-04</td>
<td>mgm0029</td>
</tr>
<tr>
<td>Bowyer, Jeff</td>
<td>10/15/2004</td>
<td>146.0</td>
<td>8196-01</td>
<td>wjo1410</td>
</tr>
<tr>
<td>Moyer, Mike</td>
<td>10/15/2004</td>
<td>176.0</td>
<td>8196-02</td>
<td>ymm1305</td>
</tr>
<tr>
<td>Tucci, Pat</td>
<td>10/15/2004</td>
<td>141.0</td>
<td>8196-03</td>
<td>ctt1112</td>
</tr>
</tbody>
</table>

CERTIFICATION

We have reviewed and comprehended our state association's principles governing proper weight management. We certify that the skin-fold/hydrostatic weighing, body density, % body fat, and minimum wrestling weight are calculated in accordance with the enclosed instructions. We certify that the athletes will achieve any weight loss at a rate not to exceed 1.5% of original hydrated body weight per week.

Signatures Required

Athletic Trainer: ___________________________ Head Wrestling Coach: ___________________________
NWCA Student Athlete Log In

You are attempting to access a secured area of Scholastic Optimal Performance Calculator. A Current NWCA membership is required to proceed beyond this point. If you have already registered on-line, use the Card Number you were assigned and the password you supplied during the registration process. If you have not yet registered, you must do so in order to proceed beyond this point.

NWCA Membership Card #: 
Password: 

Forgot your password? Enter your Card Number above, then Click here for a reminder!

Log In!
Wrestler Nutrition Plan

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci
School: Michigan Test School
Alpha Weight: 63.9572 kg (141.0 lbs)

Step 1: Enter your age: 

Step 2: Enter your height: ft in

Step 3: Select your physical activity level: VeryActive

Note: Very Active activity level is equivalent to 10-30 miles of walking per day. If you are currently a member of a sport team (wrestling, football, cross-country, etc.) and are in-season, choose this category.

Moderately Active is equivalent to 5-10 miles of walking per day. If you are currently a member of a sport team (wrestling, football, cross-country, etc.) and are out of season, choose this category.

Low Physical Activity is equivalent to 1-5 miles of walking per day. If you are not a member of a sport team (wrestling, football, cross-country, etc.) and engage in very little leisure time physical activity, choose this category.

Continue Cancel

© 2003 National Wrestling Coaches Association
Calculated Nutrition Plan

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Age: 16
Gender: Male
Alpha Weight: 03.9572 kg
Height: 1.651 meters
Daily Activity: Very Active
Max Weight Loss/Gain: 2.11 lbs/week (1057.5 kcal/day)

Step 4: Your calculated Total Energy Expenditure per day is: 4112.78 kcal/day

Step 5: Your recommended dietary plan: 3100 Calorie Diet Plan
Caloric Plan

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci
Diet Plan: 3100 Calorie

Step 6: Your calculated Food Exchange Options for 3100 kcal/day are:

3 Nonfat Dairy
0 Lean Protein
8 Vegetables

6 Fruit
16 Starch

450 Extra Calories

Continue  Cancel

© 2003 National Wrestling Coaches Association
Dairy Selection

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Step 7: Select 3 Nonfat Dairy Exchanges from the table below:

- Fat-free milk (1 cup)
- Fat-free milk (1 cup)
- Plain nonfat yogurt (3/4 cup)

One milk selection equals: 12 grams carbohydrates and 8 grams protein.

<table>
<thead>
<tr>
<th>Fat-Free and Low-Fat Milk</th>
<th>per Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat-free milk</td>
<td>1 cup</td>
</tr>
<tr>
<td>1/2% milk</td>
<td>1 cup</td>
</tr>
<tr>
<td>1% milk</td>
<td>1 cup</td>
</tr>
<tr>
<td>Fat-free or low-fat buttermilk</td>
<td>1 cup</td>
</tr>
<tr>
<td>Evaporated fat-free milk</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Fat-free dry milk</td>
<td>1/3 cup dry</td>
</tr>
<tr>
<td>Plain nonfat yogurt</td>
<td>3/4 cup</td>
</tr>
<tr>
<td>Nonfat or low-fat fruitflavored yogurt sweetened</td>
<td>1 cup</td>
</tr>
</tbody>
</table>

Continue  Cancel
Protein Selection

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Step 8: Select 8 Lean Protein Exchanges from the table below:

Items selected:
1. 4.5%-fat cottage cheese (1/4 cup)
2. 4.5%-fat cottage cheese (1/4 cup)
3. Chicken (white meat, no skin) (1 oz)
4. Chicken (white meat, no skin) (1 oz)
5. Chicken (white meat, no skin) (1 oz)
6. Chicken (white meat, no skin) (1 oz)
7. Grated parmesan (2 Tbsp.)
8. Grated parmesan (2 Tbsp.)

One very lean meat selection equals: 0 grams carbohydrates, 7 grams protein, 0-1 grams fat, and 35 calories.
One lean meat selection equals: 0 grams carbohydrates, 7 grams protein, 3 grams fat, and 55 calories.

<table>
<thead>
<tr>
<th>Very Lean Meat and Substitutes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poultry</strong></td>
<td></td>
</tr>
<tr>
<td>Chicken (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>Turkey (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>Cornish hen (no skin)</td>
<td>1 oz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Fish</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh or frozen cod</td>
<td>1 oz</td>
</tr>
<tr>
<td>Flounder</td>
<td>1 oz</td>
</tr>
<tr>
<td>Halibut</td>
<td>1 oz</td>
</tr>
<tr>
<td>Halibut</td>
<td>1 oz</td>
</tr>
<tr>
<td>Trout</td>
<td>1 oz</td>
</tr>
</tbody>
</table>
Vegetables Selections

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Step 9: Select 8 Vegetable Exchanges from the table below:

Items selected: 1. Artichoke (1/2 cup cooked, 1 cup raw)
2. Cauliflower (1/2 cup cooked, 1 cup raw)
3. Mushrooms (1/2 cup cooked, 1 cup raw)
4. Peppers (all varieties) (1/2 cup cooked, 1 cup raw)
5. Mushrooms (1/2 cup cooked, 1 cup raw)
6. Tomato (1/2 cup cooked, 1 cup raw)
7. Tomato (1/2 cup cooked, 1 cup raw)
8. Tomato sauce* (1/2 cup cooked, 1 cup raw)

One vegetable selection equals: 6 grams carbohydrates, 2 grams protein, 0 grams fat, and 25 calories.

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>1/2 cup cooked, 1 cup raw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artichoke</td>
<td></td>
</tr>
<tr>
<td>Artichoke hearts</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td></td>
</tr>
<tr>
<td>Beans (green, wax, Italian)</td>
<td></td>
</tr>
<tr>
<td>Bean sprouts</td>
<td></td>
</tr>
<tr>
<td>Beets</td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td></td>
</tr>
<tr>
<td>Brussels sprouts</td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td></td>
</tr>
<tr>
<td>Cauliflower</td>
<td></td>
</tr>
</tbody>
</table>
Fruits Selections

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Step 10: Select 6 Fruit Exchanges from the table below:

<table>
<thead>
<tr>
<th>Items selected:</th>
<th>1. Apple, unpeeled, small (1/4 oz)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Apple, unpeeled, small (1/4 oz)</td>
</tr>
<tr>
<td></td>
<td>3. Kiwi (1 3/2 oz)</td>
</tr>
<tr>
<td></td>
<td>4. Kiwi (1 3/2 oz)</td>
</tr>
<tr>
<td></td>
<td>5. Apple juice/cider (1/2 cup)</td>
</tr>
<tr>
<td></td>
<td>6. Apple juice/cider (1/2 cup)</td>
</tr>
</tbody>
</table>

One fruit selection equals: 15 grams carbohydrates, and 60 calories.

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple, unpeeled, small</td>
<td>1/4 oz</td>
</tr>
<tr>
<td>Apple sauce, unsweetened</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Apricots, dried</td>
<td>4 rings</td>
</tr>
<tr>
<td>Apricots, fresh</td>
<td>1 whole (5 1/2 oz)</td>
</tr>
<tr>
<td>Apricots, canned</td>
<td>8 halves</td>
</tr>
<tr>
<td>Bananas, small</td>
<td>1 (4 oz)</td>
</tr>
<tr>
<td>Blueberries</td>
<td>3/4 cup</td>
</tr>
<tr>
<td>Blueberries</td>
<td>3/4 cup</td>
</tr>
<tr>
<td>Cantaloupe, small</td>
<td>1 3 melon (11 oz) or 1 cup cubes</td>
</tr>
<tr>
<td>Cherries, sweet, fresh</td>
<td>12 (2 oz)</td>
</tr>
<tr>
<td>Cherries, sweet, canned</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Dates</td>
<td>3</td>
</tr>
</tbody>
</table>
# Starch Selections

## NWCA Wrestler Nutrition Plan

**Wrestler Name:** Pat Tocci

**Step 11:** Select 16 Starch Exchanges from the table below:

<table>
<thead>
<tr>
<th>Items selected</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Crackers, round butter type</td>
<td>6</td>
</tr>
<tr>
<td>2. Bran cereals (1/2 cup)</td>
<td></td>
</tr>
<tr>
<td>3. Grape-Nuts (1/4 cup)</td>
<td></td>
</tr>
<tr>
<td>4. Grape-Nuts (1/4 cup)</td>
<td></td>
</tr>
<tr>
<td>5. Pretzels</td>
<td>3/4 oz</td>
</tr>
<tr>
<td>6. Pretzels</td>
<td>3/4 oz</td>
</tr>
<tr>
<td>7. Pretzels</td>
<td>3/4 oz</td>
</tr>
<tr>
<td>8. Pita, 6 in across (1/2)</td>
<td></td>
</tr>
<tr>
<td>9. Bagel (1/2 (1 oz))</td>
<td></td>
</tr>
<tr>
<td>10. Bagel (1/2 (1 oz))</td>
<td></td>
</tr>
<tr>
<td>11. Rice, white or brown (1/3 cup)</td>
<td></td>
</tr>
<tr>
<td>12. Cereals (1/2 cup)</td>
<td></td>
</tr>
<tr>
<td>13. Pretzels</td>
<td>3/4 oz</td>
</tr>
<tr>
<td>14. Graham crackers, 21/2 in. square (3)</td>
<td></td>
</tr>
<tr>
<td>15. Shredded Wheat (1/2 cup)</td>
<td></td>
</tr>
<tr>
<td>16. Pretzels</td>
<td>3/4 oz</td>
</tr>
</tbody>
</table>

One starch selection equals: 15 grams carbohydrates, 3 grams protein, 0 grams fat, and 90 calories.
Additional Selections

NWCA Wrestler Nutrition Plan

Wrestler Name: Pat Tocci

Step 12: Select 450 Extra Calories from any category: (clear selections)

Calories remaining: 15

Selection Categories:
- Nonfat Dairy: 270 selected.
- Lean Proteins: 140 selected.
- Vegetables: 25 selected.
- Fruits: 0 selected.
- Starches: 0 selected.

Generate Diet Report  Cancel

© 2003 National Wrestling Coaches Association
## Individual Meal Plan

**NWCA Wrestler Meal Plan**

- **Meal Plan for:** Pat Tocci
- **School:** Michigan Test School
- **Alpha Weight:** 63.9572 kg (141.0 lbs)
- **Max Weight Loss/Week:** 2.11 lbs
- **Total Energy Expenditure:** 4112.78 kg

**Recommended Diet Plan:** 3100 Calories/Day

### FOOD EXCHANGE SELECTIONS

<table>
<thead>
<tr>
<th>Nonfat Dairy:</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fat-free milk</td>
<td>1 cup</td>
</tr>
<tr>
<td>2. Fat-free milk</td>
<td>1 cup</td>
</tr>
<tr>
<td>3. Plain nonfat yogurt</td>
<td>3/4 cup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lean Protein:</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 4% milk fat cottage cheese</td>
<td>1/4 cup</td>
</tr>
<tr>
<td>2. 4% milk fat cottage cheese</td>
<td>1/4 cup</td>
</tr>
<tr>
<td>3. Chicken (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>4. Chicken (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>5. Chicken (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>6. Chicken (white meat, no skin)</td>
<td>1 oz</td>
</tr>
<tr>
<td>7. Grated parmesan</td>
<td>2 Tbsp.</td>
</tr>
<tr>
<td>8. Grated parmesan</td>
<td>2 Tbsp.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetables:</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Artichoke</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>2. Cauliflower</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>3. Mushrooms</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>4. Peppers (all varieties)</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>5. Mushrooms</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>6. Tomato</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>7. Tomato</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
<tr>
<td>8. Tomato sauce*</td>
<td>1/2 cup cooked, 1 cup raw</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruits:</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apple, unpeeled, small</td>
<td>1 (4 oz)</td>
</tr>
<tr>
<td>2. Apple, unpeeled, small</td>
<td>1 (4 oz)</td>
</tr>
<tr>
<td>3. Kiwi</td>
<td>1 (3 1/2 oz)</td>
</tr>
<tr>
<td>4. Kiwi</td>
<td>1 (3 1/2 oz)</td>
</tr>
<tr>
<td>5. Apple juice/cider</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>6. Apple juice/cider</td>
<td>1/2 cup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Starches:</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Crackers, round butler type</td>
<td>6</td>
</tr>
<tr>
<td>2. Bran cereals</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>3. Grape-Nuts</td>
<td>1/4 cup</td>
</tr>
<tr>
<td>4. Grape-Nuts</td>
<td>1/4 cup</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sample Menus

NWCA Sample Menu Plans

Wrestler Name: Pat Tocci

Click on the links below to view a sample menu plan for a specific caloric intake level:

Sample Menu Plans:
• 1000 Calorie Menu
• 1500 Calorie Menu
• 2000 Calorie Menu
• 2500 Calorie Menu

(Return to individual menu plan)

© 2003 National Wrestling Coaches Association
# Daily Assessment

## Sample Menu for Wrestlers: 2500 Calories

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, nonfat/skim</td>
<td>1 cup</td>
</tr>
<tr>
<td>Cereal, Total, raisin bran (fortified)</td>
<td>2 cups</td>
</tr>
<tr>
<td>Strawberries, fresh, sliced</td>
<td>1.25 cups</td>
</tr>
<tr>
<td>Orange juice</td>
<td>0.5 cup</td>
</tr>
<tr>
<td>Toast, whole wheat</td>
<td>1 piece</td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>Milk, nonfat/skim</td>
<td>1 cup</td>
</tr>
<tr>
<td>Bread, whole wheat</td>
<td>2 slices</td>
</tr>
<tr>
<td>Lunchmeat, turkey breast</td>
<td>3 ounces</td>
</tr>
<tr>
<td>Mayonnaise</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>Lettuce, romaine, chopped</td>
<td>1.5 cups</td>
</tr>
<tr>
<td>Tomato, raw</td>
<td>1 medium</td>
</tr>
<tr>
<td>Carrots, raw</td>
<td>1 medium</td>
</tr>
<tr>
<td>Salad dressing, Italian</td>
<td>2 tablespoon</td>
</tr>
<tr>
<td>Pretzels, hard, salted</td>
<td>1.5 ounces</td>
</tr>
<tr>
<td>Orange, California naval</td>
<td>1 medium</td>
</tr>
<tr>
<td>Supper</td>
<td></td>
</tr>
<tr>
<td>Milk, nonfat/skim</td>
<td>1 cup</td>
</tr>
<tr>
<td>Pasta, spiral noodles, cooked</td>
<td>2 cups</td>
</tr>
<tr>
<td>Bread, garlic</td>
<td>0.5 piece</td>
</tr>
<tr>
<td>Broccoli, chopped, cooked, without salt</td>
<td>1.5 cups</td>
</tr>
<tr>
<td>Cauliflower, chopped, cooked</td>
<td>1 cup</td>
</tr>
<tr>
<td>Chicken, broiler/tyer, breast, no skin, roasted</td>
<td>4 ounces</td>
</tr>
<tr>
<td>Oil, canola</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>Apple, raw</td>
<td>1 small</td>
</tr>
</tbody>
</table>

## Nutrient Composition: Macronutrients, % of Total Calories

- Protein: 21%
- Carbohydrate: 59%
- Fat: 19%

## Nutrient Composition: Micronutrients, % of Recommended (DRI)

(Notes: values include nutrients from fortified breakfast cereal, recommended during energy restriction)

- Zinc
- Iron
- Calcium
- Folate
- Vitamin E
- Vitamin C
- Vitamin B12
- Vitamin D3
- Riboflavin
- Thiamin
- Vitamin A

(Return to sample menu)
It has been recommend that assessment not be conducted by the wrestling coach.
Nutrition Education Program
Training the Coach

- NWCA Basic Concepts of Weight Management and Nutritional Guidelines.
- Seminar to educate the coaches on healthy eating habits, safe weight loss techniques and dangers of improper weight loss.
Educating the Athlete and Parent

- Video
- Individual program presentations.
- NWCA Web based Nutrition/Weight Management program
Healthy Training

- Emphasis should be placed on training - not weight loss.
- Emphasis on lifelong healthy living.
- Consequences of dehydration.
EAT, Wrestle and WIN: A Nutritional Guide for Wrestlers

- USA Wrestling
- NCEP
- Silver Level Curriculum
- Power Point Presentation
- Book
Responsibilities for the measurement process

Individual Program
Regional Program
State Program
# Materials

<table>
<thead>
<tr>
<th>Site</th>
<th>Data Forms (Labels)</th>
<th>Collection Cups</th>
<th>Additional Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Scale</td>
<td>Body Composition Tool</td>
<td>On Line Computer</td>
<td>Refractometer Regent Strips</td>
</tr>
</tbody>
</table>

- Materials needed include:
  - Site
  - Data Forms (Labels)
  - Collection Cups
  - Additional Staff

- Equipment:
  - Certified Scale
  - Body Composition Tool
  - On Line Computer
  - Refractometer Regent Strips
Implementation Models

- Regional Testing Sites
- Regional Assessor Directory
- “In House” Assessors
Theory Into Practice

The New Jersey Model

Regional Testing Sites

Indianapolis 2005
NJ Model 2004

August Memo to all NJSIAA Member school announcing the program

• Hydration info from the NJSIAA Medical Advisory Committee
• Legal opinion on weight management and testing for hydration
• Q & A on weight management
• Information to assist schools in certifying scales
• 2004/2005 forms
• Q & A on weekly weight loss calculations
• Testing Dates
New Jersey

- The state was divided into 8 regions
- 3 Sunday testing dates
- 1 make up date
Testing Dates

October 31, 2004
Regions 1 – 4 - 8

November 7, 2004
Regions 2 – 5 - 7

November 14, 2004
Regions 3 - 6

November 21, 2004
Makeup
Regional Staffing for New Jersey Wrestling Weight Management Program

Staffing

- Site Manager
  - Welcome
  - Staging
  - Orientation
- Physician
- Height 3
- Specific Gravity 3
- Tanita Scales 3
- Data Entry 3
- Bathroom monitors 3
Advantages of Regional Site

- Standardizes the program (less variability with assessments because fewer assessors are involved).
- Minimizes equipment costs because individual schools don’t have to purchase equipment.
- Efficient way to train apprentice assessors
- Coaches will perceive it as a level playing field.
- Accommodates state associations that do not have certified athletic trainers in each school.
Disadvantages of Regional Site

- Cost of transporting team to regional site.
- Logistics of reassessing a wrestler who fails the hydration test.
- Coordinating wrestlers, coaches, and assessors schedule with facility availability.
Theory Into Practice

The Michigan Model
Regional Assessor Directory

Indianapolis 2005
Regional Assessor Directory Logistics

- State assigns master assessors to each district/section.
- Each master assessor trains regional apprentice assessors each fall.
- Master assessor compiles a regional directory of certified assessors in his/her region.
- Coach contacts an assessor from the directory to schedule appointment for assessor to travel to the school.
Advantages of Regional Assessor

- Coaches perception of level playing field if assessors can’t assess their own teams.
- Individual schools do not have to purchase their own equipment (the assessors bring their own).
- Accommodates state associations that have a shortage of certified athletic trainers in each school.
Disadvantages of Regional Assessor

- Logistics of reassessing a wrestler that fails the hydration test.
- Logistics of training and retraining a large pool of assessors.
- Variability of assessments may increase due to more assessors being involved.
- Logistics of maintaining an updated assessor directory.
Theory Into Practice

The Indiana Model

“In House” Assessors

Indianapolis 2005
"In House" Assessor Logistics

- State requires each school district to train two people to perform assessments.

- Assessors conduct assessments on wrestlers whenever convenient for the coach/wrestler.
Advantages of “In House” Assessors

- Each school has the flexibility to conduct assessments when convenient (some wrestlers play Fall sports, may be injured during initial assessment period, etc.)

- Much easier to reassess a wrestler that fails the hydration test.
Disadvantages of “In House” Assessors

- Is difficult to implement in states that do not have ample number of certified athletic trainers in each school.
- Each school must purchase its own equipment.
- Logistics of training and assuring proficiencies in a large number of athletic trainers.
Current Research

- NCAA weight regain studies
- Average body fat of elite wrestlers
- Maintenance of lean body mass
Panel Discussion

Thank You

Indianapolis 2005