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Making Weight

Wrestlers want to cut weight. Athletic trainers want to teach healthy eating habits. This author describes how to do both.

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Power. Strength. Stamina. Skill. Discipline. Toughness. These are all qualities that come to mind when thinking of athletes who compete in the sport of wrestling.

Dehydration. Fasting. Rapid weight loss. Unfortunately, terms like these are also linked with the sport. While rules surrounding weight management have changed at both the high school and college levels over the past decade, making weight is still a critical part of wrestling, and this makes teaching your athletes how to do so in a healthy manner important.

The good news is that recent research offers new insights into how wrestlers can make weight safely and maintain the best power-to-weight ratio throughout the season. There are some very concrete steps coaches and athletic trainers can implement that lead to both good nutrition and success on the mat.

The bad news is that sports nutrition for wrestlers continues to be a misunderstood subject. Because the sport is so steeped in tradition, it takes delicate yet consistent work with coaches and athletes to educate and assist them in utilizing healthful strategies to make weight.

Over the last five years, I have had the opportunity to assist junior high, high school, and collegiate wrestlers with their nutrition needs. I have worked very closely with the Clovis (Calif.) High School wrestling program, which has won a state-record nine team titles, most recently in 2011, and has finished in the top five in the state each of the past five years. Providing our athletes with nutritional strategies on making weight safely at this level has given them a distinct advantage on the mat, and set them up for healthy eating throughout their future careers.

LAW OF THE LAND

In recent years, both the high school and collegiate wrestling governing bodies have made strong efforts to eliminate unsafe practices around making weight. Following the deaths of three collegiate wrestlers in 1997 who were attempting to cut weight quickly, the NCAA implemented a weight management program for the 1998-99 season. The NFHS put its current rules in place before the 2006-07 season.

Under NCAA rules, weigh-ins are held one hour before the start of a dual match. Tournament rules require that athletes weigh in two hours before the start of the first match on the opening day of a tournament, and one hour beforehand on subsequent days. These rules were put in place to reduce the practice of drastic weight cutting that could be achieved with a longer

window between weigh-ins and competition. The NCAA also banned artificial weight loss practices such as the use of laxatives, diuretics, emetics, vapor impermeable suits, steam rooms, and hot practice rooms.

Another new regulation is determining a minimum wrestling weight (MWW) for every competitor before the season starts, which is a multi-step process and requires a certified assessor. The athlete first submits a urine sample that is tested for specific gravity using a refractometer to ensure he or she has an acceptable level of hydration. Because dehydration causes urine to concentrate, a specific gravity of 1.020 or less must be achieved to indicate a hydrated state. If the athlete does not meet this standard, the test cannot be repeated for at least 24 hours.

Once wrestlers pass the specific gravity test, they are weighed on a certified scale. Next, their percent body fat is determined either through skin fold measurements, the use of hydrostatic weighing, or air displacement plethysmography (using a BodPod). These measurements are then entered into the Optimal Performance Calculator (OPC), which uses an equation based on their percentage of body fat, fat weight, and fat-free weight to calculate the athlete's MWW.

The minimum body fat percentage allowed is five percent for males and 12 percent for females. In addition, athletes may not lose more than 1.5 percent of their bodyweight per week. This is to prevent excessive weight loss in a short amount of time, which can compromise the health of the wrestler.

NFHS weight management rules are similar to the NCAA's. Establishing a MWW for high school wrestlers follows the same steps required for collegiate wrestlers, though the NFHS uses slightly different benchmarks. The specific gravity of urine must be less than or equal to 1.025 and male wrestlers may not go under seven percent body fat. State athletic associations may specify which tool to use to measure body fat. For example, California requires a certified bioelectrical impedance scale while Illinois uses the Lange caliper. Lastly, weigh-ins occur two hours prior to all competitions.

In working with wrestlers, it is important to understand the rules and how a wrestler determines his or her competition weight. The new regulations are aimed at making sure wrestlers do not attempt to drop significant amounts of weight in short periods of time. But wrestlers still need to hit specific weights and may wish to use weight loss measures to achieve this. Nutritional advice must work within that premise and culture.

LATEST RESEARCH

The purpose of establishing weight classes in wrestling is to match up athletes of similar size. But within each class, there are still variations in weight. The idea has always been that wrestlers gain an advantage by being at the top end of their weight class--if an athlete is competing in the 152-pound class, he wants to weigh 152 and not 146 (one pound over the 145-pound class).

How does the latest research suggest wrestlers make weight safely? Certainly, it comes as no surprise that severely restricting fluids and food over the course of a season, especially as competitions near, can lead to electrolyte imbalances, impaired thermoregulation, glycogen depletion, impaired immune function, fatigue, and loss of lean tissue. Thus it seems obvious that we should advise wrestlers against such tactics.

However, in reality, wrestlers still engage in weight cycling to make weight for competitions. While a study from 2006 shows that since the implementation of the NCAA weight management rules, wrestlers are engaging in less drastic weight cutting strategies, another study indicates that some weight cycling continues. A small study published in 2010 tracked the body composition of collegiate wrestlers over a season and showed that on average, they cycled their weight 3.4 kg (4.7 percent of their bodyweight) per week by reducing calories and restricting fluids starting two days before competition. To achieve competition weight, these wrestlers would approach a five percent level of dehydration, although there was no evidence of loss of fat-free mass as a result of weight cycling.

Anecdotal evidence is also strong. Wrestlers continue to restrict fluids or exercise heavily to yield more sweat loss in the 24 to 48 hours prior to weigh-in.

Our instincts may tempt us to preach against the practice of weight cycling. But after examining more research, I have found a good compromise.

A study looking at rowers who reduced their body mass by approximately four percent over 24 hours and then aggressively refueled and hydrated during a two-hour recovery period between weigh-in and competition showed a small, non-significant decrease in performance. In another similar study, the repetition of acute weight-making to simulate a multi-day regatta also resulted in minor decreases in performance when followed by rehydration and refueling.

This suggests that acute dehydration in the 24 hours prior to competition followed by aggressive rehydration and refueling is a safer method than larger weight cuts with more severe dehydration and food restriction over a longer period of time. This practice may allow a wrestler to train at a higher weight, while wrestling in a class that optimizes his or her power-to-weight ratio. Doing so would prevent severe or long term energy restrictions that result in lean tissue loss and focus more on water shifts that can be replaced with proper refueling after weigh-in.

Clint Wattenberg, MS, RD, CSCS, who works with the Cornell University wrestling program in nutrition and strength and conditioning, agrees with this approach. "The big misconception surrounding wrestling, especially among practitioners, is that all weight loss is the same," he says. "Quickly shifting fluids by restricting intake and increasing sweat loss is the safest and most effective way to achieve weight loss. However, dehydrating too early, outside of 24 to 36 hours prior to the weigh-in, is a common weight loss tactic that compromises both health and performance."

BEFORE THE SEASON

While making weight may be a wrestler's most pressing concern as it relates to nutrition, they should also be guided on implementing a more comprehensive weight management plan. This includes an off-season strategy for any major weight shifts and a preseason schedule for perfecting body composition.

The off-season is the best time for making any large-scale changes to an athlete's weight. Every team has wrestlers who want to move up or down a weight class, but waiting until preseason practices to do so can be too late.

It's important to help coaches be realistic when determining the best weight class for an athlete in the upcoming year. The earlier they make this decision and the more time we have to

implement gradual weight changes, the better. At Clovis, if an athlete wants to move down a weight class, we evaluate his current weight and body composition (lean vs. fat mass in pounds) and how much time we have until the season begins. We then calculate what his lowest weight would be while maintaining seven percent body fat (for high school) to determine if that weight class is achievable. Essentially, we follow the guidelines of the NFHS wrestling rules.

To help wrestlers lose weight slowly, we pair a guided moderate energy restriction of approximately 250 to 500 calories per day with their usual wrestling workouts and additional cardio. Their goal should be to lose one to two pounds of body fat per week. This slow rate of weight reduction will minimize the loss of muscle protein and maintain optimal hydration for workouts.

We emphasize to our athletes that a quality diet is key during the off-season to ensure that they are receiving adequate vitamins and minerals, as well as an optimal distribution of macronutrients. I keep my athletes' protein at a minimum of 1.4 to 1.7 grams per kilogram of bodyweight to help maintain lean tissue while losing fat mass. It can be beneficial to track your athletes' weights daily and weekly to provide feedback on their progress.

For those wrestlers who want to increase muscle mass so that they can move to a higher weight class, the key is a slight increase in high-quality calories over several months paired with a strength and conditioning program. I suggest an increase of approximately 500 calories per day above what they need to fuel their workouts. It often works best if athletes can eat small, frequent meals throughout the day. This allows for nutrients to be available to the muscles constantly.

To determine the calorie needs for wrestlers in an off-season training program, I start with a base of approximately 41 calories per kilogram of bodyweight. It is important to determine an athlete's nutrition needs to first meet expenditure, then we adjust nutrition to help them gain or lose weight. For example, for a 140-pound wrestler exercising three to five days per week, here's the calculation:

$140 \text{ pounds} / 2.2 = 63.6 \text{ kilograms}$. $63.6 \text{ kilograms} \times 41 \text{ calories per kilogram} = 2,610 \text{ calories per day to maintain weight} + 500 \text{ calories per day for weight gain} = 3,110 \text{ calories per day}$.

When an athlete wants to gain or lose weight in the off-season, their food choices before and after workouts are critical. Athletes looking to lose weight should not reduce calories in their pre-workout fueling or their post-workout recovery fueling. And athletes hoping to gain weight should increase their overall intake at all meals and snacks.

A pre-workout meal rich in carbohydrates like a bagel with peanut butter, banana, and low-fat milk will provide carbohydrates for the muscles to utilize during the workout, as well as amino acids that will be available for post-workout refueling. Following a workout, encourage your athletes to consume both carbohydrates and protein within one hour for optimal recovery. Research suggests aiming for 1 to 1.5 grams of carbohydrates per kilogram of bodyweight plus 0.1 to 0.2 grams of protein per kilogram of bodyweight. A good example of a post-workout snack would be eight to 16 ounces of low-fat chocolate milk paired with a turkey sandwich and a piece of fruit.

Coming into the preseason, our wrestlers further decrease or increase weight healthfully to get closer to their competition weight. But it is best that any major weight gain or loss happens in the off-season as the preseason is the time to focus on wrestling skills. Athletes should be within five percent of their competition weight before the preseason begins.

Another useful off-season or preseason tactic, according to Jennifer Gibson, MS, RD, Sports Dietitian for the U.S. Olympic Committee, is for athletes to learn their sweat rates. Knowing how much fluid they lose in a workout allows athletes to better know how to rehydrate after practice. This information can also be helpful to know when recovering from cutting weight during the season.

To calculate sweat rate, an athlete should subtract their post-workout weight (in pounds) from their pre-workout weight, then multiply the pounds lost by 16 (16 ounces equals one pound). Add that number to the ounces of fluid consumed during practice to determine the total amount of fluids lost, or sweat rate.

For example, if a wrestler weighed 140 pounds pre-workout, drank 12 ounces of fluid during a two-hour workout, and weighed 138 pounds after the workout, he would have lost 44 fluid ounces. His sweat rate would equal 22 fluid ounces per hour.

To replenish the fluid lost in a workout, wrestlers should aim to consume 150 percent of the weight lost by dehydration, or 16 to 24 fluid ounces per pound lost. To monitor hydration status, athletes should check their urine. It should be a pale yellow, which indicates adequate hydration.

COMPETITION TIME

The last piece of the nutrition puzzle is implementing best practices leading up to weigh-in on match day. We recommend our wrestlers be within two to three percent of their target weight the day before weigh-ins. However, this plan varies for each wrestler based on how it impacts their performance.

To achieve the final two to three percent weight loss before weigh-ins, we offer the following strategies to our wrestlers:

- 48 to 72 hours before weigh-ins, reduce fiber and residue in the diet. High residue foods, including fiber, remain in the intestinal tract, are not digested, and contribute to stool. This strategy should only be used around competition, as it limits the nutritional quality of the diet. It can result in approximately a one to two pound weight loss due to reduction of gastrointestinal contents.

Examples of low-fiber, low-residue foods include cooked carrots, spinach, and green beans, melons like cantaloupe and watermelon, vegetable juice, and plain enriched grains like white rice, rice cakes, cream of wheat, enriched bagels, Cheerios, and waffles.

- Moderately reduce food intake two days before weigh-ins and pair this with reduced energy expenditure to minimize glycogen depletion.
- Up to 24 hours before weigh-ins, keep fluid intake high. Sipping on nutrition shakes can provide carbohydrates, electrolytes, and energy needed for competition and what the body does not need can be expelled in urine during the 24 hours before the event.

- 24 hours before weigh-in, restrict fluids and promote sweat loss through low intensity exercise to induce dehydration of up to two percent. If possible, do this the night before weigh-ins to limit the dehydration time period. Use a heart-rate monitor during exercise to ensure you stay within a safe heart rate zone of approximately 50 to 60 percent max heart rate. (We monitor our athletes during workouts to ensure they are not over-heating.)
- If you are not a salty sweater and/or need to make weight on consecutive days, a mild sodium reduction to 1,500 milligrams per day may be beneficial.

After weigh-in, recovery is paramount to allow the wrestler to refuel and rehydrate prior to competition and should begin immediately. Here is what we advise our athletes:

- Consume fluids that equal 150 percent of the weight lost by dehydration, or 16 to 24 fluid ounces per one pound lost. Aim for six to 12 fluid ounces every 15 minutes. Flavored sports drinks containing carbohydrates and electrolytes can help to stimulate further thirst, while repleting carbohydrates and electrolytes, and cool beverages are typically tolerated better and help cool the athlete.
- Consume easy-to-digest carbohydrate-rich foods and fluids that contain salt, such as pretzels, low-fat salty crackers, sports drinks, and endurance formulas with added salt. Other carbohydrate-rich foods include: bagels, bananas, English muffins, peanut butter and jelly sandwiches, low-fat yogurt, low-fat chocolate milk, low-fat granola, low-fat pudding, and sports replacement bars and beverages.
- Try to eat small, frequent snacks rather than large meals to avoid gastric discomfort. And avoid high fiber and high fat foods, which may delay gastric emptying and prevent nutrients from reaching the bloodstream and being carried quickly to the muscles for expedited recovery. Additionally, high fiber and high fat foods may cause bloating and gas.
- Cool the body using cold towels on the neck, wrists, and/or head and consume cool beverages to help decrease core body temperature.

There is much debate in the wrestling community regarding using Pedialyte as a recovery beverage in place of a carbohydrate-electrolyte beverage to help replace electrolytes lost in sweat. While Pedialyte does have a higher concentration of electrolytes, it has minimal carbohydrates. Therefore, I recommend that wrestlers who use Pedialyte pair it with other carbohydrate-rich snack items. Alternatively, some athletes will consume Pedialyte first, followed by a sports drink and a snack. The main point is to ingest fluids and fuel rich in both carbohydrates and electrolytes.

One very important note is that these strategies may not be appropriate for every wrestler. Try these tactics before in-season competition to establish what works best for each wrestler and how he or she feels in terms of energy level and performance. Work with a registered dietitian to help individualize strategies.

While the above plan is the big focus of our in-season nutrition, we also concentrate on having wrestlers consume a healthy diet at all times. In order to have the energy for competition, an athlete needs to eat a diet rich in whole grains, fruits, and vegetables along with adequate protein and fluids.

Working with wrestlers provides a unique set of challenges and opportunities. By starting at a young age, educating parents, athletes, and coaches on proper fueling strategies can allow each wrestler to meet his or her potential.

The author would like to thank Kristen Gravani, Sports Nutritionist at Florida State University, for assisting with research for this article. To view the full list of references for this article, go to: www.Training-Conditioning.com/references.

Sidebar: **CASE STUDY**

Dylan wrestled at 145 pounds his junior year of high school and then worked in the off-season to increase his muscle mass. At the beginning of preseason during his senior year, Dylan was certified at 165 pounds with 15 percent body fat. His minimum wrestling weight was calculated at 152 pounds, and it would take six weeks (losing 1.5 percent of his bodyweight each week) to reach that weight: $165 \text{ pounds} / 2.2 = 75 \text{ kilograms}$. $75 \text{ kilograms} \times 41 \text{ calories per kilogram} = 3,075 \text{ calories per day} - 500 \text{ calories per day} = 2,575 \text{ calories per day}$ for weight loss. Here was our plan for his weight reduction, following NFHS rules.

Dylan's Certification Weight: 165

Week 1: 162.5

Week 2: 160

Week 3: 157.5

Week 4: 155.1

Week 5: 152.6

Week 6: 151.8

Here is a sample diet for Dylan that provided him with 2,605 calories, including 400 grams of carbohydrates, 66 grams of fat, and 128 grams of protein.

Breakfast: 445 calories

1 1/2 cups cooked oatmeal (240)

3/4 cup blueberries (60)

8 walnut halves (45)

8 ounces skim or one-percent milk (100)

Snack: 310 calories

6 ounces low-fat yogurt (100)

1 large apple (120)

12 almonds, whole (90)

8 to 16 ounces water (0)

Lunch: 440 calories

2 slices whole grain bread (160)

2 ounces sliced deli turkey (70)

1 ounce cheese (90)

2 tablespoons avocado (45)

1 cup raw spinach and tomato slices (for sandwich) (25)

16 baby carrots (50)

16 ounces water (0)

Pre-workout snack: 220 calories

1 orange (60)
34 mini pretzels (1.6 oz) (160)
16 to 20 ounces water (0)

Post-workout snack: 675 calories

1 banana (120)
2 slices whole grain bread (160)
1 tablespoon peanut butter (95)
16 ounces reduced-fat chocolate milk (300)

Dinner: 515 calories

4 ounces grilled chicken breast (180)
1 cup cooked broccoli (50)
1 cup cooked quinoa (240)
1 teaspoon olive oil (45)
16 ounces water (0)

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