Power up protein at breakfast

By Kathleen Zelman, MPH, RD, LD

You’ve heard it before: eat breakfast like a king, lunch like a prince, and dinner like a pauper. Breakfast may indeed be the most important meal of the day. It breaks-the-fast, provides fuel and sets the stage for a healthy nutrient intake. But not all breakfasts are created equal. Starting your day with a meal that includes ample high-quality protein may be the secret to gaining health benefits.

“Adding a protein source at breakfast stabilizes blood sugar and insulin, which leads to metabolic flexibility and the ability to burn fats,” explains protein researcher Donald Layman, PhD, Professor Emeritus at University of Illinois.

Purdue’s Richard Mattes, PhD, RD, agrees: “Protein at breakfast has insulin-sensitizing properties to control swings in blood sugar, and also tends to be most satiating when consumed as part of a solid food system instead of a beverage.”

Further, protein at breakfast can have lasting benefits, according to Heather Leidy, PhD, at the University of Missouri.

“Data from our lab shows that eating a protein-rich breakfast reduces unhealthy evening snacking of high fat and/or high sugar foods and has a greater impact on appetite control, satiety, and controls food cravings throughout the day,” Dr. Leidy says.

Eat quality protein at breakfast

Most foods on the breakfast menu are low in protein and high in refined carbohydrates. Common sources of protein at breakfast are eggs and dairy, which both serve as benchmarks for high biological value protein. But one egg or milk on your cereal may not be enough; both quality and quantity of protein at breakfast is important.

Adequate amounts of high-quality protein yield the right concentrations of the amino acid leucine, which may play an important role in muscle health and weight control.

“Achieving leucine thresholds at individual meals is a trigger for muscle synthesis, which can help protect skeletal muscle during calorie restriction and increase the likelihood of long-term weight loss,” says Layman.

A 2007 study found eating eggs for breakfast helped individuals lose more weight and reduce their waist circumference more than dieters who consumed a bagel breakfast of the same calorie count, without negatively impacting cholesterol levels1.

A 2012 study reported eating eggs for breakfast was associated with greater satiety and reduced calorie consumption at lunch compared to eating the same amount of protein in wheat-based breakfast foods2.

Continued on page 6.
Year after year, diet and exercise goals top the list of New Year’s resolutions. Self-improvement takes center stage, as so many try to reverse the gluttonous month of December. And it’s not surprising. Many people do gain weight late in the year, likely a combination of exposure to sweet and savory holiday treats, as well as parties, shopping, and out-of-town guests, which means more time around food and drink and less time at the gym. Plus, limited daylight hours and cold weather in most of the U.S. limit opportunities for outdoor activity, such as long walks with the dog.

Exactly how much weight people typically gain during the holidays is surprising. Popular magazines and others with a commercial interest lead one to believe that holiday weight gain is substantial, upwards of 10 pounds. While it is likely that some individuals do gain a considerable amount of weight during this time, scientific evidence suggests it’s far less. For example, Cook et al. recently reported average weight gain over the holiday season, defined as the six-week period between Thanksgiving and New Year’s Day, as approximately 1.5 pounds in women and 2 pounds in men. Those already overweight or obese were more likely to gain weight than those of normal weight, but a far cry from 10 pounds.

On paper, it would seem that it is much easier and presumably less daunting to lose 1-2 versus 10 pounds. However, such a small weight gain may ultimately be more pernicious than a 10 pound gain. An increase of only a few pounds may go unnoticed. Or it may fall below the threshold that motivates a person to consciously lose weight. Regardless, research suggests that despite the onslaught of advertising for diet and fitness programs, and in spite of people’s best intentions, the extra 1-2 pounds of holiday weight stick around. In fact, holiday weight gain appears to make the biggest contribution to annual weight gain in the U.S. and may explain, at least in part, increased body mass indices with advancing age. The 1-2 pounds a year of holiday weight gain can surreptitiously push many adults into the category of overweight, obese or morbid obese.
An overview of diabetes meal planning

By Gillian Arathuzik, RD, LDN, CDE

Everywhere you turn there is a new promise of the diet that will finally help control and maybe even cure diabetes. Of course, if the perfect diet had been found, it would be in newspaper headlines and on the evening news, and its discoverer would be a very wealthy person. Alas, we’re not there yet, so what is the best approach today?

**The diabetes diet: A brief history**

The meal planning approach to diabetes has changed many times over the years. Before insulin was discovered, people with diabetes were given very low-calorie, high-fat, low-carbohydrate diets, otherwise known as starvation diets. Diet recommendations then shifted after the discovery of insulin in the 1920s to a slightly higher carbohydrate percentage, but still remained higher in both protein and fat. Then in the 1970s and 80s we in the United States became fat phobic, mistakenly linking all fats to cardiac disease. At that time, the American Diabetes Association lowered the fat calories of the diabetes diet to 30% and increased the carbohydrate calories to 50-55%.

**Carbohydrate**

Carbohydrate is the primary nutrient that turns into glucose in the blood stream after digestion. Carbohydrate foods include grains, milk and yogurt, fruits, starchy vegetables, and desserts. Higher carbohydrate diets can make it difficult for people with diabetes to maintain good glycemic control. People with diabetes need to consume carbohydrate for energy and to prevent low blood glucose, but finding the right balance of carbohydrate is the challenge. Eating too much carbohydrate, especially at one time, puts people with diabetes at risk for high blood glucose. In recent years there has been yet another shift to consuming lower-carbohydrate, higher-protein diets for diabetes. They include the Atkins, South Beach, and Paleo diets.

**Glycemic index**

People need to choose which carbohydrate foods are best for their diabetes meal plan. They’re invariably bombarded with messages to “avoid sugar” or “avoid all white foods,” but the issue of carbohydrate isn’t cut and dry. There is some research to support choosing lower glycemic index (GI) carbohydrate choices for better management of blood glucose. The GI is a method of rating carbohydrate foods according to their effect on post-meal blood glucose levels. Lower GI carbohydrate choices include whole grain pasta, fruits like apples and berries, beans, and non-fat or low-fat dairy products. Not all foods that have a low GI are healthy foods. For example, peanut M&Ms have a low GI, but are high in calories and saturated fat. A person with diabetes should meet with a Registered Dietitian and/or Certified Diabetes Educator to determine the ideal meal plan for balancing carbohydrates and choosing foods based on GI.

**Protein**

Protein is slower to digest than carbohydrate, which therefore helps with satiety and blunting the glycemic response after eating. And protein does not have a direct impact on blood glucose. Many people with type 1 and type 2 diabetes battle weight, as well as diabetes, so the increase in satiety from protein helps curb hunger between meals which, in turn, can reduce caloric intake throughout the day. Also, protein will help preserve lean muscle mass during weight loss, which helps sustain a good metabolic rate that contributes to long-term weight loss maintenance. Protein foods include meats, poultry, fish, eggs, nuts, nut butters, and cheese.

**Fat**

One concern with higher protein diets is that they tend to be high in saturated fat. Saturated fat, as well as trans fats, cause an increase in low-density lipoprotein (LDL) cholesterol and may increase the risk of heart attack or stroke. People with diabetes are already at much higher risk of cardiac disease than people without diabetes. Protein in the diet should be comprised primarily of sources with low-saturated fat, which include eggs, lean meat, skinless poultry, fish, nuts and nut butters, and non-fat or low-fat dairy products.

Eggs are of particular interest because they provide a host of other beneficial nutrients. The egg provides B vitamins, vitamin A, vitamin D, iron, zinc, and polyunsaturated fat. Yet despite all that eggs have to offer, some health care professionals and people with diabetes still believe eggs should be avoided or at least limited due to cholesterol content. In fact, eggs are lower in cholesterol than they used to be. An egg yolk now contains 185 mg cholesterol versus the 215 mg that it contained a decade ago; dietary cholesterol is actually far less likely to raise blood cholesterol than saturated and trans fats; and there is less concern with dietary cholesterol now versus years ago, when it was thought to be the culprit for raising blood cholesterol levels. A study published in the British Journal of Nutrition in 2010 found that people with diabetes who followed a low-calorie, high-protein, high-cholesterol diet saw improvements in glycemic control, and an increase in HDL cholesterol, without an increase in LDL or other cardiovascular risk factors. The cholesterol content of the study group was provided by two eggs per day.

Continued on page 7.
Top 5 lessons for runners
By Jason R. Karp, PhD

As runners start the new year with new goals, it is important to keep in mind what kind of an athlete they wish to be, what they plan to accomplish, and what level of commitment to their training regimen will be required to reach their goals. Here are five lessons for runners in 2014 that may help them along the way:

1. Run for gold by training the “Lactate Threshold”
The lactate threshold (LT) represents the fastest speed runners can sustain aerobically. Training the LT enables runners to run faster before anaerobic metabolism begins to promote fatigue. LT pace is about 10 to 15 seconds per mile slower than 5K race pace (about 80 to 85% max heart rate) for recreational runners and 20 to 25 seconds per mile slower than 5K race pace (about 90% max heart rate) for trained/competitive runners. Subjectively, it feels comfortably hard. Examples of workouts are:

- **LT Run:** 2 to 4 miles (or 15-30 minutes) at LT pace
- **LT Intervals:** 4 x 1 mile (or 5-7 minutes) at LT pace with 1 minute rest
- **LT+ Intervals:** 2 sets of 3 x 1,000 meters (or 3-4 minutes) at 5 to 10 seconds per mile faster than LT pace with 45 seconds rest and two minutes rest between sets

2. To prevent fitness level from waning, ramp up the intensity with VO2max training
VO2max indicates the maximum rate at which muscles consume oxygen. Runners can improve VO2max by increasing their weekly mileage, which increases their muscles’ metabolic machinery to use oxygen. But interval training is the most potent way to increase VO2max. One of the most elegant adaptations to interval training is hypertrophy of the left ventricle of the heart, causing an increase in maximum stroke volume (the volume of blood the heart pumps each beat), maximum cardiac output (the volume of blood the heart pumps each minute), and VO2max.

For VO2max intervals, use work periods of 3 to 5 minutes, running at VO2max pace, which equals 1- to 1½-mile race pace for recreational runners and about 2-mile race pace for trained/competitive runners (95-100% max heart rate). Examples of VO2max workouts include:

- **5 to 6 x 800 meters (about 3 minutes) at VO2max pace with a 1:1 work-to-rest ratio**
- **4 to 5 x 1,000 meters (about 3½-4 minutes) at VO2max pace with a 1:1 work-to-rest ratio**
- **3 to 4 x 1,200 meters (4-5 minutes) at VO2max pace with a 1:1 work-to-rest ratio**

3. To meet physiological needs, run workouts at the correct speeds
One of the biggest mistakes runners make is running workouts at incorrect speeds. If runners run their workouts too fast, they won’t maximize the workout. At the very least, they’ll add unnecessary fatigue to their legs without extra benefit. For example, a person wants to improve VO2max, so they plan to run mile repeats at VO2max pace. If running each mile in 7:00 elicits VO2max (and max heart rate), running each one in 6:30 will certainly also elicit VO2max. But why run each mile in 6:30 when it can be run in 7:00 and still produce the same benefit? Running faster is not always better. The goal of training is to obtain the greatest benefit while incurring the least amount of stress, so run as slow as necessary while still obtaining the desired result.

4. Before picking up the pace, have a solid aerobic base
Aerobic running develops many physiological and biochemical traits needed for good endurance. It increases the number of red blood cells and the amount of hemoglobin contained within them, giving blood vessels a greater oxygen-carrying capability; increases muscle capillary volume, providing more oxygen to the muscles; and increases mitochondrial volume and the number of aerobic enzymes, allowing for a greater use of oxygen. The more runners attend to these qualities of aerobic metabolism, the more they’ll ultimately get from their subsequent interval training.

5. Refuel immediately to maximize recovery
Refueling nutrient-depleted muscles is probably the single most important aspect of recovery. Runners need carbohydrates to restore muscle glycogen and protein to rebuild damaged muscle tissue and synthesize new structures, like mitochondria and enzymes that enhance running performance. Runners should consume 200 to 400 calories of carbohydrates and protein immediately after their run to recover faster. Chocolate milk, which contains both carbohydrates and protein, is a great post workout recovery drink.

Runners who heed these lessons will get the most out of training and racing. They should not only expect to be rewarded with higher levels of fitness and new personal records, they should almost count on it.

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In 1988 the National Cholesterol Education Program (NCEP) of the National Heart, Lung, and Blood Institute (NHLBI) released guidelines for the management of high blood cholesterol in adults (Adult Treatment Panel I). These were subsequently updated in 1993 (ATP II), 2001 (ATP III), and 2004 (ATP III update 2004). In 1998, the NHLBI, in cooperation with the National Institutes of Diabetes and Digestive and Kidney Diseases, released clinical guidelines for the management of overweight and obesity in adults. The approach taken by the NHLBI in the years since those guidelines was to initiate the development, by expert panels from the American College of Cardiology, the American Heart Association (AHA), and The Obesity Society, of systematic reviews and an interdependent set of guidelines for reducing cardiovascular risk and managing overweight and obesity. These long-awaited recommendations were recently released in 4 separate guidance documents for 1) assessment of cardiovascular risk, 2) treatment of high blood cholesterol to reduce atherosclerotic cardiovascular risk in adults, 3) lifestyle management to reduce cardiovascular risk, and 4) management of overweight and obesity in adults1-4.

**Cardiovascular risk assessment and cholesterol treatment**

The new recommendations do not include LDL-cholesterol and non-high-density lipoprotein cholesterol targets for the primary and secondary prevention of atherosclerotic cardiovascular disease (ASCVD), but instead recommend statin therapy for 4 groups of patients for whom LDL-cholesterol lowering has been proven to be most beneficial. These include those with 1) clinical ASCVD, 2) LDL-cholesterol ≥190 mg/dL, 3) type 2 diabetes and aged 40-75 yr with LDL-cholesterol 70-189 mg/dL, and 4) an estimated 10-yr risk of ASCVD ≥7.5% and aged 40-75 yr. Among the most controversial of the recommendations is the calculation of 10-yr risk for a first hard ASCVD event using Pooled Cohort Equations in place of the Framingham score for estimating 10-yr risk of coronary heart disease. The use of statins is emphasized in the guidelines; however, a healthy lifestyle is also promoted as a cornerstone for managing cholesterol levels.

**Lifestyle management**

The Lifestyle Panel evaluated the evidence that particular dietary patterns, nutrient intake, and physical activity could play a role in CVD prevention and treatment via their effects on blood pressure and lipids. Their recommendations indicate that adults who would benefit from lowering LDL-cholesterol should consume a dietary pattern that emphasizes intake of vegetables, fruits, and whole grains; includes low-fat dairy products, poultry, fish, legumes, non-tropical vegetable oils, and nuts; and limits intake of sweets, sugar-sweetened beverages, and red meats. Furthermore the pattern should aim to reduce calories from saturated fat (5-6% of calories) and trans fat. The Dietary Approaches to Stop Hypertension (DASH) dietary pattern, the United States Department of Agriculture (USDA) Food Pattern, and the AHA Diet are specifically suggested5. Similar recommendations are made for lowering blood pressure, with an additional instruction to reduce sodium intake (without the instructions regarding saturated and trans fats). Moderate-to-vigorous intensity aerobic physical activity (3-4 sessions/wk, ~40 min/session) is also advised.

**Summary of 2013 AHA/ACC Guidelines on Lifestyle Management Recommendations for Lowering LDL-C and Blood Pressure**

**Diet**

- Consume a dietary pattern that:
  - Emphasizes intake of vegetables, fruits, and whole grains
  - Includes low-fat dairy products, poultry, fish, legumes, non-tropical vegetable oils, and nuts
  - Limits intake of sweets, sugar-sweetened beverages, and red meats
  - For LDL-cholesterol lowering: reduce % calories from saturated fat (5-6% of calories) and from trans fat
  - For blood pressure lowering: reduce sodium intake to 1500-2400 mg/d, or decrease sodium intake by ≥1000 mg/d

- Adapt the dietary pattern to appropriate calorie requirements, personal and cultural food preferences, and nutrition therapy for other medical conditions
- Achieve this dietary pattern by following plans such as the DASH dietary pattern (and the lower sodium version for lowering blood pressure), USDA Food Pattern, and the AHA Diet

**Physical Activity**

- Engage in moderate-to-vigorous aerobic physical activity, 3-4 sessions/wk, ~40 min/session

**Overweight and obesity management**

**NEWS YOU CAN USE**

**New cardiovascular risk management guidelines**

By Mary R. Dicklin, PhD

Continued on page 7.
Power up protein at breakfast

Continued from page 1.

How much protein at breakfast?

Increasing evidence suggests that more may be better when it comes to protein and health. Optimally, it has been suggested that you need to consume 2.5 g leucine by eating 30 g mixed protein (plant and animal) or 25 g of high-quality protein (animal).

“The effect of leucine only lasts about 3 hours, which is why it is important to eat this amount at every meal to protect muscle mass and promote weight loss,” Layman says.

An ideal breakfast for weight loss contains 25-30 g protein and an equal amount of high fiber, low-sugar carbohydrates. Protein-containing foods such as eggs, lean meat, low fat dairy, beans, and seafood are good choices for breakfast.

A recent study in The American Journal of Clinical Nutrition suggests that a breakfast containing 35 g protein from lean beef and eggs leads to improved appetite control and satisfaction throughout the day.

Protein requirements

Moderately increased protein diets are associated with a lower risk for many chronic diseases such as obesity, type 2 diabetes, metabolic syndrome, heart disease, and osteoporosis. Additionally, higher protein diets can reduce loss of skeletal muscle mass.

The Institute of Medicine recommends 10-35% of daily calories from protein or about 56 g for adult males and 46 g for adult females on the low end. Layman recommends about 90 g/day divided equally over three meals, which is within the Institute of Medicine’s acceptable macronutrient range of 10-35% of calories from protein.

“These recommendations are based on the minimum level needed for nitrogen balance, yet higher levels appear to be optimum for muscle health,” says Layman. He adds: “Muscle health is critically important to quality of life and avoiding chronic diseases.”

Breakfast benefits

Breakfast is a marker of diet quality. “Eating regular breakfast sets the stage for the rest of the day, moderates swings in appetite, improves vigilance and memory tasks,” says Mattes.

Years of studies have shown an association of breakfast with enhanced academic and physical performance, improved concentration, weight control, appetite control, and reduced risk of type 2 diabetes. People who eat breakfast have healthier diets overall with higher intakes of essential nutrients such as calcium, fiber, and protein.

“Skipping breakfast is associated with overeating (particularly later in the day), weight-gain, and obesity,” says Leidy.

In addition, those that skip breakfast consume inadequate amounts of vitamins and minerals and actually consume unhealthier, energy-dense foods including high fat and/or high sugar snacks and beverages.

Eighty percent of the successful losers in the National Weight Control Registry, those who have lost at least 30 pounds and kept it off for a year, eat breakfast daily. The 2010 Dietary Guidelines recommends a nutrient-rich breakfast for weight loss and weight-loss maintenance.

The CARDIA study analysis of 3,598 young adults found that eating breakfast regularly was protective against a spectrum of metabolic conditions, including obesity, hypertension, metabolic syndrome and type 2 diabetes.

A large 16-year study reported in Circulation finds men who skipped breakfast had a higher risk of heart attack or death from heart disease. Skipping breakfast may lead to one or more risk factors, including obesity, high blood pressure, high cholesterol and diabetes, which may lead to heart disease.

According to a 2011 survey by the NPD Group, as many as 1 in 10 of those surveyed—which projects to about 31 million Americans—skip breakfast.

Kathleen Zelman, MPH, RD, LD is Director of Nutrition for WebMD, overseeing diet, nutrition and food information.

Sources:

Richard Mattes, MPH, PhD, RD, Distinguished Professor of Nutrition Science, Purdue University.
Donald K. Layman, PhD, Professor Emeritus, Department of Food Science and Human Nutrition, University of Illinois.
Heather Leidy, PhD, Assistant Professor, Department of Nutrition and Exercise Physiology, University of Missouri.

References

An overview of diabetes meal planning

Continued from page 3.

Pre-diabetes
Not only is it critical to find the right balance between macronutrients for diabetes, it’s also true for pre-diabetes. Incorporating slowly-digesting carbohydrates, proteins, and healthy fats into a diet for pre-diabetes is vital to avoid taxing the pancreas and putting a person at higher risk for developing diabetes. It is important to note there is conflicting research on pre-diabetes as it applies to eggs. One article published in the journal Diabetes Care in 2009 found that high levels of daily egg consumption are associated with an increased risk of type 2 diabetes in men and women. Another study published in Nutricion Hospitalaria in 2013 found that egg consumption was not associated with the development of type 2 diabetes in a Mediterranean cohort. More research in this area is needed.

In conclusion, nutrition research is ongoing and we will continue to look for the ideal diet for both diabetes and pre-diabetes. Using what we know now, people with both pre-diabetes and diabetes should strive to:

- keep carbohydrate portions controlled
- focus on lower glycemic index carbohydrate choices
- consume adequate protein
- choose lower saturated fat protein options
- maintain a caloric intake that doesn’t exceed caloric expenditure for the purpose of weight management

Gillian Arathuzik, RD, LDN, CDE, has been a Nutrition Diabetes Educator since 2004 at the world renowned Joslin Diabetes Center in Boston.

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Cardiovascular risk guidelines

Continued from page 5.

The Obesity Panel recommends measuring height, weight, and waist circumference and calculating body mass index (BMI), at least annually, and upholds the definitions for overweight (BMI ≥25.0-29.9 kg/m²) and obesity (≥30 kg/m²). Lifestyle changes counseling is endorsed for overweight and obese adults with the aim of weight loss resulting in reductions in blood pressure, hyperlipidemia, and hyperglycemia. The suggested dietary strategies for weight loss include 1200-1500 kcal/d (women) or 1500-1800 kcal/d (men), a 500 kcal/d or 750 kcal/d energy deficit, or an evidence-based diet that restricts/emphasizes certain food types to create an energy deficit (e.g., low fat, high protein, Mediterranean). Referral to a nutrition professional for counseling and the use of comprehensive lifestyle programs is also recommended, and guidance for selecting patients for bariatric surgical treatment is provided.

Eggs
Egg consumption is not specifically addressed in these guidelines, nor is cholesterol, the component in eggs which has historically been the cause for their restriction in certain diabetic diets. However, eggs only contain ~1.5 g of saturated fat per egg, the type of fat recommended to be consumed only in moderation. The DASH diet pattern allows whole egg (egg yolk) intake of ≤4/wk, and the AHA Diet allows consumption of 1 egg/day, within the confines of its cholesterol limitation of <300 mg/d. The Lifestyle Panel indicated that the clinical studies they examined lacked a consistent definition of the Mediterranean diet, and the strength of evidence regarding its potential effects on blood pressure and lipids was low. Eggs, considering their protein content (1 egg contains ~6 g protein), would be expected to make an important contribution to the higher protein and Mediterranean diets that are recommended by the Obesity panel as dietary approaches for weight loss in the context of an energy deficit.

Mary Dicklin, PhD, has been involved with clinical lipid research in the Chicago area since 1997 and recently established Night Owl Medical Writing, LLC.

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