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BY SUSAN M KLEINER, PH.D., RD, FACN, CNS, FISSN

SCIENCE IS CLEAR: TO PERFORM WELL, YOU NEED TO GET YOUR FOOD TO WORK FOR YOU. BONUS! MEAL PLAN INCLUDED.



I'VE ALWAYS WANTED to write a book titled *For Athletes Only*, because I believe everyone, at some point in their life, dreams of being an athlete. The sense of ultimate power and control over your body is incredibly aspirational, and if it were easy to achieve, everyone would sign up.

In fact, we all have an inner athlete, but it takes focused fueling and training to release the athlete within. When it comes to the fueling part, especially for women, evidence-based recommendations are sparse. The world of sports nutrition has been notoriously male-centric, and a current published research survey documented that only a little more than one-third of all subjects in sports and exercise medicine research studies are female. This landscape has allowed the diet world, which has marketed to women for more than a century, to sell the message that less is more, often in the guise of sports nutrition.

But there are some real facts on the ground, and scientific data tells us that women have to fuel their training and their bodies to fully achieve their athletic goals. Without the right fuel at the right times, sustainable athletic goals will be left in the dust, and health may be compromised. So let's look to science for the information that will lift us up to become the most that we can be.

TRAIN AND EAT TO BUILD

The most important nutritional factor affecting muscle gain is calories — specifically, calories from carbohydrates. Building muscle requires systematic intense training. Muscle must be challenged and stressed in order to break down, and then grow back stronger and more robust. That level of training, called high-

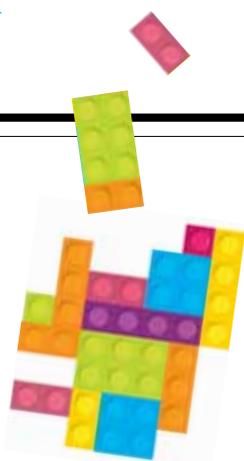
intensity or maximal-resistance training, depends primarily on carbohydrates as the energy to fuel the exercise. Whether female or male, the science is clear that carbohydrate-dense diets give strength-training athletes an edge in their workouts; and the bottom line is, the harder you train, day after day, the more you need to supply your body with carbs in order to build muscle effectively and efficiently.

We benefit from an increase in calorie expenditure not only during resistance exercise, but also for hours after training. Called excess post-exercise oxygen consumption (EPOC), the harder you train, the higher your calorie burn throughout exercise, and the higher and longer the afterburn. If you fuel yourself well enough to lift multiple sets to failure, EPOC can continue for 24 to 36 hours postworkout.

The best time for women to increase food consumption is around exercise: before, during (depending on total energy needs) and after. This strategy takes the greatest advantage of heightened sensitivity of skeletal muscle to absorb and utilize carbohydrates to refuel, recover and grow lean muscle. That's when the calories know where to go and how to be used. It's the magical benefit of high-intensity training matched with fueling your body with the right carbs at the right time: train, build, recover, sculpt, repeat!

Carbs may play the leading role for your training, but proteins and fats play a critical supporting role: tissue recovery, repair and growth. All three macronutrients work in concert with each other to optimize your fueling and maximize your training.

You may have heard that women burn more fat and fewer carbs than men during exercise. While that seems to be true for submaximal exercise, scientific evidence is not so clear during maximal exercise. We may burn carbs just like the guys when we lift, climb hills or train at high-intensity levels. Additionally, exercise intensity



HIGH-PERFORMANCE FATS FROM FISH, AVOCADOS, NUTS, SEEDS, OLIVES, PLANT BUTTERS AND OILS OFFER THE BODY IMPORTANT STRUCTURAL MATERIALS FOR YOUR BRAIN AND CENTRAL NERVOUS SYSTEM. THEY ALSO CREATE JOINT LUBRICATION AND ARE THE BUILDING BLOCKS OF IMPORTANT HORMONES AND ENZYMES.



PROTEIN RICH

**PLAN,
TRAIN, FUEL
MINDFULLY**
Using food
around exercise

BEFORE:

Fuel yourself with starches before and after training. If you are an early morning trainer or it's been hours since you last ate, stick to a light portion of a grain cereal or starchy vegetable. If you can tolerate it, mix with a dairy protein from yogurt or milk, or a plant protein, but this is secondary, especially if the protein upsets your stomach before you train. A total of about 200 calories works nicely.

DURING:

Stay well hydrated with water during a lifting session. If you train in a hot, humid or dry environment, and/or at a high intensity consistently for more than an hour, then you may benefit from carbohydrate supplementation during training. This takes experimentation. If you find you are "running out of gas" during your workout even though you've fueled beforehand, you may need to fuel "in" as well as before and after.

AFTER:

After exercise combine starches with fruits, vegetables, and of course, protein. Smoothies are an excellent choice. Your total will include 20 to 25 grams of protein with carbohydrate replenishment adjusted based on the intensity and duration of your training. The typical carbohydrate to protein ratio for women is 2:1 to 4:1. Two hours later, eat a good meal containing foods rich in protein, carbohydrates and high-performance fats.

“WHEN YOU COMBINE CARBOHYDRATES AND PROTEIN TOGETHER, YOU MAXIMIZE THE FUNCTION OF EACH NUTRIENT, ESPECIALLY AROUND EXERCISE.”



PUT YOUR FOOD TO WORK FOR YOU

When you eat, how much you eat and what combinations of foods you eat together can make all the difference in your results. When you combine carbohydrates and protein together, you maximize the function of each nutrient, especially around exercise. Protein raises your insulin response beyond carbohydrates alone, heightening the body's ability to transport carbohydrates into your muscle cells to fuel and refuel your exercise. Carbohydrates enhance the transport of amino acids to the muscle cell, and together they create an anabolic hormonal environment to increase the synthesis of new muscle protein tissues and decrease the breakdown of protein tissues from a side effect of intense exercise. An additional benefit to the carb-protein combo is the effect on mood — carbohydrate enhances the movement of tryptophan, an amino acid, into the brain to manufacture and raise serotonin levels (the feel-good neurotransmitter). Eating carbohydrate and protein together every time you eat, and especially around exercise, is an important mind-muscle building strategy.

Today scientists are giving a second look at animal fats from dairy and other meats, and whether they might serve an important health role, as well. But until the data is clearer, emphasize the fats from fish and plants in your diet. These will keep your metabolism working at full speed and allow you to feel and perform at your best to build lean tissue. Eat small portions of fats at every meal and snack, except around exercise. Fat slows stomach emptying, and we want to feel as light as possible before training, then allow for your recovery nutrition to move into the body as fast as possible after exercise.

Follow "A Day's Worth of Fuel" on Page 85 and the menu guide to take the counting and restricting out of your nutrition vocabulary, but add in fueling for performance. The beauty of this is that you can mindfully fuel your training with starchy foods and supplements and then feel free to eat non-starchy vegetables, fruits, protein foods, dairy and high-performance fats throughout the rest of the day. You will focus on what you need to eat, not what you can't eat next. You'll get the results you desire: a lean and strong body that is the result of beating the challenge!

PUT YOUR FOOD TO WORK FOR YOU. COMBINE CARB-RICH WHOLE GRAINS, STARCHY VEGETABLES AND FRUITS WITH PROTEIN-RICH FOODS LIKE EGGS, FISH, MEAT AND PLANT PROTEINS. MILK, A NATURAL COMBINATION OF PROTEIN AND CARBOHYDRATES (LACTOSE), IS MOTHER NATURE'S MIND AND BODY FUEL.



can vary during training bouts, and fats clearly play an important fueling role during training. Choosing the right high-performance fats will help you train at peak levels.

Protein needs are met best when we consume moderate amounts throughout the day. Each source of protein has its own unique amino acid profile, so including a variety of protein-rich foods in your diet ensures the most well-balanced nutrient composition. In addition, plant-based protein foods have a wide variety of phytochemicals as part of the structure of the food, while animal-based protein foods are typically high in minerals. We utilize protein most efficiently in amounts of approximately 20 to 25 grams per serving. This is the equivalent of about 4 ounces of animal protein or 1.5 cups of beans. If you include this much protein at every meal and snack, four to five times each day, you will consume very close to the amount of protein your body needs to grow lean muscle.

BEFORE:

If you can't eat before you train, then your "go to" supplement is a patented barley starch extract — a 100 percent sugar-free, complex starch supplement that is proven to empty from the stomach and get to the muscle cell fast. It empties so fast that you have no sense of fullness or bloat, so you can drink it and train right away, although it's preferable to wait 30 to 40 minutes so it's already fueling the cells. You can add protein to this starch extract before you train, but if you do so, you should have it at least 60 minutes beforehand.

DURING:

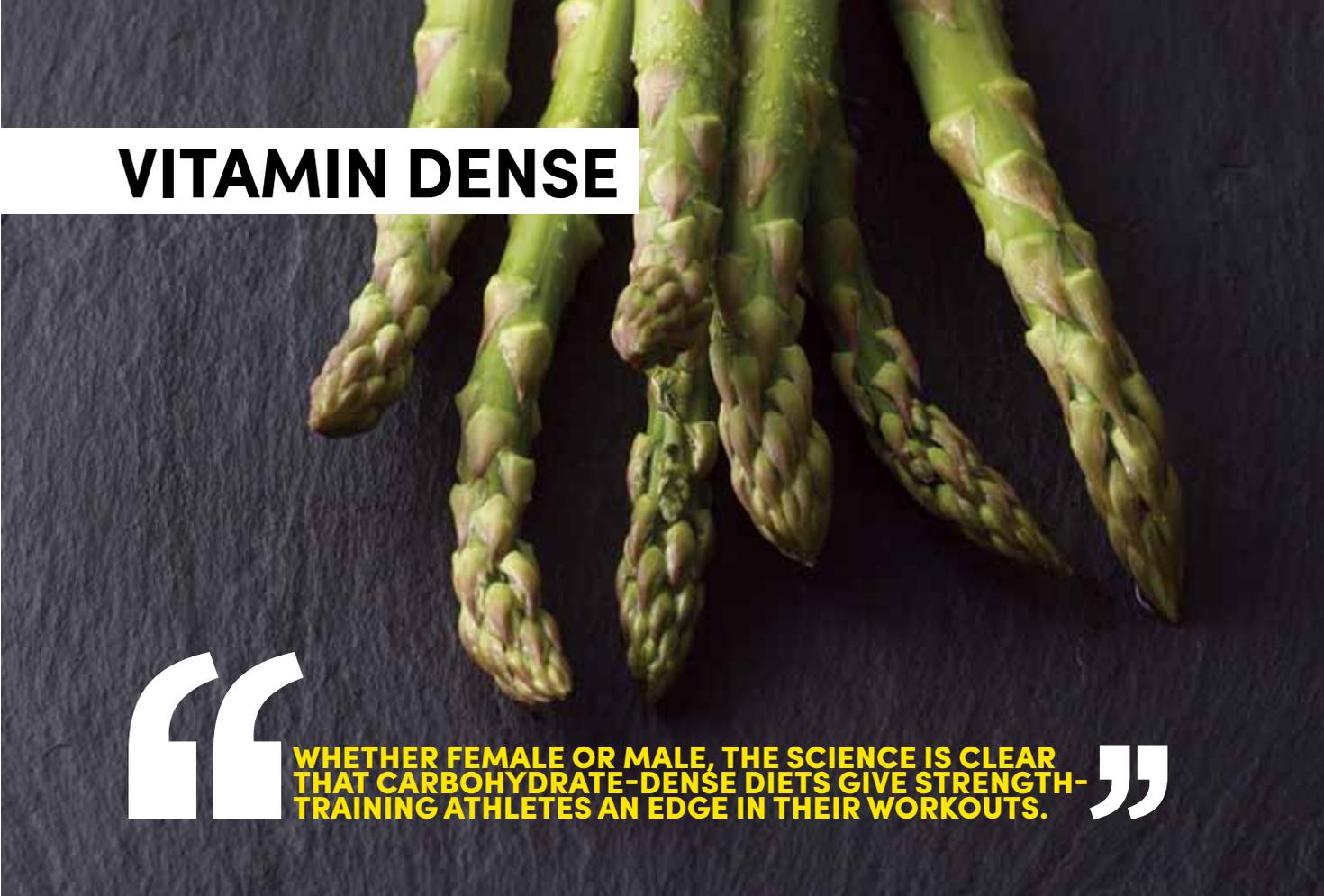
It does not cause stomach distress, so it's easy to fuel and refuel on the fly.

AFTER:

This is a good time to add 20 to 25 grams of protein for full recovery. The same ratios apply as with food above, as well as recommendations for eating a good meal two hours later. If you have a blender, you can make a recovery shake with it combined with fruit and protein.

USING SUPPLEMENTS AROUND EXERCISE
How to maximize your results

VITAMIN DENSE



“WHETHER FEMALE OR MALE, THE SCIENCE IS CLEAR THAT CARBOHYDRATE-DENSE DIETS GIVE STRENGTH-TRAINING ATHLETES AN EDGE IN THEIR WORKOUTS.”

A DAY'S WORTH OF FUEL First fuel and refuel your training with carbs and protein. Increase or decrease your fuel based on your training needs. Plan your breakfast, lunch, snack and dinner, and be mindful of your training time. With enough time in between, you can eat a meal prior to training, or recover with a meal immediately afterward; otherwise, fuel with supplements. Your snack can be placed anywhere during your day. And of course, drink water!

You'll notice that these meals are heavy on plant foods — that's the way to create diets that are dense with vitamins, minerals, phytochemicals, food factors and fibers that contribute to total health and tissue growth. Try to include three to five fish meals per week to keep your brain and central nervous system operating at peak capacity.

(Check out our fish recipes on Page 60.)

Susan Kleiner, Ph.D., is the author of *Power Eating, Fourth Edition (Human Kinetics)*, a member of Oxygen's advisory board and co-CEO of Vynna LLC.

MEAL PLAN

Breakfast
4 ounces protein-rich food, 1 cup cooked or raw vegetables, 1 fruit, 2 fat servings, water, coffee/tea

Snack
(any time that works for you)
1 cup plain nonfat or low fat Greek yogurt, 1 fruit, 2 fat servings

Lunch
4 ounces protein-rich food, 1 cup cooked or 2 cups raw vegetables, 1 starchy vegetable/whole grain serving, 2 fat servings

Dinner
4 ounces protein-rich food, 1 cup cooked or 2 cups raw vegetables, 2 fat servings

MENU OPTION

1 whole egg + 6 egg whites, 1 cup sauteed onions and mushrooms
1 whole fruit or ½ cup juice, 1 teaspoon olive oil + 2 tablespoons/ ⅓ avocado

1 cup yogurt, ¾ cup blueberries, 1 tablespoon natural nut butter

4 ounces roast turkey slices, large mixed green salad, ½ cup yam/cooked grain/1 bread slice, 2 teaspoons olive oil for salad dressing

4 ounces grilled wild salmon, 1 cup cooked asparagus, 1 teaspoon olive oil for grilling/8 large olives