

*Fitting In Fitness*

# Preventing Posture-Related Problems in the Workplace

*A. Lynn Millar, PT, Ph.D., FACSM***Letter from the Editor***Dixie L. Thompson, Ph.D., FACSM*

Welcome to the March 2015 edition of the *ACSM Fit Society® Page*. We all struggle to find ways to avoid being sedentary, build exercise into our daily routine, lower stress and avoid common workplace ailments.

In this issue, you will read advice about making your workday more active and avoiding some of the problems that come from long hours of sitting. You will also learn about ways to build exercise into a busy daily routine. An article focused on stress management can help you consider ways to beat the stress that creeps into our busy lives.

After you have read this information that ACSM experts have prepared for you, please feel free to share it with friends and family. We hope these articles will help you as you pursue a healthy and active life.

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**M**usculoskeletal complaints related to the workplace are common and account for approximately 40 percent of worker complaints according to statistics from the National Institute for Occupational Safety & Health (NIOSH). While some of these may be injuries associated with lifting a heavy object, many are related to overuse or repetitive motions. This includes postures that may place abnormal stresses on specific body areas or parts. The most common nontraumatic problems include neck, back or wrist/hand pain.

Many of us spend many hours working at desks with computers. Often we compensate by rounding our shoulders forward as we work with the keyboard and mouse. In addition, we also move our head forward so it is no longer aligned over our shoulders and trunk. This causes muscles

on the front of the trunk to shorten and those on the back to stretch out. Such postural changes can cause neck and shoulder pain. Some simple ways to reduce this risk are to get up from the desk on a regular basis, do some shoulder rolls and scapular squeezes. In addition, it is important to make sure that your computer and keyboard are positioned properly. Do not have the screen too far or too close (you may need to try different locations to see what the optimal distance is), and position the keyboard on an adaptable holder so that the keyboard is at elbow height. This allows you to rest your arms and not have to reach up, which can put extra stress on the shoulder joint.

Low back pain is another posture-related problem that can occur, especially with lots of sitting or repetitive motion. Good low back support is important. Position your chair so that both of your feet can rest flat on the floor. If you are short, you may want to get a footstool to support your feet. Newer chairs often have lumbar support built into them, but you may need to adjust the amount. Lumbar pillows can be helpful if your chair is older and does not have good lower back support. Standing desks are a newer trend that some are using to decrease sitting and the strain it can cause. There are a wide variety of these, some of which are adjustable. If you opt for a standing desk, you will still need to adjust the height so that your forearms are at approximately 90 degrees and are supported. Sustained standing postures can cause just as much discomfort as sitting.

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You will need to wear supportive, comfortable shoes if you are spending long periods standing. In addition, you may want to have a small footstool that you can prop one foot on, which can help relieve stress through the low back. Alternate which foot is on the stool in order to balance the stresses.

Another common posture-related complaint is wrist/hand pain, with carpal tunnel syndrome being the most prevalent cause of pain. While research shows that the biggest risks for carpal tunnel syndrome are forceful repetition of hand movements, forearm and raised palm supports have been shown to decrease the shoulder and wrist pain.

As many of the postural-related problems are related to sustained postures or repetitive movements, it is important to change positions and move regularly. NIOSH notes that several factors interact to increase the risk of workplace-related injury, including physical fitness and body weight. Incorporate some activities that help strengthen your “core” and supporting muscles. The core includes the back, hips and abdomen. Simple activities such as abdominal crunches, the “bird-dog” (quadruped with diagonal leg-arm raises) and the plank. Even doing partial squats when you are in the office and taking a break will help activate the muscles and improve circulation to the back. Remember, get up and move!



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# Stress Management

Sue Brown, B.Sc.



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**M**ad Magazine takes a satirical look at many issues facing humanity. Its most famous character is Alfred E. Neuman, a freckle-faced boy with a silly gap-toothed grin, whose motto is “What, Me Worry?” Unlike young Alfred, we do worry. We have noise, traffic, deadlines, bills, relationship problems, phobias and fears. In short, we suffer stress.

Stress, as we use the term today, can be defined as the body’s response to any demand for change. It is essential to life and can be good, such as the exhilarating feeling of competition that compels us to perform at our best. Unfortunately, we experience more distress from being deluged with daily hassles or faced with demands that we can’t cope with because we don’t have the resources to do so. Constant exposure to distress without any relief leads to physical symptoms throughout the body!

- increased respiratory symptoms of asthma and bronchitis
- inhibited immune system increasing susceptibility to illness
- suspended tissue repair leading to osteoporosis

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- cessation of menstruation in women, impotency in men
- insomnia, anxiety and depression

The physiological responses are predictable, but stress sensitivity is subjective and different for each individual. An adverse response to stress will depend on what a person perceives as harmful. Once affected, however, heart rate, breathing rate, muscle tension and blood pressure all increase. The adrenal glands secrete stress hormones which inhibit digestion, tissue repair and immune responses. Stress management is crucial to optimal health and fitness.

One good way to expose your stressors is to keep a stress diary. Log each event that you find stressful, when and where it happened, how you reacted and how you felt—before and after. This effort will prompt questions that can be used in finding ways to deal with stress. Was it your reaction to a situation rather than the situation itself that caused the distress? If so, how can you alter your perceptions? If not, can you minimize this type of occurrence in your life? Stop your internal dialogue, breathe deeply, reappraise the situation and see if you can choose a more rational response—or try to avoid the stressor altogether.

With stress rising from both real and imagined sources, there are management techniques that are both physical and psychological. Some examples are mindful breathing, progressive relaxation, self-hypnosis, refuting irrational ideas, assertiveness training, time management and coping skills. Different symptoms respond to different techniques and a combination of methods is often best. For example, if you find you are generally anxious, you might try breath counting, progressive relaxation and refuting irrational ideas. If you are in a stressful work environment, or you juggle many responsibilities like work and child care, appropriate systems might be deep breathing, time management and coping skills

No discussion of stress management would be complete without acknowledging the importance of exercise and diet. A fitter body is better equipped to face life's endurance race, and exercise can:

- improve your mood by releasing endorphins
- clear your mind through alpha wave activity
- decrease muscle tension
- encourage blood flow which increases nourishment to the body's tissues
- increase intake of oxygen
- strengthen the heart
- remove waste products
- produce a more restful sleep

Coupling exercise with a sensible diet will support your body's healthy functions. So, there is an outlet for today's stress-filled environment, and each of us is capable of choosing the best method to manage our individual stressors. Address your stress perceptions one at a time, be patient with yourself and, ultimately, be healthy and happy.

# The PIECES® of Workplace Fitness – Moving Beyond Diet & Exercise

Mary Ellen Rose, Ph.D.



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**A**re you doing everything you can to improve your level of workplace fitness? Did you take advantage of the options provided through your company's wellness program last year? For some people, the idea of workplace fitness can seem a bit overwhelming or intimidating. One way to simplify that challenge is to think about your health by the PIECES®. This health model builds upon the idea that workplace fitness is impacted by the Physical, Intellectual, Emotional, Community, Environmental and Spiritual aspects of life that have an influence upon your health.

These PIECES® categories represent specific activities, behaviors, influencers and triggers that affect personal health. For instance, in the Physical category think about what you do to take care of your body while you're at work. Are you eating healthy foods? Do you drink plenty of water? Is exercise part of your day? All of these elements contribute to the Physical aspect of your workplace fitness, and most of them are within your control to manage.

Workplace fitness involves more than a healthy body. Effective employees have a healthy mind! When your body has the proper exercise, nutrition and rest it needs, your brain will function more effectively. You can improve the Intellectual aspect of your workplace fitness by assessing the challenges that interfere with your ability to perform optimally. Is your job well matched to your capabilities? Are you bored or easily distracted? Does your work lack mental stimulation? How can you improve your Intellectual capacity and functioning?

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When your body feels good and your mind is active, you will find that your Emotional health will benefit as well. Consider the typical emotional triggers that affect your workplace fitness. When you are tired, you may struggle with finding the energy to be enthusiastic about your job. If you are hungry, do you tend to be angry or short tempered? When stressed, are you often ill and ineffective at work? The positive management of Emotional triggers is often dependent upon the status of your Physical and Intellectual health.

If you consider the fitness of your own Physical, Intellectual, and Emotional health throughout your workday, you can establish small goals for managing or improving those controllable elements which may be influencing your overall workplace fitness.

The Community, Environmental and Spiritual categories of the PIECES® model consider the healthy aspects of relationships, work space and the workplace culture. Although many of the elements in these categories are beyond the control of the employee, there are some aspects that an individual can personally manage or improve.

For the Community category, begin by making the most of the relationships you form with the people at your workplace. Focus on contributing positive energy to conversations. Improve your Environmental health by making your workstation comfortable and organized in a way that contributes to good posture and efficiency. Small changes such as better lighting, a scented candle or live plants can have a big impact on workplace fitness. Improve Spiritual health by participating on your company's wellness committee to advance the healthy culture of your company. Think about who you want to be as a person and whether or not you feel valued by your company.

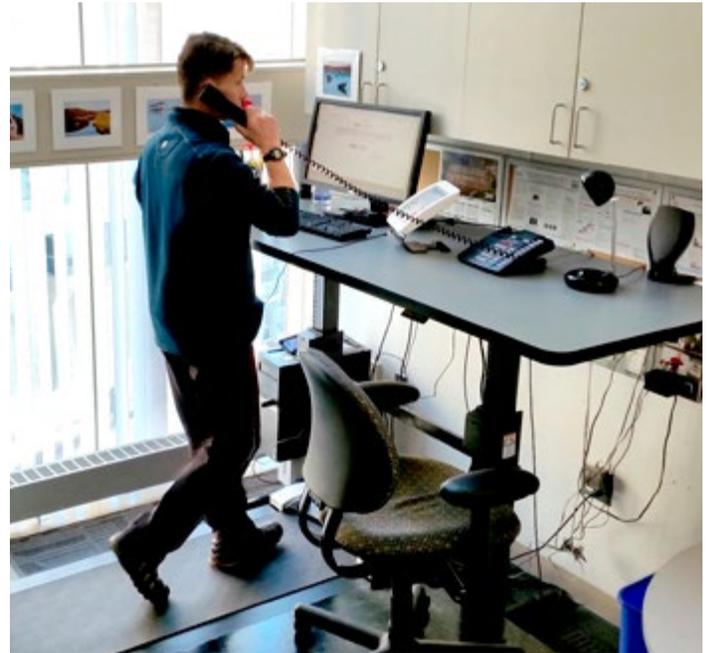
To improve your overall workplace fitness level, be sure to use strategic simplicity to define targeted, controllable goals that are realistically attainable. Finding the resources you need to achieve workplace fitness goals shouldn't require a big investment of time or money. If you simply consider each of the PIECES® of your health that need attention, and then tackle the challenges one at a time, you will see an improvement in no time at all.



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# Active Workstations

Dinesh John, Ph.D.



Gregory Cloutier

**D**ecreasing levels of physical activity increases the risk for obesity and various chronic health problems. Dramatic changes in occupational physical activity may be a major contributor to the declining rates of overall physical activity in the United States. For example, there has been a decrease in labor-intensive occupations and a large growth in seated “9-to-5” computerized jobs in a modern office. Health problems due to declining physical activity may be compounded by recent suggestions that prolonged sitting may exert an independent harmful effect on health. Thus, the World Health Organization has now recognized the workplace as a “priority-setting” for health promotion.

## Workstation Strategies

Employees participating in workplace physical activity wellness programs typically engage in a continuous session (~1 hour) of structured moderate-to-vigorous exercise three to five times a week. More recently, ‘active workstation’ strategies that allow seated office-workers to accumulate periods of light intensity activity during the course of the workday, while simultaneously performing work have gained prominence. Users can choose to accumulate light intensity activity in short (<10 minutes) or long periods of time. Two popular strategies are height adjustable sit-to-stand and treadmill workstations that allow users to alternate between sitting and standing and/or slow walking. Sit-to-stand workstations mostly increase static muscular activity where the muscle contracts and remains contracted without relaxing during standing. On the other hand, treadmill workstations also increase dynamic muscular activity from walking where a muscle

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contracts and relaxes. Other strategies include pedal and step workstations that increase dynamic muscular activity.

### Benefits of Workstations Strategies

Many researchers are examining the effectiveness of active workstations and if this behavior change can improve cardio-metabolic health (e.g., cholesterol, glucose, blood pressure), musculoskeletal discomfort and mental function (e.g., cognitive function, work productivity).

In general, workstation strategies may reduce sitting time, increase light intensity activity and help users to burn more calories during the workday. For example, transitioning from sitting to standing increases caloric expenditure from approximately 70 to 88 calories per hour, and walking at 1 mph on a treadmill can increase energy expenditure by around 190 calories per hour. However, it is too early to conclusively state that this sustained increase in muscular activity and energy expenditure during an eight-hour workday will result in desirable long-term adaptations in cardio-metabolic health outcomes at the same rate and of similar magnitude observed after a moderate-to-vigorous exercise program. Nevertheless, frequent periods of muscular activity during the workday may accelerate glucose uptake from the blood into the muscle for storage. This may be particularly important after meals, which results in high levels of circulating blood glucose (postprandial hyperglycemia) that can last for a few hours. Postprandial hyperglycemia is an independent risk factor for diabetes and heart disease. Improved postprandial glucose control may prevent the onset or progression of poor cardio-metabolic health.

Active workstations may help to decrease “postural fixity” as users can frequently interrupt sitting with standing or dynamic muscular activity. However, excessive standing or dynamic activity may fatigue or injure the musculoskeletal system. Dynamic muscle activity may also improve mental function as large parts of the brain are activated during movement, which also increases hormonal and neurotransmitter activity in the brain. Some research suggests that breaking occupational sitting with standing and walking through the use of active workstations may improve creativity and collaboration among employees.

Users of active workstations in our research have stated that they “love the workstations,” “cannot do without them,” “makes them feel much better” and helps them break the “2:00 p.m. lethargy” at work. While such anecdotal evidence indicates acceptability of active workstations and the potential for positive behavior change, current research on the exact dose and the corresponding health effects is minimal. Active workstations should not be used as a substitute for regular moderate-to-vigorous physical activity. However, these workstations can help negate a sedentary lifestyle and be an important complement to regular exercise.

# Fitting Fitness into a Busy Life

Thomas S. Altena, Ed.D.



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**I**f we engage in conversation with nearly anyone, it can quickly be concluded that we all could use more free time, and everyone seems to have a full schedule. Some people may even boldly state that time is more precious than money. Discretionary time seems to disappear due to our varied responsibilities, and it seems that our free time is consumed by our daily and weekly tasks of family life, career, continuing education, household chores, social life, etc. Thus, finding exercise time might end up on the back burner of our agenda.

There is no shortage of health and fitness information available. However, because of time constraints in a busy life, adjusting our attitude toward exercise might be what’s really needed. If a full exercise session cannot be found in a busy schedule, consider a day filled with multiple short exercise sessions and physical activity. Do multiple short exercise sessions add up and improve health? Is there merit to taking the stairs instead of the elevator or parking the car farther from the store? Seriously, do these small amounts of physical activity actually improve our health? The answer is “YES.” The daily 30 minutes of cardiorespiratory exercise as recommended by the American College of Sports Medicine can be accumulated in smaller amounts of time using traditional exercise or a variety of physical activities including yard work, daily ambulation and even childcare.

The benefits of accumulating 30 minutes of exercise each day in 10 minute blocks almost sounds too good to be true, but two research articles in *Medicine & Science in Sports & Exercise*<sup>®</sup> reported improved health through accumulated exercise. Research has addressed the idea of accumulating three 10-minute exercise sessions a day. In a 2006 study, participants accumulated 30 minutes of jogging performed five days per week for a total of four weeks. The results of this study reported reduced total cholesterol and LDL-C (bad cholesterol) with increased HDL-C (good cholesterol) with no changes in diet or

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body weight. Another study from 2004 demonstrated that just a single day of accumulated exercise (three, 10-minute bouts) can lead to short-term decreases in triglycerides. Also, studies targeting accumulation of daily steps have shown that this approach to an active lifestyle is effective. Studies such as these provide evidence that accumulating short periods of exercise or physical activity can lead to important health changes.

When finding time to exercise is a challenge, research has demonstrated that accumulating short amounts of exercise that total 30 minutes actually does promote health-related fitness and can reduce chronic diseases associated with sedentary lifestyle. That's why making conscious decisions to be physically active during each day is an important, including that simple decision to walk up the stairs rather than take the elevator.

## Q&A

James MacDonald, M.D., FACSM



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**Q: I am very busy with a new family and a job that requires me to be at the office from 9 to 5 and do a substantial amount of work from my computer at home in my supposedly 'off' hours. Between taking care of my family and trying to keep up at work, I really have almost no time to myself. I have the interest and even the energy to work out, but I can't get to a gym and can't find the time at home. Help!**

**A:** There are ways to solve this problem. Really!

If you can find even 10 minutes—at home, on your lunch break, before you head home from work—you can fit in meaningful exercise.

There are many variations on the theme of the “minimalist workout,” but one of the more popular ones is the “seven-minute workout,” which has been featured in the *New York Times*. It involves a combination of cardio exercises (e.g. jumping jacks and running in place) with resistance exercises using your body weight (e.g. step ups, planks, triceps dips). It needs no specific equipment. It is freely available. And the name is authentic; no marketing ploy: the entire workout indeed will be completed in seven minutes.

The whole routine is easy enough to commit to memory, but there is, proverbially, an “app for everything,” and this workout is no different. We have the seven-minute workout app on our iPad and regularly use it on our lunch hour. Devote 10 minutes to this so you can complete the workout and then cool down with a walk around the office or a visit to the drinking fountain to hydrate.

There are several variations of this approach that you can find easily with an internet search engine. The *New York Times* has, for instance, introduced an ‘advanced’ seven-minute workout which incorporates the use of dumbbells.

You can find those 10 minutes. Do it.

**Q: I hate exercise. My doctor keeps getting after me to start working out so I don't turn out like my mother, who has high blood pressure and is heading toward developing diabetes. No time, no desire. What should I do?**

**A:** We have good news for you: don't exercise. And we mean it.

If you want to follow through on your doctor's advice and start taking steps toward improving your health well, for starters, don't exercise.

But by all means, be active.

There are a lot of folks with challenges similar to yours, and going to the gym is not for everyone. We human beings are all meant to be active, however. We're built for it. When we don't stay active, that's when our bodies decline.

There is a wealth of evidence that short bursts of regular, recurring activity may be just as health-promoting as extended workouts. A 2011 systematic review in the *American Journal of Preventive Medicine*, for instance, found ‘modest but consistent benefits’ to integrating short bursts of physical activity into everyday routines.

The trick then for you is, paradoxically, to make your life harder. Yes, harder: as in physically harder. For starters, when you have the chance, always take the stairs as opposed to an elevator or escalator. When you go out to run an errand, try to find a parking spot far from the store entrance so you will have to walk more. Better yet, for those errands which may be a mile or less, take the opportunity to walk or bike there, if you feel this can be done safely.

Active commuting—which can include walking, biking or taking public transportation to work or school—can have great health benefits. A 2012 study in the journal *Pediatrics* found that active commuting was associated with a lower risk of adolescent obesity. If you can find a way to more frequently commute actively to work or when running errands, this will help you achieve your health goals.

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Think too of household work not as a chore as much as an opportunity for physical activity. Hand wash the dishes instead of using the dishwasher. Rake the leaves from the lawn instead of using a blower.

If you reframe your doctor’s advice in your mind and try to make your life ‘harder’ in a playful, active way, you will take a step toward having a destiny different than your mother’s. You may inspire your mother and others to do the same, and you may just find yourself liking activity. You, like all of us, are built for it after all.

### *The Athlete’s Kitchen*

## Tips for Label Readers

*Nancy Clark, MS, RD, CSSD*



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*“What percent of my calories should come from carbs, protein and fat?”*

*“Orange juice has 24 grams sugar. Isn’t that bad?”*

*“I stopped eating peanut butter; the label says it has 16 grams of fat!”*

If you are like many active people, you feel totally confused about what to eat. You listen to a plethora of nutrition experts, read food labels and then try to piece the information together to build a better sports diet. Yet, you end up with lots of questions,

like what percent of calories should come from carbs, protein and fat: 40-30-30 percent or 60-15-25 percent?

According to the *American Dietetic Association’s Position Stand on Nutrition & Athletic Performance*, percentages are not the way to calculate a sports diet. Here’s one example why:

If you are a lightweight rower trying to drop five pounds to make weight and are eating only 1,600 calories a day, 10-15 percent of calories from protein translates into 160-240 calories of protein. That’s the equivalent of 40-60 grams of protein. That’s way too little. The rower who weighs 140 lbs. would need almost double that amount because dieting athletes should target about 0.8 grams protein per pound of body weight (1.7 g pro/kg).

### Assessing your diet

Instead of getting overwhelmed by percentages of calories, I suggest you envision a dinner plate. The goal is for 2/3 to 3/4 of the plate to be filled with carb-based foods (such as brown rice and broccoli) and 1/4 to 1/3 filled with a protein-rich food (such as a piece of fish). The plate-method is far easier than calculating grams of carbs, protein and fat!

But, if you are curious about your food intake and want to learn more about what you eat, you can track your diet on websites such as [www.MyDailyPlate.com](http://www.MyDailyPlate.com), [www.fitday.com](http://www.fitday.com) or [www.sparkpeople.com](http://www.sparkpeople.com). One critical key when assessing your diet is to weigh and measure your food so you know exactly how much you actually eat and not just guess. (Hmm. I guess that’s about one cup of oatmeal) Be honest now, people tend to change what they eat when they have to record it. Be sure to include the doughnut someone brought into the office, the goodies from the candy jar, the extra French fries at lunch, etc.

By tracking your intake for three or four days, you’ll get a good snapshot of your training diet. Ideally, an athlete who routinely trains hard wants to consume about:

- 2.5 to 4.5 gram carbohydrate per pound of body weight (6 to 10 g/kg)
- 0.5 to 0.8 gram protein per pound of body weight (1.2 to 1.7 g/kg)
- the rest of the calories from fat (no less than 20 percent of calories from fat).

If you are consuming more than 2,000 calories of day from primarily nutrient-dense food, a diet analysis will help you discover you likely consume abundant vitamins and minerals—and get more than 100 percent of the daily value This may lead you to question if you actually need a daily multi-vitamin pill.

### Making sense of information on food labels

Here are some food label questions athletes ask me about the carbs, protein and fats in their diets. Perhaps this information will help address your confusion as well.

**Q: Is it OK to have 2 percent milk (with 5 grams fat) on my cereal instead of watery skim milk (with zero grams fat)? It tastes better and is more satisfying.**



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**A:** Yes, as long as you budget the rest of your day's fat intake. That is, if you enjoy 2 percent milk on cereal, then simply choose less mayo, cheese and fatty foods at other meals. Even dieting athletes should consume at least 40 grams of (primarily healthful) fat per day.

**Q: Should I avoid peanut butter because it has 16 grams of fat?**

**A:** No! About 25 percent of your calories can appropriately come from fat. That means the typical female athlete can enjoy 600 calories (~65 grams) of fat per day. Peanut butter can easily fit within your fat-budget. Plus, peanut butter's fat is health-protective. People who enjoy peanut butter and nuts five or more times a week reduce their risk of heart disease and diabetes by more than 20 percent. Perhaps you want to enjoy peanut butter twice a day?

**Q: The label says two tablespoons of my favorite peanut butter has three grams of added sugar. Isn't that bad?**

**A:** Three grams of sugar equates to 12 calories of sugar. This is far less than the jelly that goes on a PB&J sandwich, as well as a fraction of the sugar in sports drinks and jellybeans. A standard guideline is 10 percent of calories can come from refined sugar. That equates to about 240 to 300 calories (60-75 grams) of sugar for most athletes. You can choose how you want to spend those sugar grams.

**Q: Should I avoid orange juice because it has too much sugar?**

**A:** All the calories in orange juice come from sugar, but along with that (natural) sugar, you get abundant vitamin C (to boost your immune system), potassium (to protect against high blood pressure), folate (to protect against birth defects) and numerous other health-protective nutrients. The sugar in orange juice (and any type of sugar, for that matter) fuels your muscles. The nutrients that accompany that natural sugar are like spark plugs and help your body's engine run stronger.

While eating the whole orange is preferable to drinking the juice, any form of fruit is better than none. That is, if you aren't

going to make time to peel an orange, grabbing a glass of OJ for a morning eye-opener is a handy alternative—and is far preferable to grabbing just a coffee to go.

**Q: The label on my protein bar says it contains 20 grams of protein. How many of these bars should I eat in a day?**

**A:** What makes you think you need any protein bars at all? Most hungry athletes get the protein they need through normal meals and snacks. Consuming excess protein is a needless expense for most athletes.

Athletes who might benefit from protein bars include vegetarians, dieters or college students who eat limited meat from the dining hall. If that's your case, track your protein intake by using the websites mentioned above to see if your protein intake comes up short. If it does, make the effort to eat extra Greek yogurt, tuna or cottage cheese—excellent sources of protein with a lower price (and better taste).

**Q: How many grams of protein should I eat in a day?**

**A:** For most active people, I recommend 0.5-0.8 grams protein per pound of body weight (1.2 -1.7 g/kg). This equates to a moderate serving of protein-rich food at each meal (such as milk on breakfast cereal, sandwich at lunch, yogurt for a snack, fish for dinner.) Even if you want to build muscle, your need for additional carbs to fuel the heavy lifting is higher than the need for extra protein. Be sure to enjoy carb-protein combinations that allow you to fill up on carbs and enjoy protein as the accompaniment. Filling up on primarily protein will leave your stomach full but your muscles unfed!



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