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| JOB # <b>95742</b>             | DATE <b>11/17/14</b>                                 | CAMPAIGN/LOCATION <b>NCAA</b>                         |              | PRODUCTION NOTES<br><b>Files only</b> |
| REQUESTOR <b>Latrice Sales</b> | PROOF# <b>2</b>                                      | DESCRIPTION <b>Energy Availability Fact Sheet</b>     |              |                                       |
| CLIENT <b>NCAA</b>             | DSR <b>AG</b> AM<br>PM <b>CG</b>                     | SIZE <b>8.5"w x 11"h</b>                              | QTY <b>1</b> |                                       |
| <input type="radio"/> APPROVED | <input type="radio"/> APPROVED WITH MINOR CORRECTION | <input type="radio"/> BACK WITH CORRECTIONS; RE-PROOF |              | SIGNATURE _____                       |
|                                |  |   |              | DATE _____                            |



**M**y weight has been stable all year, but now that we're in season I haven't been able to get through workouts as easily. I've also been skipping a couple of my menstrual cycles.

Is it possible that I'm not getting enough energy from my foods, but still not losing any weight either?

# ENERGY AVAILABILITY

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Managing your energy levels is a daily priority. As a student-athlete, you face many demands on campus while asking your body to perform at its best, both mentally and physically, for your sport.

To stay at your best throughout the year, well-practiced fueling strategies — known as energy management — is the name of the game. You want to have enough energy ready and available to support your body's health, daily activity, growth and training. The term 'energy availability' (EA) refers to the amount of energy left over and available for your body's functions after the energy expended for training is subtracted from the energy you take in from food. In other words:

$$\text{Food Energy Intake} - \text{Exercise Energy Expenditure} = \text{Energy Availability}$$

*(To learn how to manage your energy, turn the page.)*

## SYMPTOM WATCH: ENERGY METER

The signs and symptoms listed below might be your body's way of telling you to look closer at how you are managing your energy. Nutrition might be a key factor!

- Chronic fatigue
- Anemia
- Recurring infections and illnesses
- Depression
- Disordered-eating thoughts
- Inability to gain or build muscle or strength
- Poor performance
- Absent or irregular menstrual cycles
- Stress fractures or repeated bone injuries
- Decreased muscle strength
- Irritability
- Always being hurt or injured
- Training hard, but not improving performance
- Gastrointestinal problems
- Weight loss

Information presented by



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## ALTERING ENERGY AVAILABILITY

The energy goal for a healthy student-athlete is to be able to adjust his/her dietary intake to cover all the expenditures from exercise and training. These adjustments promote an energy balance that is positive for health and performance.

Athletes sometimes can negatively alter their EA knowingly or unknowingly. Energy availability can be reduced by increasing training, over-exercising or decreasing the amount of food one eats. Some student-athletes adopt abnormal eating behaviors such as fasting, skipping meals, restricting foods, binge eating, or using diet pills or laxatives. Other athletes also have eating disorders. Whatever the case, these scenarios can result in low EA.

## WHAT YOU SHOULD KNOW ABOUT ENERGY DEMANDS

Low EA results in adjustments to our body's systems that cause hormonal, metabolic and functional disruptions — complications that can occur in both men and women. This energy deficiency affects physiological functions such as metabolic rate, bone health, immunity, protein synthesis, cardiovascular and psychological health, and menstrual function. For example, an energy deficiency could:

- Impair your body's ability to use glucose effectively for energy
- Increase fat stores in the body
- Increase cholesterol
- Slow down your metabolic rate

- Decrease your body's production of growth hormone (an important hormone for growth and repair)

In women, low EA and its resulting effect on menstrual function and bone is the root of what is called the female athlete triad. Female athletes who miss three or more menstrual cycles in a row should talk to their team physician. When altered hormones disrupt the menstrual cycle, the arteries that deliver oxygen and nutrients to the body and working muscles can be impaired. This can result in fatigue and impair the ability of muscles to use oxygen.

Weight loss is often a sign that the body is in an energy deficit and may indicate low EA. However, low EA is not always accompanied by weight loss. The body is amazing at conserving itself for survival and can maintain overall body weight even while EA is low. This is common among female athletes without menstrual cycles.

Perhaps the most important organs affected by low EA are bones. Low EA directly impairs bone health and development by affecting hormones that build and restore bone, and it indirectly impairs bone by disturbing the female menstrual function and estrogen levels. Your college years are an important time for your bones — women reach peak bone mass at approximately age 19 and men at age 20½. This means you want to build and protect your bones as much as you can during your college years to last your lifetime and prevent stress fractures.

## PRACTICE PLAN: ENERGY MANAGEMENT

Recognizing some of the signs and symptoms of a possible energy deficit can help with early detection of low EA. As a good first step toward improving your performance and preventing long-term health problems, talk with your sports medicine provider or a sports registered dietitian (sports RD). In the meantime, keep these ideas in mind to help you manage your energy and have the best chance to practice and play at your best!

- Three meals and snacks are typical for most student-athletes to meet daily energy needs.
- Remember: Appetite is not always indicative of your food and fueling needs.
- It's a good idea to have a structured eating guideline for your heavy training cycles.
- Sometimes an increase in energy from food, or a reduction in exercise, or a combination of both, can be important adjustments to get into energy balance (talk to your sports RD and coach about making any adjustments in your training).
- Consider meal replacement supplements or protein shakes as tools to help manage high-energy demands.
- A bone mineral density measurement called DXA may be a good idea to evaluate your body's bone health, especially if you've been experiencing low EA symptoms (talk to your athletic trainer or team physician).
- Ask your doctor and/or sports RD if a vitamin D blood test or calcium and vitamin D supplementation is important for you.
- If you're planning to diet, ask yourself whether your weight or your performance is the driving force.
- Develop a realistic, performance-oriented, health-minded weight and body composition goal (your sports RD and athletic trainer can help).
- Always look for and use reputable sources of information (talk to your athletic trainer if you are unsure of the source).
- Set a realistic timeline for any weight loss or body composition changes; avoid quick fixes (your athletic trainer and strength and conditioning coach can help).
- Following a well-planned nutrition strategy designed for you can best prepare you to perform.

