Research suggests that approximately one third of female athletes struggle with pathogenic weight control behaviors (1-4). Frequently, restrictive eating among female athletes contributes to amenorrhea and stress fractures (5,6) and, thereby, the inability to train and compete optimally.

Although weight obsessions and anorexia may seem an inherent part of athletics, especially among sports that emphasize leanness, in most cases the sport did not cause an athlete’s eating disorder but rather perpetuated it (1,2,7). The same compulsion that sustains an eating disorder can also sustain competitiveness in athletics.

Nutrition guidance can help athletes resolve eating disorders (8), but registered dietitians who are insecure about their ability to handle this delicate situation may hesitate to accept athlete patients who display anorexic or bulimic symptoms. Yet, athletes with eating disorders often prefer to consult with a sports nutritionist/registered dietitian because the athletes see food as the problem.

To enhance nutrition counseling for athletes with an eating disorder, the following case study about a dancer with a borderline case of anorexia, who was brought into treatment before her food restrictions grew out of control, demonstrates one effective treatment approach. Figure 1 outlines the overall nutrition treatment plan and goals. Because the real problem surrounding anorexia relates to complex life issues, not food or weight, sports nutritionists should refer athletes to an appropriate health professional (eg, therapist or physician skilled with eating disorders) for interdisciplinary
CASE STUDY: DANCER WITH RESTRICTIVE EATING HABITS

Initial Visit, Week 1

Mary (not her real name), a 16-year-old student at a highly competitive dance school, was referred for nutrition counseling by her orthopedist, who had been treating her for dance-related knee and muscle injuries. She was 64-in (164 cm) tall, weighed 97 lb (44 kg), had a body mass index (BMI) of 16.5, and had been amenorrheic for the past 4 months. The client's mother, who expressed concern about her daughter's health, enforced the initial visit. Mary's opening statement was, "My mother made me come here. She thinks I don't eat enough. I agree, but I'm afraid to eat, because I don't want to get fat while I'm injured. I can't dance now or get as much exercise as I'd like."

Five months before the initial visit, Mary had weighed 107 lb (48.5 kg) and had a BMI of 18. At this time she started to restrict her intake to lose 3 lb. Premenarche (1 year earlier), Mary reported that she "ate anything and everything---chips, ice cream, cookies," had no weight issues, and was desirably lean for her sport. She resembled her genetically thin mother.

Figure 2 describes Mary's restrictive 1,000-kcal diet at the time of the initial consultation. She had an adequate protein intake (60 g protein; 1.4 g protein/kg), but because of her limited energy intake, she ate less than 75% of the Recommended Dietary Allowance (RDA) (11) for thiamin, riboflavin, vitamins B-6 and B-12, folacin, calcium, iron, magnesium, and zinc.

Treatment Plan

| Education the athlete about the pattern. consequences of anorexia. | Establish a normal eating pattern. |
| Reduce preoccupation with food, weight, and body fat. | Attain peace with food and weight. |
| Gradually increase meals and snacks to an appropriate level. | Fuel body appropriately. |
| Rebuild the body to an appropriate weight. | Optimize strength and health. |
| Establish regular menstrual periods. | Reduce risk of stress fractures. |

FIG 1. Overall nutrition treatment plan and goals.

Assessment Mary clearly considered food to be the fattening enemy, was afraid to eat, and repeatedly expressed fears of getting fat. To begin allaying her fears, in the first session we discussed the importance of food for fuel and health and the dangers of losing too much weight (i.e., loss of muscle, strength, stamina, and health). I pointed out the inadequacy of her current intake, especially the dramatic contrast between her current intake of 1,000...
kcal compared with her estimated requirements of 1,700 to 1,800 kcal. This helped Mary understand why she felt chronically tired. Yet she repeatedly expressed fear that consuming more energy would make her fat. I also obtained body fat measurements (using skinfold calipers) to assure Mary that she was currently very lean and to provide baseline measurements for future assessment of whether weight gain was muscle or fat. Finally, we established weight goals. Rather than identify a specific number on the scale, we agreed upon the goal of being lean, fit, and healthy, with resumption of regular menstrual periods being the sign of adequate nutrition and improved health.

Treatment plan In this initial session, we negotiated that Mary would make the effort to make gradual changes, including the following.

* Accept food as a positive substance that improves health and is more than just fattening calories.

* Eat a wider variety of foods to provide a wider variety of nutrients, specifically calcium, iron, zinc, and protein.

* Gradually boost energy intake by at least 10% per week (100 kcal/day) until she is rebuilding her body (ie, gaining weight) at the rate of about 1 lb per week.

* Add the fuel at breakfast, lunch, and/or afternoon snack to enhance daytime energy intake.

* Maintain protein intake of 1 to 1.5 g protein per day, the equivalent of 50 to 75 g protein/day.

* Reintroduce small (3 to 4 oz) portions of lean red meat two to four times per week as a possible means to enhance resumption of menstrual periods (9,10), and to provide iron and zinc, two minerals important for an athlete's health.

* Boost calcium intake to at least 800 mg/day and progress to the RDA of 1,200 mg.

* Keep food and emotion records that focus on improvements in energy, mood, and feelings of well-being, and appreciate the positive effect of food rather than dwell on its fattening qualities.

* Remember that any improvement is better than no improvement.

Mary's mother was included for 10 minutes at the end of the first meeting to clarify the lines of responsibility: the dietitian was responsible for teaching Mary how to eat healthfully, Mary was responsible for what she ate, and Mary's mother was responsible for supporting the food plan by having the appropriate foods available. We agreed (with Mary's approval) that I would periodically telephone her mother to address her questions and concerns and to keep the lines of communication open.

Second Visit, Week 3
Mary's comments: "I've tried to eat a little more, but I'm petrified of getting fat. I've only added an orange for a snack; it digests easily and feels 'safer' than the yogurt we'd talked about. My weight is the same."

Assessment: Mary continued to express fear that eating more food would result in her getting fat. I reminded Mary that any dietary improvement was better than none; that she should try each day to fuel herself as well as possible. Just as she practiced her dancing, she would have to practice eating healthfully. We developed a 1,300- to 1,400-kcal meal plan based on food exchanges for her to use as a target diet and reduce her obsession with counting calories.

Some of the topics of our discussion included the importance of having some fat (20% to 30% of energy) in the diet to normalize eating, add nutrients, provide satiety, and allow for a greater variety of food. We also discussed the need to see food as the symptom, not the problem. Despite nutrition counseling, Mary showed little evidence of changing her attitudes about food. We discussed her desire for control. Although Mary could not control her parents, schoolwork, or injuries, she was inappropriately controlling her food, fat intake, and body fat. Mary agreed that counseling might be helpful to deal with her feelings about food and weight. I referred her to an appropriate counselor skilled with handling eating disorders.

Treatment plan:

* Keep practicing eating healthfully. Preplan each day's menu using the food exchange system. Include a wider variety of nutrient-dense foods.

* Include a little fat at each meal; appropriate target is 30 to 40 g fat (20% to 25% of a 1,400-kcal diet).

* Consult a psychotherapist skilled with handling athletes with eating disorders to address the underlying psychological issues.

Mary's mother was updated about the topics covered in the second visit, particularly the topic of control. Because the mother had been reading several books on anorexia, she was aware that food was not the real issue behind Mary's eating disorder. She expressed a willingness to see a family therapist and appreciated my referral to an appropriate counselor skilled with managing eating disorders.

Third Visit, Week 5

Mary's comments: "So many people--my doctor, dance teacher, parents, therapist--have been telling me that I need to gain weight and start to menstruate. I'm starting to believe them."

Assessment: Mary came into the third session seeming more motivated and more receptive to my suggestions. She reported that she had added a little more "safe" food at breakfast (a fat-free muffin), at lunch (a 3-oz can of tuna), and for a snack (a muffin or yogurt). Her weight as a result, had increased 2 lb. Skinfold measurements indicated that Mary had gained little or no fat. Mary was relieved to learn that this increase was either water weight and/or
Lean body mass; this increased her trust that she could eat more without "getting fat."

Mary seemed happier and reported that she was feeling better. She had started counseling sessions with the eating disorders therapist (two sessions per week) and was working on the issues of control, perfection, and lack of self-esteem. She reported that she and her mother were communicating better. Confrontation of the real issues was allowing Mary to let go of the obsession to control her food and weight. Because she was feeling increasingly better, she seemed less concerned about her weight and expressed greater interest in healing and resuming menses.

Treatment plan

* Continue experimenting with adding a variety of nutrient-dense foods.

* Listen to her body to assess how much better she feels when she fuels herself appropriately.

Fourth Visit, Week 7

Mary's comments "I got my period--and I didn't even have to gain a lot of weight and get fat. I'm only 101 lb."

Assessment Mary was thrilled that she had reached a point of better health. She reported that she was eating about 2,000 kcal (including some peanut butter, cheese, and other fatty foods that had been taboo), was feeling warmer, more energetic, and sleeping better. She was pleased by the helpfulness of family therapy, and looked forward to exercising more. Her injuries were almost healed and her doctor said that she would soon be able to start dancing again.

Because Mary had been able to stop controlling food and start eating healthfully, I was confident that she would be able to graduate from intensive nutrition counseling.

Treatment plan

* Return in 4 weeks for a nutrition check-up or earlier if she started to struggle with food. Call with questions or concerns.

* Expect relapses, and be sure that she learns what went wrong and figures out how she could better handle the situation the next time.

* Continue both individual and family counseling.

APPLICATION

Unlike many cases of anorexia where the athlete has struggled for years, this case demonstrates that early intervention by a registered dietitian, in conjunction with a therapist skilled with handling eating disorders, can facilitate a quick recovery (8).
Ideally, coaches, parents, and teammates can be educated by a dietitian to be alert to nutritional "red flags" (i.e., dramatic weight loss, distorted body image, preoccupation with food, overconcern about weight and energy, and amenorrhea [1, 2, 4, 8]), so that potential eating disorders can be resolved early. By becoming known among the athletic and sports medicine community via these educational efforts, dietitians will be in a good position to accept referrals of athletes with eating disorders.

References


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