Case 1: Vitamins

Roger is a starting guard on his college basketball team. He is a leader on his team, stays after practice to work on his shots, and is busy with academic and community life on campus. Because of his hectic schedule, he has little time for meal planning, grocery shopping, and food preparation. Dinner is usually consumed at the athletics training table during the week, and the rest of his meals are costumed either at home or at local restaurants. A 3-day food record kept by Roger recently was analyzed using a nutrition software program. The analysis revealed overall energy intake was not meeting his estimated needs, and vitamins A, C, and folate were consistently low throughout the three days. The rest of the vitamins and minerals met the minimum RDA or AI requirements.

1. What questions should you ask Roger about his typical daily diet?
2. What recommendations do you have for Roger to improve his dietary intake of vitamins and his energy intake?
3. How can you help Roger meet these recommendations?

To begin, I would start by asking Roger what a typical meal consists of. Since he usually eats at athletics training, I would inquire about what those meals are composed of, meaning quantity and types of foods that are regularly consumed. The analysis indicated that he was lacking in Vitamin A, C, and folate which raises some red flags. Roger is experiencing a lack of energy, which could be linked to his low levels of these vitamins and nutrients. By inquiring about Roger's typical daily diet, I can then identify where we can make changes to his food intakes to improve his daily values in Vitamin A, C, and folate to meet the minimum RDA requirements.

To help Roger meet these recommendations, patient education would begin with an understanding of which foods contain the vitamins that he is lacking. I would begin by explaining the recommended daily intake of these vitamins and nutrients, and explain what symptoms can arise when you become deficient. A description of why our body needs these nutrients to function can be a great way to ensure that Roger will have a deep understanding of how critical proper nutrition is to a healthy body. For example, Vitamin A is important for eye health, reproductive health, and a good immune system. As Roger is an athlete, he needs proper nutrition to perform at his best. Folate is important for the formation of red blood cells.

For example, some examples of foods high in vitamin C include citrus fruits and vegetables like peppers. Foods high in folate include dark, green, leafy vegetables like kale or spinach. Good sources of vitamin A come from beef and other animal sources. Creating a sample meal which includes adequate amounts of all three of these vitamins, would be helpful in assisting Roger to meet these recommendations.

Case 2: Minerals

Anne participates in triathlons. Recently, in a half-Ironman race, she experienced nausea, intestinal cramping, and diarrhea on the run, leading to poor performance. The entire race took her nearly 6.5 hours. During the bike portion, she consumed 100 oz of a relatively new sports beverage that she has been training with this year, as well as two gels. On the run, she consumed sips of the sports beverage provided on the course but switched over to water once she started experiencing nausea, cramping, and diarrhea. She was frustrated by her performance and wants to ensure that it does not happen again. You ask Anne to bring in the new sports beverage she has been consuming so that you can review the Supplement Facts label. Per 8 oz. serving, the following nutrients are provided: 60 calories, 15 g carbohydrates, 0 g protein, 0 g fat, 100 mg sodium, 50 mg calcium, 30 mg magnesium, and 100 mg potassium.

1. What could be a potential cause of Anne's nausea, intestinal cramping, and diarrhea during the race?
2. How does Anne's new sports beverage compare with others on the market?
3. What recommendations would you give to Anne to prevent the symptoms from occurring in future races?

A potential cause of Anne's nausea, intestinal cramping, and diarrhea during the race could be dehydration and an imbalance of electrolytes. She is performing a long exercise, at 6.5 hours, which causes the body to lose an excessive amount of fluids through sweat. Her intake at 100 oz is not enough fluid consumption prior to the race, and she also only took some sips during the run. During the run, she needs to be more well-hydrated as these are long runs at 6.5 hours.

The sports beverage she had been drinking is high salt, which may not be balanced with other nutrients in the beverage. Compared to other sports beverages on market, Anne's drink has fewer carbohydrates and more salt. There are a variety of sports and nutrition beverages available on the market, so a simple change in brands should improve Anne's symptoms. Her current drink has no protein, which could also be a problem. I would recommend that Anne review her activity level and look at other brands of sports drinks that may better suit her needs and eliminate some of the uncomfortable symptoms she is experiencing.

For upcoming races, Anne should gather a new hydration protocol, including changes in her amount of fluids and the types. This will eliminate her nausea, intestinal cramping, and diarrhea during the race. Based on her body weight, she should calculate what proper water intake should be. She should consume the fluid before she runs slowly, rather than gulping them down very fast. In addition, she should also look at her food consumption, as high-carbohydrates before the run may be a good idea.

Case 3: Fluids

Chad is a collegiate lacrosse player in Arizona. During the preseason and in-season training, the team will practice for hours, often in 80- to 90-degree weather. The coach incorporates fluid breaks during practice; however, he allows the athletes to consume only water. The coach believes that sports beverages hinder performance and therefore forbids the athletes to consume them. The athletes complain of feeling fatigued, lethargic, and light-headed by the end of practices.

1. What are the problems in this scenario?
2. What should the athletes do to feel better throughout their practices?
3. What hydration principles should the athletes follow?

Chad's feelings of fatigue, lethargy, and light-headedness may be a result of improper fluid restrictions set by his coach. While it is positive that his coach believes in proper hydration, a new protocol should be considered. After heavy periods of exercise in high heats, the athletes are experiencing imbalances within their bodies. Heavy exercise utilizes glucose in their muscles which is being depleted. When drinking water, it does not help replenish the glucose that they have lost. They are likely experiencing symptoms of low blood sugar, such as feeling tired and light headed. Water contains no nutrients, therefore, no energy is consumed by them.

To feel better throughout their practices, the athletes should try consuming different types of beverages during their fluid breaks. They can start by explaining the above principles to their coach, so he can understand that sports drinks do not hinder their performance, but rather encourage improved performance. If his athletes are complaining of feeling fatigued, light-headed, and lethargic, then that is a sign that the players are not performing at their best and a change in hydration rules is necessary.

New hydration principles should include beverages that are designed for athletes. Instead of water, changing their fluids to drinks to bring their blood glucose up should improve their symptoms. The sports drink should include electrolytes and simple forms of sugar, which will enter the bloodstream and make them feel more energetic and perform better. The coach should continue the forced fluid intake breaks, however, just alter the type of fluid the athletes consume.

Case 4: Weight Management

Ian is an 18-year-old gymnast training in a private gym with many other male and female gymnasts. He is competing at an advanced level and is likely to make the next Olympic team. Lately, he has been finding some of his balance and strength moves on the rings and parallel bars more difficult. He has gone through a bit of a growth spurt and has gained approximately 5 pounds over the last year. He suspects the weight gain is causing his performance difficulties. He decides to try a weight loss program that will help you lose weight before his next big competition in six weeks. He is not sure how many calories to consume and therefore, arbitrarily decided to eat 1,500 kcal per day.

1. Which assessments are required to determine whether Ian needs to lose weight?
2. What type of diet and exercise plan would you recommend for Ian?
3. What additional concerns do you have for Ian's health and sports performance?

As Ian is a high-performing gymnast, the determination whether he needs to lose weight should be based on his body fat percentage and muscle mass. Ian should create a program that is based on both strength and conditioning workouts, and make sure he is eating a well-rounded diet. He needs to ensure he is taking in adequate amounts of energy and all of the three major components of food (fat, carbohydrates, and protein) to ensure he can lose weight effectively before his big competition, but also without causing other health problems.

I would recommend that Ian creates a meal plan with three meals and possibly one snack a day. According to the diet recommendations, Ian could set a carbohydrate, fat, and protein intake goal for each day to make sure he chooses the correct foods to meet his nutritional needs. An example breakfast could be a fiber based cereal and adequate protein like eggs, or a fruit serving. Proper servings of daily fruits and vegetables are something else to consider. A dinner example could be lots of high quality chicken, to meet his protein requirements with a salad. His workouts for his exercise plan should be aerobic and cardio-based.

Since Ian is a gymnast, he should be paying extra attention to the macronutrients he is consuming and possibly even keep a food journal or log to meet his goals. Avoiding added sugars or processed foods is a great way to ensure that the foods he is consuming are healthy and real. Ian's 1,500 calorie a day goal is likely too low based on his activity levels, and should be calculated based on his specific body fat and weight requirements, not arbitrarily decided. Athletes looking to lose weight before a competition are at risk for undereating, and this would eliminate that potential concern for Ian's health.