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Safe And Effective Weight Management

By Matt Brzycki, Coordinator of Recreational Fitness and Wellness, Princeton University

Gaining, losing, or maintaining bodyweight is primarily a function of two variables: caloric intake (consuming calories) and caloric output (expending calories).

When caloric intake is greater than caloric output, it produces a caloric profit and weight gain.

When caloric output is greater than caloric intake, it produces a caloric deficit and results in weight loss. When caloric intake is the same as caloric output, it produces a caloric balance that will not affect a change in bodyweight.

Despite its conceptual simplicity, the mechanics of weight management, weight gain, and weight loss deserve closer inspection.

GAINING WEIGHT

Some athletes will become healthier and perform better with the addition of bodyweight. The potential to gain weight is determined by a number of factors, the most important of which is the athlete's genetics or inherited characteristics.

An athlete whose ancestors had lean features and average muscular size has the genetic propensity for that type of physique. It's difficult for an athlete with such inherited characteristics (categorized as an "ectomorph") to achieve a significant increase in weight.

The primary goal of gaining weight is to increase lean-body (or muscle) mass. One pound of muscle has about 2,500 calories.

If an athlete consumes 250 calories per day above the caloric needs – a 250-calorie profit – it will take 10 days to gain one pound of lean-body mass [$2,500 \text{ cal} \div 250 \text{ cal/day} = 10 \text{ days}$].

If a 100-pound softball player requires 2,000 calories per day to maintain her bodyweight, she must consume 2,250 calories per day – 250 calories above her current need – to gain one pound of lean-body mass in 10 days.

Keep in mind that after she increases her bodyweight, she'll require more calories per day to meet her energy needs. At a bodyweight of 105, for example, she might need 2,100 calories per day to maintain her weight. In this case, she will have to increase her caloric intake to 2,350 calories per day – 250 calories above her current need – to gain another pound of lean-body mass in 10 days.

The daily caloric profit shouldn't be more than about 350-700 calories above the normal daily needs, which comes to about 1-2 pounds per week.

If the weight gain is more than about 1% of an athlete's bodyweight per week, it's likely that some of it was due to an increase of body fat rather than lean-body mass.

If the weight gain is less than about 1% of an athlete's bodyweight per week and is the result of a demanding strength-training program in conjunction with a moderate caloric increase, the weight increase will likely be due to the increase in lean-body mass rather than of body fat.

TIPS FOR WEIGHT GAIN:

Gaining weight requires total nutritional dedication for seven days a week. Additional calories must be consumed daily on a regular basis until the desired gain in weight is achieved.

The best way for the body to absorb food is by dividing it into several regular-sized meals intermingled with a few snacks. The body cannot absorb one or two large meals as well. Most of these calories are simply jammed through the digestive system.

When consuming a large number of calories at one time, the athlete must understand that some of them will be stored as fat because of the sudden demand on the metabolic pathways. (This has been referred to as "nutrient overload.")

Some additional tips for athletes who are interested in gaining weight in a safe and effective manner:

- Set short-term goals that are realistic.
- Keep a food/activity log or diary.
- Eat dense vegetables (such as peas, corn and carrots).
- Eat at least three meals per day.



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- Eat at least three nutritious snacks per day.
- Consume foods that are high in calories (but not high in fat).
- Eat dense fruit (such as bananas, pineapples and raisins).
- Drink juice and milk.
- Eat breakfast.
- Increase the size of portions.

LOSING WEIGHT

Some of your athletes will become healthier and perform better by decreasing their bodyweight. As in gaining weight, the potential to lose weight is mainly determined by an athlete's genetics.

An athlete whose ancestors had round features with little in the way of muscular definition has the genetic potential for that type of physique. It would be difficult for an athlete with those inherited characteristics (endomorphic) to achieve a significant

decrease in weight.

The primary goal of losing weight is to decrease body fat. One pound of fat has about 3,500 calories. If, therefore, an athlete consumes 250 calories per day below the caloric needs – a 250-calorie deficit – it will take 14 days to lose one pound of fat [3,500 cal ÷ 250 cal/day = 14 days].

So, if a 200-pound football player requires 5,000 calories per day to maintain his bodyweight, he must consume 4,750 calories per day – 250 calories below his current need – to lose one pound of fat in 14 days.

Keep in mind that after he decreases his bodyweight, he will require less calories per day to meet his energy needs. At a bodyweight of 195, for example, he might need 4,875 calories per day to maintain his bodyweight. In this case, he will have to decrease his caloric intake to 4,625 calories per day – 250 calories below his current need – to lose

another pound of body fat in 10 days.

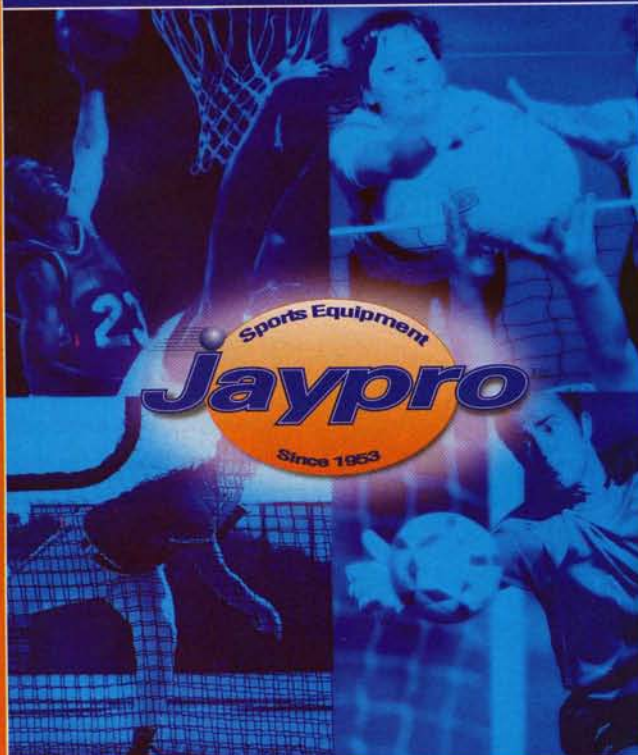
A caloric deficit can actually be achieved by decreasing caloric intake, increasing caloric output (through additional activity), or a combination of the two. In fact, most authorities agree that proper weight loss should be a blend of consuming less calories and expending more calories.

For instance, an athlete can obtain a 250-calorie deficit by eating 125 less calories and using 125 more calories.

The daily caloric deficit shouldn't be more than about 500 - 1000 calories below the normal daily needs, which is about 1-2 pounds per week. If the weight loss is more than about 1% of an athlete's bodyweight per week, it's likely that some of it was due to a decrease of lean-body mass and/or water rather than body fat.

If, however, the weight loss is less than about 1% of an athlete's bodyweight per week and is the result of a rigorous training program in con-

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junction with a moderate decrease in caloric intake, then it probably will be in the form of decreased body fat.

Here is a perfect illustration of what can happen if an athlete loses weight too quickly: A 200-pound running back who is 20.0% fat has 40 pounds of fat [200 lbs x 0.20 = 40 lbs].

His coach tells him that he could become a step or two faster if he lost 10 pounds. Being highly motivated, the athlete decides to lose the weight quickly by skipping meals and spending long hours pedaling a stationary bicycle. After one week, he steps on a scale and is elated to see that he dropped the 10 pounds.

But, since it was done so quickly, the loss was mostly lean-body mass and water. If only one pound of the weight loss was from fat, he'd have 39 pounds of fat at a bodyweight of 190, meaning that his body composition actually increased to more than 20.5% fat!

TIPS FOR WEIGHT LOSS:

Losing weight must be a carefully planned activity. Skipping meals – or all-out starvation – isn't a desirable method of weight loss since sufficient calories are still needed to fuel an athletic lifestyle.

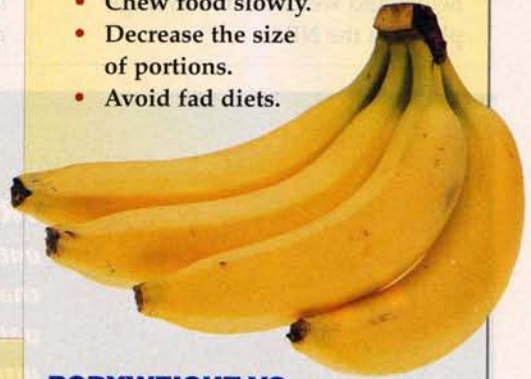
Oddly enough, losing weight should be done in a fashion similar to that of gaining weight: frequent – but smaller – meals should be consumed over the course of the day. This will suppress the appetite.

It's also a good idea for an athlete to drink plenty of water before, during and after meals. It will create a feeling of fullness without providing any calories.

Some additional tips for athletes who are interested in losing weight in a safe and effective manner:

- **Set short-term goals that are realistic.**

- **Keep a food/activity log or diary.**
- **Read nutrition labels.**
- **Eat a moderate amount of sugars.**
- **Eat foods that are low in fat.**
- **Reduce the intake of saturated fats.**
- **Eat more fruits and vegetables.**
- **Chew food slowly.**
- **Decrease the size of portions.**
- **Avoid fad diets.**



BODYWEIGHT VS BODY COMPOSITION

It's important to understand that the numbers on height/weight charts and bathroom scales are poor indica-

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tors of whether or not an athlete needs to lose weight.

Focusing simply on height and weight can be grossly inaccurate. Based upon the Body Mass Index (BMI), someone who's 6'7" and 224 pounds is overweight. But this is the height and weight of the average player in the NBA.

Also, based upon the BMI, someone who's 5'10" and 210 pounds is obese. But this is the height and weight of Emmitt Smith who has rushed for more yards than any running back in the history of the NFL.

So, the need for weight loss should be determined by body composition rather than bodyweight. Think about

it: Two athletes could be the same height and weight, but have different body compositions. One might have 15% body fat and the other 30%. If this were the case, only one of the athletes might need to lose weight – the one with the higher percentage of body fat.

That said, how do you measure body composition? A variety of methods can be used, such as air-displacement plethysmography (ADP), bioelectrical impedance analysis (BIA), computerized tomography (CT), dual energy x-ray absorptiometry (DEXA), hydrostatic (underwater) weighing and near infrared reactance.

But perhaps the most popular method of assessing body composition is with skinfold calipers. In general, this is considered to be the most practical and least expensive method of assessment without sacrificing much in the way of accuracy (assuming that the tester is reasonably skilled and the formula is reliable).

What's a good percentage of body fat? To a large degree, it depends upon the sport. In most sports, a low percentage of body fat is desirable; in other sports, a high percentage of body fat is actually advantageous. For instance, long-distance swimmers obtain increased buoyancy and thermal insulation from higher levels of body fat.

THE BOTTOM LINE:

The best way for an athlete to gain, lose, or maintain bodyweight is by sticking to the basics.

To gain weight (lean-body mass), the athlete must consume more calories than he expends.

To lose weight (fat), he must expend fewer calories than he consumes.

To maintain weight, he must consume the same number of calories than he expends.

The implementation of the aforementioned tactics will allow this to happen in a safe and effective manner. ■



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