

COACHING

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The Effect of Horizontal Ball Placement on Defending Big Plays in the Game of Football

by

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Football coaches have spent a great deal of time discussing vertical field position and how it affects outcomes and decisions during the course of a particular game but, traditionally, many coaches

have ignored the element of horizontal field position. Horizontal field position can affect strategy and tactical decisions on the part of both offensive and defensive coaches.

Context of the Problem

Troppmann (1969), Lombardi (1973), Wacker & Morton (1980), and Capra & Martin

Strength Training Q&A #2

by

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I keep hearing that walking will use up the same number of calories as running. Also, doesn't walking "burn" more fat while running uses more carbohydrates?

During any activity, your rate of caloric expenditure is directly related to your intensity of effort — the higher your intensity, the greater your rate of caloric expenditure. In the case of running, your intensity is directly associated with your speed — the faster you run, the greater your rate of caloric utilization. Your time of activity is also a factor — the longer that you perform a given activity, the greater your total caloric expenditure.

The American College of Sports Medicine (ACSM) offers formulas for estimating the utilization of calories for both walking and running. Let's compare the calories used by a 165 pound male over the same distance but at different speeds (or intensities). Based upon the ACSM formulas, a 165 pound man who walks 3 miles in 60 minutes will utilize roughly 4.33 calories per minute. Over the

course of his 60 minute walk, his total caloric usage would be about 260 calories. If that same individual ran those 3 miles in 30 minutes, he would use about 13.38 calories per minute. (Note the higher rate of caloric utilization.) In this case, he would have expended about 401 total calories during his 30 minute run. So, walking doesn't really use up more calories than running.

The second part of your question pertains to the body's preference for different substrates — or fuels — to provide energy. Energy is measured in calories and is obtained through the foods — or nutrients — that you eat. Three nutrients provide you with a source of energy: carbohydrates, fats and proteins. Your body elects to use carbohydrates — stored as glycogen in your muscles and glucose in your liver and bloodstream — as its principal fuel during intense exercise. On the other hand, your body prefers to use fats as its primary fuel during low intensity exercise — such as walking. (Proteins are the body's least preferred fuel.)

These physiological facts have been misused by those in the weight loss industry who suggest that if you want to "burn" fat and lose weight you should exercise at a low intensity. In order to lose weight, you must use up more calories than you take in to produce a "negative caloric balance" or caloric deficit. Whether you use carbohydrates or fats to produce this negative balance is immaterial. A caloric deficit created by the selective use of fat as fuel doesn't necessarily translate into greater fat loss compared to an equal caloric deficit created by the use of carbohydrate as fuel.

According to Dr. Jack Wilmore, a professor in the Department of Kinesiology and Health Education at the University of Texas, the notion of comparing "fat-burning" exercises to "carbohydrate-burning" exercises in order to promote weight loss is a common misconception endorsed by many fitness professionals, particularly aerobic instructors. Calculations by Dr. Wilmore and an associate, David Costill, have confirmed that a larger percentage of fat is

used during low intensity exercise. However, they also determined that the total grams of fat utilized during high intensity exercise is actually greater than low intensity exercise. This is because the total energy output is higher during intense exercise.

In short, researchers who perform studies and review the scientific literature in the area of exercise and weight control generally agree that it probably doesn't matter whether you use fats or carbohydrates while exercising in order to lose weight. One final point: for most people, walking usually doesn't elevate the heart rate enough to produce a conditioning effect.

What exercises in the weight room are specific for basketball?

Your question raises a number of important issues. Are there sport-specific or even position-specific exercises? Should a basketball player perform different exercises than a football player or a swimmer? Or, should a power forward perform a strength workout that differs from that of a center or a shooting guard?

A basketball player has the same muscles which function in the same manner as any other athlete. For example, your bicep muscle flexes your lower arm around your elbow joint. The same is true for a diver, shot putter, quarterback, lacrosse player and defensive lineman. It follows that there is no such thing as a sport-specific or position-specific exercise. For that matter, there aren't any gender-specific exercises, either. Some athletes might perform certain movements as a precaution to prevent an injury to a joint that receives a lot of stress in their particular sport, such as a wrestler using neck exercises. Athletes might also perform a movement to focus on a particular muscle group that is absolutely critical to their sport. For instance, a golfer who relies on grip strength might exercise his or her forearms while a soccer player would not. Other than that, athletes should select movements that exercise their muscles in the safest and most efficient way possible — regardless of sport or activity. Remember, skill training and conditioning are specific to a sport but strength training is general.

About the Author

Matt Brzycki has been the Strength Coach and Health Fitness Coordinator at Princeton University since August 1990. Coach Brzycki has authored more than 90 articles on strength and fitness and a book, *A Practical Approach to Strength Training*, which is in its second edition. He has also coauthored the book *Conditioning for Basketball* with Shaun Brown, Strength Coach for the University of Kentucky basketball team.

Coach Brzycki will answer questions about strength training and conditioning in this column. If you have questions, you can write to him at the following address:

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