Burst Training

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Have you heard of burst training? It may be the fastest, most convenient high-intensity cardiovascular exercise that exists. It is also extremely effective. There are many programs in exercise that work very well. The only problem is most people won't do them. As personal trainers, we love exercise and are always keen to try something new, but what about all the non-exercisers out there? Plenty of people think long-duration cardio takes too much time or is too boring, and high-intensity interval training is just too hard for many. Burst training has several key advantages that set it apart and address these common reasons for avoiding activity. Bursting requires very little time to perform and can literally be done anywhere. It also takes advantage of many of the same elements of interval training, sprint training, or any other short duration high-intensity workout.

What is it?

Before we get into the specifics of how to do burst training, we need to first define what it is. Virtually everyone has experience with burst training. Remember the stop and start movement of tag as a child? How about running quickly up a small flight of steps or charging through the rain to your car to keep from getting wet? Burst training is all over the sports world too. The sprint from home plate to first base after a ground ball in baseball is one example. The quick acceleration off the line of scrimmage in a football game is another.

Burst training consists of very short and intense bouts of activity that are usually repeated several times throughout the day. These bouts last a maximum of one minute. The premise behind this style of training is that the shorter the duration of exertion required, the harder someone will actually push. And of course, the harder someone pushes the more likely they will reach the goal of any burst training protocol. That goal is oxygen debt.

Oxygen debt or excess post-exercise oxygen consumption (EPOC), as it is known in exercise science, is a compensatory mechanism by the body. In response to very intense exercise, even of short duration, the body will set into motion several physiological processes that consume excess calories and fat long after the movement has stopped. These involve lactic acid, glycogen resynthesis, fatty acid cycling, and hormonal effects. These are the same biochemical processes at work in sprinters and interval training. Except in burst training the training bout is very short.

Here is how it works

Imagine waking up in the morning, walking outside and sprinting as hard as you can 100 yards down the street. Then, walking back to the house and going through your morning routine as normal. Then again, on the way back from lunch, sprinting up three stories of steps to your office building rather than taking the elevator. Later in the day, after returning home, you drop to the ground and rep out as many push-ups as possible in sixty seconds. Finally, later in the evening on commercial break of your favorite TV show, you do as many squat jumps as possible in sixty seconds. In all you would have accumulated four minutes of activity for the day. However, the physiological effect created is like dropping a stone in a quiet pond. A metabolic ripple is created with each all-out intense burst. And better yet, each successive burst adds to the effect of the next. All with no sweating (the exercise is too short to sweat), no huge time commitment, and total convenience.

The science

Obviously this is going to be a shocking proposal to some personal trainers. It can almost sound like science fiction. As a personal trainer you may be asking if this can really work. After all, we have been

told for years that, at least 20 minutes of continuous exercise is required to produce results. Also, can four minutes have any real effect on body composition or fitness parameters? New research suggests it can.

Today, people incorrectly assume that in order for exercise to be effective it must be continuous for at least twenty minutes. The last twenty years of research has changed that assumption. The American College of Sports Medicine (ACSM) and the Centers for Disease Control (CDC) released a joint statement in 1995 after a thorough review of the research. In this report they acknowledged that short bursts of activity can induce an effective physiological training response. Here is a direct quote "accumulation of physical activity in intermittent, short bouts is considered an appropriate approach to achieving the activity goal." This acknowledgement by some of the major policy makers in the fitness industry represents a huge shift in thinking about the effects of exercise.

The skeptics among us may assume this policy shift is more about getting lazy people who do nothing to at least do something. However, when we look at some of the research in this emerging fitness paradigm we have to admit there is something to this. As far back as 1993 it was shown that very short bursts of activity could elicit a significant oxygen debt. That same year, the European Journal of Applied Physiology (vol 67) printed a study showing that sixty seconds is an optimal time for high-intensity activity to elicit an oxygen debt that, in turn, can elevate fat burning at rest.

Another study, in the international Journal of Obesity and Related Metabolic Disorders (1995 Vol 19 # 12), showed bursts of activity improved exercise adherence and increased fat loss. Another interesting finding of this study was that short bouts of exercise were able to improve aerobic capacity comparable to that of longer exercise sessions. A 2005 article out of McMaster University and published in the Journal of Applied Physiology had similar findings. In this study, seven thirty second sprints done once every third day for 2 weeks (roughly 8 minutes of exercise per week) significantly enhanced fat burning and doubled aerobic capacity of recreational exercisers. This is a real world example of having your cake and eating it too, and creates new opportunities for people who hate spending hours exercising.

Is it Practical?

The theory and practice of short bursting activities definitely has merit and can definitely be an important addition to any fitness regime. But what about those extremely out of shape couch potatoes with weak joints? Is it practical for them and can it produce results in even very small doses? Dr. Mark J. Smith, a PhD in exercise physiology and a leading researcher on burst training, uses a small stepping device called the X-iser. In his studies using this machine he has been able to reduce the traditional drawbacks of high-intensity exercises, like excessive pounding and muscle strain. This, portable, hydraulic stepping machine has been built to allow for an impact-free work-out while aligning the body perfectly for intense movement.

In several of his studies he shows the practicality and effectiveness of this approach. In 2005, Dr. Smith conducted a pilot study where subjects exercised in short one-minute bursts throughout the week to accumulate a total of just 12 minutes a week. The study lasted for 12 weeks. At the end of the study, the participants lost an average of 13 inches over the whole body and improved their work economy by more than 12 beats per minute on the Harvard Step Test. In another study, conducted at Colorado State University, Dr. Smith and his colleagues compared three minutes of burst training to 20 minutes of traditional aerobic activity and the effect on energy consumption. With a nearly five-fold greater rate of oxygen consumption, the three minutes of burst training burned 74% of the calories that the twenty minute period accomplished!

Final Thoughts

Burst training is an effective means of exercising despite requiring only a miniscule amount of time. And, like most powerful ideas in the world, it is also super simple. Bursting can be incorporated within a more traditional exercise program for added benefit or can be used alone for those completely averse to exercise. With only 12 minutes of accumulated bursts throughout the week showing a substantial benefit, this approach eliminates the most common reason for exercise avoidance, lack of time.

Bursting is also very convenient in that it can be used in many different scenarios and places. The incorporation of a machine like the one used in Dr. Smith's studies can even make this style of training appropriate for the extremely obese or severely deconditioned. Simple, effective, and convenient tools are hard to come by in the world of fitness. With burst training you and your clients now have a new science-based tool to deliver improved results in a time starved world.