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Q&A

[BY MATT BRZYCKI]

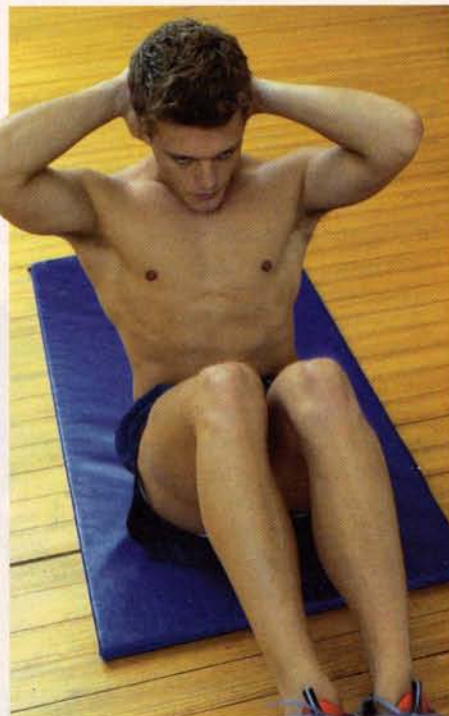
Are portable abdominal machines better than traditional crunches?

Whether an abdominal machine is better than crunches depends on the machine. A number of studies have compared the electromyographic activity of the abdominal muscles during the use of "portable" abdominal machines (many of which have been popularized on those pesky infomercials) and traditional crunches (a.k.a., "curl-ups" or abbreviated sit-ups). With very few exceptions, the research has shown that these abdominal machines aren't significantly better than good, old-fashioned crunches (performed by raising the head and shoulders off the floor).

The portable machines that are most effective are those that have a movement pattern similar to a traditional crunch, and offer the ability to increase the resistance. Another caveat: An abdominal machine in which the user is in

a vertical (seated) position must provide enough resistance to counteract the force of gravity acting on the torso. Otherwise, the weight of the torso will help to move the resistance. (An advantage of a vertical position is that it may make it easier for some people to enter and exit the machine.)

Regardless of whether a machine or crunch is used, the repetitions must be executed with a controlled speed of movement. This way, momentum isn't a significant factor in the performance of the exercise. **FM**



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Is it possible to improve muscular strength and aerobic fitness by performing strength and aerobic training on the same day?

Researchers in one study randomly assigned 30 subjects to one of three groups: a group that performed strength training, a group that performed aerobic training, and a group that performed strength training and aerobic training. The last group performed the same protocols as the former two groups, but the strength training and aerobic training were performed in the same workout. All groups trained three times per week for 10 weeks. At the end of the training period, the subjects who performed strength training and aerobic training in the same workout had significant increases in muscular strength and aerobic fitness. Furthermore, the subjects' increases in muscular strength were comparable to the subjects who only performed strength training, and their increases in aerobic fitness were comparable to the subjects who only performed aerobic training.

Essentially, there are two options for scheduling strength and aerobic training: Both activities can be performed on the same day or on alternate days. The advantage of performing both activities on the same day is that it permits a more complete recovery. If strength training is performed on one day and aerobic training the next, the muscles will be constantly stressed, and the body may not have adequate time to recover properly. From a psychological standpoint, it may also be difficult to perform intense training a number of days in a row with a high degree of enthusiasm. Therefore, the recommended way of scheduling strength training and aerobic training is to perform both activities on the same day. The activities can be done on al-

ternate days, however, if preferred, or if enough time isn't available to perform both activities on the same day. **FM**

Are different muscles involved when using a stairclimber while facing away from the machine?

In the literature, facing away from the stepper is referred to as "retrograde" stepping. One study compared the electromyographic activity of the gluteus maximus, quadriceps (the rectus femoris and vastus medialis), hamstrings (semimembranosus and semitendinosus) and gastrocnemius during forward stepping and retrograde stepping at the same rate (60 steps per minute). The researchers found that retrograde stepping produced a significantly greater activation of the hamstrings than forward stepping. There were no significant differences in the activation of any other muscle between the different directions of stepping. (There was less activation of the gluteus maximus and gastrocnemius during retrograde stepping, but it wasn't significantly less.)

So, it seems as if the direction of stepping only affects the activity level of the hamstrings. Be that as it may, forward stepping is a much more natural movement. Retrograde stepping is awkward, and difficult for the user to maintain balance. **FM**

Do you have questions that you need answered? Email them to edit@fitnessgmt.com.

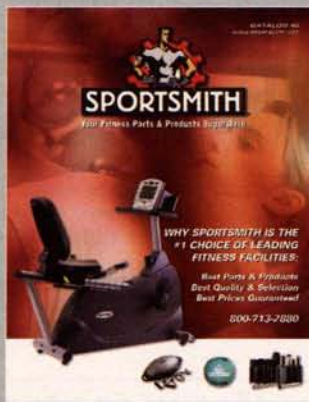
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