

Repeated sessions of exercise burn more fat than a single, long session

Taking a break in the middle of your workout may metabolize more fat than exercising without stopping, according to a recent study in Japan. Researchers conducted the first known study to compare these two exercise methods—exercising continually in one long bout versus breaking up the same workout with a rest period. The findings could change the way we approach exercise. Who wouldn't want to take a breather for that?

“Many people believe prolonged exercise will be optimal in order to reduce body fat, but our study has shown that repetitions of shorter exercise may cause enhancements of fat mobilization and utilization during and after the exercise. These findings will be informative about the design of [future] exercise regimens,” said lead researcher Kazushige Goto, Ph.D. “Most people are reluctant to perform a single bout of prolonged exercise. The repeated exercise with shorter bouts of exercise will be a great help [in keeping up with fitness].”

This finding is part of a study entitled "Enhancement of fat metabolism by repeated bouts of moderate endurance exercise", found in the June 2007 edition of the *Journal of Applied Physiology*, which is published by the American Physiological Society. It was conducted by Kazushige Goto, of both the Department of Life Sciences, Graduate School of Arts and Sciences, University of Tokyo, Komaba, Tokyo, Japan and the Institute of Sports Medicine, Bispebjerg Hospital, Copenhagen, Denmark; Naokata Ishii, of the Department of Life Sciences, Graduate School of Arts and Sciences, University of Tokyo, Komaba, Tokyo, Japan; and Ayuko Mizuno and Kaoru Takamatsu, both of the Institute of Health and Sport Sciences, University of Tsukuba, Tsukuba, Ibaraki, Japan.

Summary of Methodology

The researchers used seven healthy (avg. body mass: 66.1, percentage fat: 17.6) men with an average age of 25 who were physically active and familiar with exercise and had them perform three separate trials:

- one single bout of 60-min exercise followed with a 60-min recovery period (Single)
- two bouts of 30-min exercise with a 20-min rest after the first 30-min bout, along with a 60-min recovery period at the end (Repeated)
- one 60-min rest period (Control)

The men performed each trial at the same time of day after fasting overnight. They exercised on a single ergometer (cycling machine) at the commonly recommended exercise prescription of 60% maximum oxygen intake. The recovery and rest periods were conducted while the subjects sat in chairs. Blood samples were taken every 15 minutes during the exercise and every 30 minutes during the recovery period. Their respiratory gas and heart rates were monitored continuously throughout the trial.

Summary of Results

The Repeated trial showed a greater amount of lipolysis (fat breakdown) than did the Single trial. This Repeated trial also had a pronounced increase in free fatty acids and glycerol (chemical compounds that are released when stored fat is used) concentrations in the final 15 minutes of exercise, whereas these concentrations only progressively increased throughout the Single trial. Also, the second half of the Repeated trial showed a significantly greater epinephrine response while also having a rapid decrease in insulin concentration as a result of lower plasma glucose. This combination of high epinephrine and low insulin concentration may have also increased the lipolysis. There was also enhanced fat oxidation in the

recovery period of the Repeated trial than in the Single trial, but this result may be because the free fatty acids concentration was already high before the recovery period.

Conclusions

The American College of Sports Medicine recommends moderate exercise for the duration of 45 to 60 minutes to ensure a sufficient amount of energy is depleted in obese individuals. This has caused a greater focus on extending exercise sessions in order to burn more fat. However, this study shows that this method may not be the most effective way to enhance fat metabolism, as splitting up a long bout of exercise with a rest period burns more fat than a continuous bout of exercise. This study could help with the practical application of implementing new exercise methods in order to better manage and control weight in individuals in the future. However, Goto and his team of researchers plan on conducting further studies in order to explore the results in a variety of exercise durations as well as in different types of individuals.

Source: American Physiological Society

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