

Serving Size and Waist Size

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In the spring of 2003, I wrote a four-part series on U.S. food consumption and obesity.¹⁻⁴ I included many tables of disappearance data derived from the National Health and Nutrition Examination Surveys. Although it was in contrast to what many famous diet-book authors contend, my opinion and conclusion was that the obesity problem is caused by too much of everything. Granted, disappearance data are far from exact, but the expansion of our waistlines seemed to parallel the amount of food in that data (which also included examples of how much serving sizes have grown).

Since I wrote that series of articles, the evidence for my complex theory that weight gain may be related to caloric intake has been building.⁵⁻⁸ I recently came across a small study that adds to my theory.⁹ Thirteen college students (nine males, four females) were recruited for what they thought was a two-week study on food taste enhancers and the perception of certain foods. On a Monday, Wednesday, and Friday of one week, a lunch buffet was set up for them. They were instructed to take and eat as much food as they wanted. Their plates were weighed and analyzed before each meal.

When the test subjects had finished eating, researchers again analyzed anything left on their plates. Subjects also kept a food and activity diary on the study days.

In the second week, the subjects were divided into three groups. This time, the researchers provided the food, based on the average of what and how much the subjects had consumed during their three buffet meals the previous week. Subjects were instructed to follow their food and activity diaries from week one - in other words, eat the same type and quantity of food they had in the previous week, and maintain the same activities that were listed in their diaries. The subjects had the impression that this was needed to rule out any effect different foods, portions, or activities would have on their "taste enhancement and food perception," which were supposedly being studied during their lunches. In reality, researchers were studying what effect serving size had on the amount consumed.

As indicated in the table below, the 100 percent meal was an average of the amount the subjects self-selected in week one. Then, 25 percent or 50 percent more of the same types of foods were added to their plates on various days in week two. Results showed that the average calories consumed on the 100 percent days were 698. Subjects ate 863 calories when their plates contained 125 percent of the foods they had self-selected, and 971 calories on the days their plates contained 150 percent of the amount they had originally selected. The amount of food both males and females consumed was not associated with hunger; in all cases, consumption was directly associated with portion size.

	Monday	Wednesday	Friday
Week 1	Buffet lunch	Buffet lunch	Buffet lunch
Week 2	Group 1 (100%) Group 2 (125%) Group 3 (150%)	Group 1 (150%) Group 2 (100%) Group 3 (125%)	Group 1 (125%) Group 2 (150%) Group 3 (100%)

* Percentages refer to portion size, as determined by the average of the amounts consumed *ad libitum* in week one.

This study was far from perfect and had plenty of limitations, including 1) a small sample size; 2) supervision only on the test meal; and 3) a short duration. However, it does make one stop, pause and consider the remote possibility that the more they give us, the more we eat.

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JUNE 2005