

The Benefits of a Weight Loss Contest in Overweight and Obese College Students

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The purpose of this study was to examine whether a weight loss contest would result in changes in body composition in college students. Students were invited to participate in a semester-long weight loss contest. Monthly “weigh-ins” included body weight, body mass index (BMI), percent fat, and circumference measurements. Thirty-nine participants registered for the contest. Only 41% of the original participants attended at least four weigh-ins ($n = 16$). Those participants who attended at least four weigh-ins attended more education and exercise sessions than the other participants and significantly reduced their weight, BMI, percent fat, waist, and waist-to-hip ratio over the semester-long contest. Percent change in weight was associated with education ($r = -.39$) and exercise sessions attended ($r = -.41$). In conclusion, campus-based weight loss contests can be successful in promoting weight loss, although additional studies are needed to determine what factors increase adherence and whether such programs promote long-term changes in physical activity and diet.

Keywords: obesity, weight loss, college students

The prevalence of overweight and obesity is significantly increasing in the United States. Previous research suggests that more than half of the adult population in the United States is overweight or obese, with the percentages increasing significantly over the last 15 years (Flegal, Carroll, Ogden, & Johnson, 2002; Kuczmarski, Flegal, Campbell, & Johnson, 1994). Results from the Behavioral Risk Factor Surveillance studies suggest that the greatest increases in overweight and obesity occur in individuals between the ages of 18 and 29 years, during the transition from adolescence to adulthood, when many attend college (Mokdad et al., 2001). Approximately 30–35% of college students are overweight or obese based on body mass index (BMI, weight in kg/[height in meters]²), up from 15% during childhood (DiGiacchino, Topping, & Sargent, 2001; Huang et al., 2003; Lowry, Galuska, Fulton, & Wechsler, 2000; Ogden, Flegal, Carroll, & Johnson, 2002; Racette, Deusinger, Strube, Highstein, & Deusinger, 2005). Physical inactivity, poor dietary choices, and increased caloric intake contribute to the increased weight gain and obesity in college-aged young adults (Centers for Disease Control and Prevention, 1997). Overweight and obesity contribute to the development of a

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number of chronic diseases in young adults, including hypertension, cardiovascular disease, and diabetes (Sharp et al., 2003; Teixeira, Sardinha, Going, & Lohman, 2001; Weiss et al., 2003).

Campus-based health promotion programs specifically designed for the student lifestyle, including healthy eating, weight loss, and physical activity, might be important in developing long-term healthy habits during and after college. Such programs might reduce the incidence of overweight and obesity in young adults, which might translate to a lower incidence of overweight and obesity in adults. The potential long-term reduction in the incidence of cardiovascular diseases and diabetes will have a significant impact on health care costs.

A few studies have examined the effects of nutrition education and specific weight control programs on college students' ability to lose weight (Hudiburgh, 1984; Sloan, Tobias, Stapell, Twiss Ho, & Beagle, 1976). These studies used behavioral and diet therapy techniques alone (Sloan et al.) or in combination with regular exercise (Hudiburgh) to promote weight loss in college-aged women. In both programs, the average weight loss was approximately 5 kg over a 12-week period. Sloan et al. reported that only 9 of the original 15 participants completed the weight loss program, whereas Hudiburgh reported that all 20 original participants completed the program, which was offered as a college-credit course that could be used toward any undergraduate degree. Hudiburgh followed up with participants one year after completion of the program, although only 8 of the 20 women participated in the follow-up testing. Six of these women had maintained the weight loss or had lost additional weight since completing the study. These studies confirm that weight loss programs can be successful in college-aged adults. Additional studies are needed to examine what factors, other than course credit, might increase adherence to a weight loss program and long-term maintenance of weight loss and healthy eating habits.

The popularity of the television show *The Biggest Loser* has increased the number weight loss contests as part of programming at recreation centers and residence halls on college campuses in the United States. Although the contest format might be an effective way to encourage student participation, it might also result in dieting behaviors that are unhealthy for participants, such as skipping meals, using diet pills, purging, and excessive amounts of exercise. The addition of educational programs that encourage safe weight loss strategies, a healthy diet, and appropriate daily physical activity might reduce the risk of unhealthy dieting and eating behaviors and might promote additional weight loss.

In the spring of 2006, the Campus Recreation Center at a university in the northeast part of the country offered a weight loss contest as part of the semester programming. The weight loss contest encouraged students to lose weight and start healthy lifestyle habits, including healthy eating and regular exercise. The purpose of this investigation was to examine whether a weight loss contest resulted in beneficial changes in body composition in college students. It was hypothesized that those students who attended the educational and exercise programs during the contest would lose significantly more weight than those who did not.

Method

Participants

A campus-based weight loss contest was initiated in the spring of 2006. Participants (35 undergraduate and 4 graduate students) were invited to monthly weigh-ins (held in February to May), during which body weight, BMI (kg/m^2), percent body fat, and waist and hip circumferences were recorded. Each participant paid a \$10 entry fee, which was refunded to them if they attended all of the weigh-ins. As part of the contest, participants were awarded points for reductions in body weight, percent body fat, and circumference measurements. In addition, participants were offered a variety of educational programs focusing on nutrition, healthy eating, and exercise, as well as group fitness classes and specific instruction on how to start and maintain a regular exercise program. Participants received points for attendance at the educational programs or exercise sessions. The individuals with the top three point totals at the end of the contest were given gift certificates worth \$150 to \$500.

Materials

Body weight and height were measured using a standard physicians scale (Healthometer 400-S) and height measuring stick. BMI (kg/m^2) was calculated from weight and height measurements. Percent body fat was assessed using a hand-held bioelectrical impedance body fat device (Omron Body Logic Body Fat Analyzer HBF-306). Waist and hip circumferences were measured at the narrowest point superior to the hip and at the greatest gluteal protuberance, respectively, using a standard tape measure.

Procedure

Investigators in the Physical Therapy and Clinical Laboratory Sciences and Nutrition Departments received approval from the University Institutional Review Board in the fall of 2006 to analyze the data from the weight loss contest. Campus Recreation Center staff provided the data, with all personal identifiers removed, to investigators.

Data were analyzed using standard statistical software packages (Statview for Windows, SAS Institute, Cary, NC). Differences in body composition values in participants who attended four or more weigh-ins, two or three weigh-ins, or one weigh-in were determined using Kruskal–Wallis ranking nonparametric statistical tests. Differences between initial and final measurements were determined using Wilcoxon sign rank tests. Spearman rank correlations were performed between key variables and percent change in weight (those who attended one weigh-in were not included in this analysis). All data are presented as $M \pm SEM$. Statistical significance was set at $p < .05$.

Results

Thirty-nine participants (26 women, 13 men; 19–35 years of age) registered for the weight loss contest. Forty-one percent of the original participants (12 women and 4 men, 22 ± 1 year) attended four ($n = 6$) or five ($n = 10$) weigh-ins between February and May, and the remaining original participants (14 women and 9 men, 21 ± 1 year) attended three ($n = 7$), two ($n = 5$), or one weigh-in ($n = 11$) between February and May. Participants were divided into three groups: those who completed at least four weigh-ins, those who completed two or three weigh-ins, and those who completed only one weigh-in. Those who completed at least four weigh-ins attended 4.0 ± 1.3 educational sessions (range of 1–15 classes), compared with 1.6 ± 0.5 classes for those who completed two or three weigh-ins (range of 0–6 classes). In addition, those who completed at least four weigh-ins attended group or individualized exercise sessions 33.7 ± 6.7 times during the semester, which was significantly more than those who completed two or three weigh-ins (10.4 ± 2.5 exercise sessions). Participants who completed only one weigh-in did not return for any additional programs related to the weight loss contest or did not report attendance at educational or exercise sessions to Campus Recreation Center staff.

Baseline body weight, BMI, percent body fat, and circumference measurements did not differ between the three groups, although those who completed only one weigh-in tended to weigh more compared with the other groups (Table 1, $p < .1$). Those who completed at least four weigh-ins significantly reduced body weight, BMI, percent body fat, and waist circumference ($p < .05$), while those who completed two or three weigh-ins significantly reduced waist circumference, with no significant change in body weight, BMI, percent body fat, or hip circumference (Table 1).

Significant correlations were observed between percent change in body weight and the number of education classes attended ($r = -.39$, $p < .05$) and the number of exercise sessions attended ($r = -.41$, $p < .05$).

Table 1 Body Composition of Participants Before and After Semester-Long Program

	Number of weigh-ins attended					
	One ($n = 11$)		Two or three ($n = 12$)		Four or more ($n = 16$)	
	Baseline	Baseline	Post	Baseline	Post	
Weight (kg)	102.6 ± 7.1	81.8 ± 5.3	80.9 ± 5.1	84.7 ± 4.8	81.5 ± 4.4^a	
BMI (kg/m ²)	34.1 ± 1.5	30.3 ± 1.5	29.9 ± 1.5	29.3 ± 1.7	28.3 ± 1.5^a	
% body fat	33.5 ± 1.7	33.2 ± 1.9	33.3 ± 1.7	29.9 ± 1.8	28.3 ± 2.0^a	
Waist (cm)	103.6 ± 4.5	94.3 ± 3.7	90.5 ± 3.6^a	92.1 ± 3.8	87.5 ± 3.3^a	
Hip (cm)	116.5 ± 3.8	110.9 ± 3.2	109.2 ± 3.1	112.5 ± 3.3	109.6 ± 2.6	

Note. Values are means \pm SEM; n = number of participants in the group; BMI, body mass index.

^aSignificantly different, baseline vs. post, $p < .05$.

Discussion

This preliminary study demonstrates that a campus-based weight loss contest can result in beneficial changes in body composition in individuals who attend exercise and educational sessions. Unfortunately, less than half of the participants attended the monthly weigh-ins, educational sessions, and exercise sessions. Additional studies will be necessary to improve the adherence and motivation of the students to lose weight and attend specific programs designed to help them lose weight. In addition, studies will need to examine whether those who lose weight are able to maintain the weight loss, healthy eating, and exercise habits after the program has ended.

The results of this study suggest that a weight loss contest that encourages healthy eating and increased physical activity and is designed specifically for the college student can result in reductions in body weight, BMI, percent body fat, and circumference measurements. These results are similar to previous reports of significant weight loss in college students who take a college nutrition course or participate in a weight loss program offered by campus health services (Hudiburgh, 1984; Sloan et al., 1976). The results of the current investigation emphasize the importance of nutrition education and increased physical activity as key to the success of a weight loss program in college students, as demonstrated by the significant relationship between percentage of weight loss and attendance at educational and exercise sessions.

Of concern to the investigators are the 23 individuals (60%) who registered for the weight loss contest and attended three weigh-ins or less. The contest format and prizes for the top three finishers might have provided the necessary incentive for some students who were motivated to lose weight and to attend the monthly weigh-ins, educational programs, and exercise sessions. Unfortunately, this incentive was not enough for all participants. The reasons why the contest incentive worked for some, but not all, of the participants were not examined as part of this study because this information was not collected by the campus recreation staff. Previous studies suggest that age-appropriate incentives (financial or academic-performance related), social support from family and friends, and addressing time-constraint issues are important in improving the adherence of college students and adolescents who are participating in exercise programs (Epstein, Wing, Thompson, & Griffin, 1980; Neumark-Sztainer, Story, Hannan, Tharp, & Rex, 2003). Of additional importance are the availability of educational programs on a healthy lifestyle (online, in person, or print material), availability of exercise facilities, one-on-one nutrition counseling, and personal trainers to assist with exercise program development (Pinto, Chericco, Szymanski, & Marcus, 1998). A number of studies suggest that an individual's self-efficacy, or self-confidence, and stage of change, or how an individual progresses toward a change in behavior, can strongly predict the success of an intervention such as a weight loss program to facilitate changes in diet and physical activity (Prochaska, DiClemente, & Norcross, 1992; Pinto, 1995). Thus, in addition to personal (time, social support, incentives) and environmental factors (location and convenience of program, availability of healthy food options in dining halls and campus eateries, availability of options for regular physical activity), psychological issues must also be considered when developing a campus-based program that encourages weight loss through regular exercise and healthy eating. Future studies

will need to examine what factors or incentives might result in a higher percentage of students attending weigh-ins, educational programs, and exercise sessions. These studies will help campus recreation professionals to develop effective and successful programs that will be well attended by the student population.

It should also be noted that people who did not complete the study did not gain weight, for the most part. Of the participants who attended two weigh-ins, one gained weight (approximately 1 kg), one lost weight (approximately 1 kg), and three did not change body weight (change in weight was found to be less than 1 kg). Of the participants who attended three weigh-ins, one gained weight (3.2 kg), three lost weight (average of 1 kg each), and three did not change body weight. No such data could be collected on the remaining 11 individuals who weighed in once and did not return.

There are limitations to the current study. The current study was a postanalysis of a college campus-based weight loss contest and included a small number of male and female undergraduate and graduate students. The study did not examine what factors contributed to the weight loss observed in participants, such as changes in diet and physical activity, or what factors contributed to adherence to the program and successful weight loss. Thus, although we can assume that those who lost weight made significant changes in their diet and physical activity, we have no data or evidence of these changes. Additional studies and programs will need to evaluate changes in diet by using diet records or dietary recall and changes in physical activity via recall or accelerometer, and how these changes contribute to successful weight loss in college students. In addition, the current study also did not follow up with contest participants to evaluate how many were able to maintain the weight loss and presumed healthy changes in nutrition and physical activity after the contest was over. Long-term maintenance of these healthy changes in body weight and lifestyle will be important in reducing the long-term risk of cardiovascular disease in the U.S. adult population. This will need to be examined thoroughly in future studies.

Conclusion

In conclusion, college campuses provide the ideal environment for promoting healthy lifestyle habits, including healthy eating and regular physical activity. Weight loss programs specifically designed for the college student can be successful at promoting weight loss in motivated students, and financial incentives might be effective in motivating some students to lose weight and attend education and exercise sessions. Additional studies are needed to increase adherence to such programs, to determine what incentives might be effective in increasing adherence, and to examine whether such programs can promote long-term healthy changes in physical activity and diet.

References

- Centers for Disease Control and Prevention. (1997). Update: Prevalence of overweight among children, adolescents, and adults—United States, 1988–1994. *MMWR. Morbidity and Mortality Weekly Report*, 46, 199–202.

- DiGiacchino, D., Topping, R.M., & Sargent, R.G. (2001). Racial and gender differences in weight status and dietary practices among college students. *Adolescence, 36*(144), 819–833.
- Epstein, L.H., Wing, R.R., Thompson, J.K., & Griffin, W. (1980). Attendance and fitness in aerobics exercise: The effects of contract and lottery procedures. *Behavior Modification, 4*(4), 465–479.
- Flegal, K.M., Carroll, M.D., Ogden, C.L., & Johnson, C.L. (2002). Prevalence and trends in obesity among US adults, 1999–2000. *Journal of the American Medical Association, 288*, 1723–1727.
- Huang, T.T.K., Harris, K.J., Lee, R.E., Nazir, N., Born, W., & Kaur, H. (2003). Assessing overweight, obesity, diet and physical activity in college students. *Journal of American College Health, 52*(2), 83–86.
- Hudiburgh, N.V. (1984). A multidisciplinary approach to weight control. *Journal of the American Dietetic Association, 84*(4), 447–450.
- Kuczmariski, R.J., Flegal, K.M., Campbell, S.M., & Johnson, C.L. (1994). Increasing prevalence of overweight among US adults: the National Health and Nutrition Examination surveys, 1960–1991. *Journal of the American Medical Association, 272*, 205–211.
- Lowry, R., Galuska, D.A., Fulton, J.E., & Wechsler, H. (2000). Physical activity, food choice, and weight management goals and practices among U.S. college students. *American Journal of Preventive Medicine, 18*(1), 18–27.
- Mokdad, A.H., Bowman, B.A., Ford, E.S., Vinicor, F., Marks, J.S., & Koplan, J.P. (2001). The continuing epidemics of obesity and diabetes in the United States. *Journal of the American Medical Association, 286*, 1195–2000.
- Neumark-Sztainer, D., Story, M., Hannan, P.J., Tharp, T., & Rex, J. (2003). Factors associated with changes in physical activity: A cohort study of inactive adolescent girls. *Archives of Pediatrics & Adolescent Medicine, 157*, 803–810.
- Ogden, C.L., Flegal, K.M., Carroll, M.D., & Johnson, C.L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999–2000. *Journal of the American Medical Association, 288*, 1728–1732.
- Pinto, B.M. (1995). A stages of change approach to understanding college students' physical activity. *Journal of American College Health, 44*(1), 27–31.
- Pinto, B.M., Chericco, N.P., Szymanski, L., & Marcus, B.H. (1998). Longitudinal changes in college students' exercise participation. *Journal of American College Health, 47*(1), 23–28.
- Prochaska, J.O., DiClemente, C., & Norcross, J. (1992). In search of how people change. *The American Psychologist, 47*(9), 1102–1114.
- Racette, S.B., Deusinger, S.S., Strube, M.J., Highstein, G.R., & Deusinger, R.H. (2005). Weight changes, exercise, and dietary patterns during freshman and sophomore years of college. *Journal of American College Health, 53*(6), 245–251.
- Sharp, T.A., Grunwald, G.K., Giltinan, K.E.K., King, D.L., Jatkauskas, C.J., & Hill, J.O. (2003). Association of anthropometric measures with risk of diabetes and cardiovascular disease in Hispanic and Caucasian adolescents. *Preventive Medicine, 37*, 611–616.
- Sloan, C.L., Tobias, D.L., Stapell, D.A., Twiss Ho, M., & Beagle, W.S. (1976). A weight control program for students using diet and behavior therapy. *Journal of the American Dietetic Association, 68*, 466–468.
- Teixeira, P.J., Sardinha, L.B., Going, S.B., & Lohman, T.G. (2001). Total and regional fat and serum cardiovascular disease risk factors in lean and obese children and adolescents. *Obesity Research, 9*, 432–442.
- Weiss, R., Dufour, S., Taksali, S.E., Tamborlane, W.V., Petersen, K.F., Bonadonna, R.C., et al. (2003). Prediabetes in obese youth: A syndrome of impaired glucose tolerance, severe insulin resistance, and altered myocellular and abdominal fat partitioning. *Lancet, 362*, 951–957.

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