



# EVIDENCE FOR HEALTH PROMOTION

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**W**elcome to Evidence for Health Promotion Newsletter. The Evidence-Based Health Promotion Newsletter is an initiative of the Department of Family Medicine at the Medical College of Georgia to advance Health Promotion. This publication is being produced by the Faculty Development Group to provide evidence-based reviews of current literature regarding practices in health promotion and disease prevention as well as other useful health promotion tips. This newsletter is our effort to provide clinically relevant information to practicing family physicians in Georgia. Please respond to us with any suggestions or questions at (706) 721-4510.

## WEIGHT CHANGE AND HEALTH-RELATED QUALITY OF LIFE IN WOMEN (By Rayvelle Barney, MD)

**Fine JT, Colditz GA, et.al. A Prospective Study of Weight Change and Health-Related Quality of Life in Women. JAMA, 282;22:2136-2142.**

**Clinical Question:** Is there an association between weight change and health-related quality of life in women?

**Background:** The American population continues to be overweight

and obese despite the known hazards and increased risk of overall mortality associated with weight gain and the many benefits of weight reduction on lipid panel, insulin sensitivity and hypertension. Previous research had not fully examined the impact of weight change on functional health status.

**Population Studied:** 121,700 subjects were obtained from the Nurses' Health Study cohort from 1976 and 1975. 75,453 responded to the self-administered SF-36 Health Status Survey questionnaire. Of these women, 67,247 were alive in 1996 and completed the follow-up questionnaire from the years 1992, 1994, and 1996. After exclusion criteria, a final study sample of 45,375 women was obtained. 7,513 women were classified as weight losers, 16,983 as weight gainers, 15,602 as weight maintainers and 5,277 of those whose weight change did not fit into any of the

previous categories, leaving a cohort of 40,098 women. These women were divided according to age, <65 years and >65 years in 1992, and further stratified by body mass index (BMI). The four BMI strata (in kg/m<sup>2</sup>) were: <25.0, 25.0-29.9, 30.0-34.9, and 35.0 or higher.

**Study Design and Validity:** This is a prospective observational cohort study of a sample of 40,098 women, 46-71 years old, who were categorized into three weight change groups: weight losers-women who lost 2.25 kg (5 lbs.) or more, weight gainers-women who gained 2.25 kg (5 lbs.) or more and weight maintainers-women whose weight remained within 2.25 kg (5 lbs.) of their baseline weight over the four year period of the study.

**Outcome Measured:** The SF-36 Health Status Survey questionnaire was evaluated for changes in scores on 7 health-related quality of life dimensions: 1) physical functioning - measured by 10 items assessing the capacity to perform activities of daily living, 2) vitality - measured by 4 items designating levels of energy and fatigue, 3) bodily pain - measured by 2 items citing frequency of pain and its impediment with daily activities, 4) emotional problems - measured by 3 items indicating limitations in performing usual roles, 5) physical problems - measured by 4 items assessing how physical health impairs the ability to perform work, 6) social functioning - measured by 2 items indicating emotional and physical health on social activities, and 7) mental health - measured by 5 items indicating anxiety, depression, loss of behavioral or emotional control and psychological well-being.

**Results:** 17% (6667) of women lost between 2.25 and 9.0 kg (5-20 lbs.), 38% (15,160) gained between 2.25 and 9.0 kg (5-20 lbs.) and 39% (15,602) maintained their weight. Associations between weight gain and loss of functioning were just as strong among women >65 years of age as those younger than 65. Weight gain was consistently associated with decreased physical functioning and vitality, as well as increased level of pain among women independent of age in every BMI category. Conversely, weight loss was associated with improved vitality, physical functioning, and decreased pain among women in the 2 heaviest BMI categories. Among women with the lowest BMI and age >65 years, weight loss was associated with a 4-year deterioration in mental health scores. However, overall, weight change was more strongly associated with physical than mental factors of health-related quality of life.

**Recommendations for Clinical Practice:** Physicians may continue to be confident in their recommendations to middle-aged female patients (and others) that weight loss is significantly related to improved vitality and physical functioning, especially for women who are most overweight. While this study suggests that the expected improvements accompanying weight loss will be chiefly physical (increased vitality and decreased pain) rather than chiefly related to mental health factors, previous findings indicating the impact of reduced weight on improved self-esteem, attitude, and positive perceptions of control over one's life should also be emphasized.

## REDUCING CHILDREN'S TELEVISION VIEWING TO PREVENT OBESITY

**Reducing Children's Television Viewing to Prevent Obesity: A Randomized Controlled Trial. Thomas N. Robinson, MD, MPH. JAMA, October 27, 1999, Vol. 282, No. 16.**

**Clinical Question:** Does decreasing the amount of television watched by children prevent obesity?

**Background:** Childhood obesity is increasingly a health concern in America. Because past reports of the success of interventions for obese children have

## REDUCING CHILDREN'S TELEVISION VIEWING TO PREVENT OBESITY

(By Johnathan Gore, MD)

indicated little or no effect, this study investigated prevention programs to reduce childhood obesity.

**Population Studied:** 198 third and fourth-grade students (mean age 8.9 years) from 2 different public schools in San Jose, California matched for sociodemographics and scholastics.

**Study Design and Validity:** This was a randomized controlled school-based trial. The children were similar with respect to body measurements, amount of time in front of television, diet, physical activity and fitness. One school was randomly assigned to receive a formal program designed to reduce television, videotape, and video game use. The other school was the control. Participants were not told that the purpose of the study. The intervention program consisted of 18 hrs. of formal classroom education by the children's regular teacher who had been trained. Any family that desired received an electronic television time manager.

**Outcomes Measured:** Objective outcomes measured included weight, hip to waist ratio, triceps skinfold thickness, cardiorespiratory fitness, self-reported media use, physical activity and dietary behaviors. Main outcome was body-mass index (BMI). There was excellent test retest reliability. Both children and parents completed self-report questionnaires at the start and 7 months later. There was moderate agreement between these reports.

**Results:** Ninety-two of the 106 eligible children in the intervention school and 100 of the 121 eligible children in the control school participated in surveys. 192 of the original 198 (97%) completed the study and an intention to treat analysis was not conducted. Children in the intervention group had statistically significant decreases in BMI (-0.45 kg/m<sup>2</sup>), triceps skinfold thickness (-1.47 mm), waist circumference (-2.3 cm) and waist to hip ratio (-0.02). Both children and parents noted significant decreases in time watching television (-4.29 hrs./wk) and number of meals eaten in front of the TV. No significant changes were seen with respect to high-fat food intake, moderate-to-vigorous physical activity, or cardiorespiratory fitness.

**Recommendations for Clinical Practice:** Reducing television, videotape, and video game use may be a promising, population-based approach to prevent childhood obesity. Physicians are encouraged to ask parents about their child's television use and to encourage less time viewing television. Such behavioral change may be an effective part of preventing childhood obesity.

## USE OF HOME EXERCISE EQUIPMENT TO IMPROVE ADHERENCE TO EXERCISE IN OVERWEIGHT WOMEN

(By Michael Grant, MA)

Jakicic, Winters, Lang, & Wing. Effects of Intermittent Exercise and Use of Home Exercise Equipment on Adherence, Weight Loss, and Fitness in Overweight Women, *JAMA*, 282;16:1554-1560

**Clinical Question:** Is exercise in multiple short bouts, facilitated by home exercise equipment, better than long-bout exercise in improving exercise adherence and weight loss in overweight women?

**Background:** More than 50% of adults in the United States have a body mass index in excess of 25 and are at significant health risk due to the effects of obesity. It is known that dietary modification combined with exercise enhances short-term weight loss and that exercise is one of

the best predictors of long-term maintenance of weight loss. Public health guidelines recommend exercise, usually in accumulated long bouts because it is felt that it may be easier to schedule two or three bouts per week rather than more frequent exercise periods. Research to date has not examined the effectiveness of short bouts of exercise on weight loss, especially if the opportunities to perform these short bouts are encouraged by having access to home exercise equipment.

**Population Studied:** 148 adult women, 25 to 45 years old, with body weights 20-75% higher than ideal and sedentary (reported exercising <20 min/d on <3 d/wk for the previous 6 months). Exclusion criteria included: limiting medical conditions, medications that would affect body weight or metabolic parameters, inability to commit to participation, pregnancy within previous 3 months (or currently) or plans to become pregnant in the following 18 months.

**Study Design and Validity:** Subjects were randomly assigned to 1 of 3 exercise groups differing only the way the exercise was prescribed (number of sessions/week, duration of exercise sessions, and the availability of home exercise equipment). All exercise was home-based and all subjects were required to choose a form of exercise similar to brisk walking. The long bout exercise group performed an increasing duration of exercise (increasing from 20 to 40 minutes) for 5 d/wk. The short bout exercise group was prescribed the same amount of exercise but were instructed to divide the exercise into 10-minute bouts performed at convenient times during the day. The short bout with exercise equipment group was prescribed the same regimen as the short bout group but this group was provided with motorized home treadmills throughout the study period. All subjects participated in a behavioral weight-loss program involving weekly meetings focusing on modifying eating and exercise behaviors. The study design and statistical analyses appear appropriate to answer the clinical question although a more conservative intention to treat analysis was not performed. As such, the results may present a somewhat inflated estimation of weight loss and adherence to exercise regimen among all groups investigated.

**Outcomes Measured:** Body weight, body composition, cardiorespiratory fitness, and exercise adherence were the outcome measures of interest. Dietary intake, weight, and girth measurements were assessed at baseline and at 6, 12, and 18 months. Body composition and cardiorespiratory fitness was assessed at 6 and 18 months.

**Results:** 115 of 148 (78%) completed the study and no differences appeared between completers and no-completers. Attrition was similar among all groups. One-way and repeated measures ANOVA indicated that, at 18 months, mean weight loss was significantly greater in subjects in the short bout-home equipment group (16.31 lbs.) compared to the other short bout group (8.16 lbs.). There was no difference between weight loss in the long bout group (12.78 lbs.) compared to either the short or short-equipment. Subjects in the short bout-equipment group maintained a higher level of exercise than either other group at both 13 and 18 months. All groups showed increases in cardiorespiratory fitness from baseline to 18 months, with no differences between groups. Mean weight loss was significantly greater in subjects exercising more than 200 min/wk throughout the intervention when compared to those exercising 150 to 200 min/wk or less than 150 min/wk.

**Recommendations:** Dietary modification combined with short bouts of exercise is as beneficial as long bouts in achieving weight loss in overweight women. Clinicians may confidently encourage short bouts of exercise in an exercise program and/or as part of changes in life-style physical activity. Whether long or short, bouts of exercise should total a minimum of 150 minutes (2-1/2 hours) per week. If home exercise equipment is available to the patient, its use should be encouraged since the results of this study indicate that using home exercise equipment facilitates long-term exercise

# ORLISTAT (XENICAL) IN THE TREATMENT OF OBESITY IN PRIMARY CARE

(By Peggy Wagner, PhD)

Hauptman J, Lucas C, Boldrin MN, Collins H, Segal KR. Orlistat in the Long-term Treatment of Obesity in Primary Care Setting. *Archives of Family Medicine*, 2000;9:160-167.

**Clinical Question:** Does Orlistat increase the likelihood of weight loss in obese Primary Care patients and are the side effects tolerable?

**Background:** Obesity remains a major public health problem largely treated in primary care settings. Weight loss that does occur is rarely maintained, with NIH stating that nearly two thirds of any weight lost is regained in the following year. Effective tools for weight loss and subsequent maintenance are needed to address this chronic medical disorder.

**Population Studied:** 796 obese patients (BMI) 30-44 kg/m<sup>2</sup>) from the 17 primary care

sites participating in the Orlistat Primary Care Study Group were recruited. Exclusion criteria included recent weight loss, bulimia or laxative or substance abuse, change in smoking status in 6 months, pregnancy, hypertension, renal, hepatic or gastrointestinal disorders. Of these, 635 participated, 427 (54%) completed the first study year and 328 (41%) completed the second study year. The 635 actually enrolled patients were largely white (91%), female (78%) and approximately 42 years of age.

**Study Design and Validity:** This was a three arm randomized, double-blind, placebo-controlled, multicenter trial which included a 4-week placebo lead in to establish potential differences in weight loss across three groups-placebo, 60 mg orlistat and 120-mg orlistat. No differences were observed among the three groups initially. All patients were placed on a reduced energy diet or one year followed by a second year of weight-maintenance. All were given videos and weight loss pamphlets developed by the Live for Life program at 4 points during the first study year. No group meetings or counseling sessions were held. Exercise was encouraged but not monitored. Dietary records were compared. Screening plus 8 brief physician office visits occurred in study year one and 4 visits occurred in the second year. Data was reported for actual completers and as intention-to-treat including patients who completed the 4-week lead-in period.

**Outcome Measured:** The main outcome measure was weight change. Secondary measures of serum lipid levels, fasting serum glucose and insulin levels, blood pressure. Also of interest were side effects particularly GI events related to orlistat treatment. Laboratory evaluations of vitamins A, D, E and beta-carotene were conducted.

**Results:** Patients treated with orlistat lost significantly more weight (p<.001) and sustained more of this weight loss during study year 2 (p<.001). Orlistat groups also showed greater improvements in lipid levels and blood pressure. Over the 2 years, 59%, 72% and 79% of patients in the placebo, 60-mg orlistat and 120-mg orlistat groups reported GI events (p<.001 placebo vs 120 mg). GI events with incidence greater than 5% and incidence in orlistat groups twice that of placebo included fecal urgency, oily spotting, fatty/oily stool, flatus with discharge, oily evacuation, increased defecation and fecal incontinence. Also of note, although mean plasma levels of vitamins A, D, E and beta-carotene remained with range in all groups, the odds of two consecutive low vitamin E and beta-carotene values occurred more frequently in orlistat vs placebo patients. A and D were not different among groups.

	Placebo	60-mg orlistat	120mg orlistat
Weight loss – one year	9.12 lbs.	15.6 lbs.	17.5 lbs.
Percent with 5% weight loss – one year	30.7%	48.8%	50.5%
Percent with 10% weight loss – one year	11.3%	24.4%	28.6%
Percent who maintain 5% weight loss – two years	24.1%	33.8%	34.3%

**Recommendations for Clinical Practice:** A small weight loss of 5 to 10% has significant health benefits and appears to be more likely to occur with the adjunctive therapy of orlistat. Even with orlistat weight loss is modest and patients should be encouraged to set realistic expectations. Patients should decide for themselves if the annoying GI events are worth the extra pounds and a 34% vs 24% likelihood that the weight will still be gone in two years.

# REDUCTION OF THE RISK OF TYPE 2 DIABETES BY WALKING AND VIGOROUS EXERCISE

(By Bruce LeClair, MD)

Hu, Frank; Sigal, Ronald; Rich-Edwards, Janet; et.al. Walking Compared with Vigorous Physical Activity and Risk of Type 2 Diabetes in Women, a Prospective Study. *JAMA*, Oct. 20, 1999; Vol. 282, No. 15:1433-1439.

**Clinical Question:** Does exercise reduce the risk of developing type 2 diabetes in women and how does moderate exercise, like walking, compare with more vigorous exercise?

**Background:** There is strong epidemiologic evidence that exercise, especially vigorous exercise, is associated with a lower prevalence of type 2 diabetes. In addition, recent prospective cohort studies have demonstrated support for the role of vigorous activity. Most of these studies, however, have not looked at the effect of moderate-

intensity physical activity, such as walking vs vigorous intensity and subjects have been predominantly male.

**Population Studied:** This is part of the Nurses' Health Study cohort established in 1976. The subjects for this analysis were a cohort of 70,102 women who in 1986 were free from diagnosed diabetes, cardiovascular disease, and cancer and who completed the questionnaires in 1986.

**Study Design and Validity:** A detailed assessment of physical activity was first obtained by questionnaire in 1986 and updated in 1988 and 1992. Subjects were asked about the amount of time spent on average per week on physical activities such as walking, jogging, running, bicycling, etc. and about their usual walking pace, from easy or casual (<3.2 km/hr) to very brisk or striding (6.4 km/hr or higher). From this, weekly energy expenditure in metabolic equivalent task-hours was calculated. A supplementary questionnaire was sent to women who on any biennial questionnaire reported having a diagnosis, of diabetes. Women who had the diagnosis prior to 1986, type

## REDUCTION OF THE RISK OF TYPE 2 DIABETES BY WALKING AND VIGOROUS EXERCISE (CONT'D)

(By Bruce LeClair, MD)

1 diabetes, gestational diabetes only or who did not satisfy all the authors criteria for the diagnosis of diabetes were excluded. The study design and statistical analysis were appropriate for the question.

**Outcomes Measured:** The study measured the adjusted relative risk (adjusted for age, adjusted for smoking, alcohol use, history of hypertension, and elevated cholesterol level, menopausal status, and then further adjusted for body mass index or BMI) for the development of type 2 diabetes by quintiles of total activity in MET-hours per week.

**Results:** There was a progressive reduction in adjusted relative risk with increasing exercise. The relative risk reduction ranged from a 46% reduction in risk (highest quintile in total activity score) to a 5% reduction (lowest quintile in walking only women). Some levels of activity, when adjusted for BMI, did not reach statistical significance (the confidence intervals include one), but the authors note that since BMI and physical activity are inversely correlated and individuals whose BMI decreases are more likely to increase their physical activity.

**Recommendations for Clinical Practice:** Exercise, even moderate exercise, can reduce the risk of developing type 2 diabetes in women. Examples of the exercise levels that can reduce risk are walking normally (2 MPH) for 20 minutes three times per week (equivalent to 2.5 MET-hours/week) and walking briskly (4 MPH) for 20 minutes three times per week (equivalent to 5 MET-hours/week). Equivalent activities that can reduce risk are light house work like sweeping, polishing, ironing for 20 minutes three times per week or for 1 hour once per week (2-4 MET-hours/week), heavy housework, e.g. scrubbing floors, making beds for the same amount of time (3-6 MET-hour/week). Golf (2-7 METS), fishing (2-6 METS), and sexual activity (5-6 METS) also can attain the same level of physical activity (if engaged in for 30 minutes to an hour total per week) and could reduce the risk of developing type 2 diabetes!

Encourage your patients to be active - it all counts!



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