

Research Bites, January 2019, by Mary Yoke, PhD, FACSM, MA, MM

Physical Activity Behavior in Individuals Who Have Lost Weight

Is there a difference in physical activity levels between those who've maintained their weight loss and those who are overweight or obese? The answer, according to a 2018 study by Ostendorf et al, is *yes* (1). In this study, 90 individuals were placed into three groups based on their overweight/obesity history: 30 of the participants had maintained a 13.6-kg (~30 lb) weight loss for a year or more; 33 participants had no history of overweight/obesity, and therefore served as a control group; 27 currently overweight/obese participants had BMI measures that matched those of the first group prior to their weight loss. The groups were similar with regard to age (average age = 46.2 years), gender (mostly female), and ethnicity (mostly white).

All three groups wore an activPAL for one week so that physical activity patterns could be measured. In particular, researchers were interested in patterns of moderate-to-vigorous physical activity (MVPA), low-intensity physical activity (LPA), and sedentary behavior (SB).

Results showed that the weight-loss maintainers were significantly more active than those currently struggling with overweight/obesity. Specifically, the weight-loss maintainers spent more than four times the amount of time in moderate-to-vigorous physical activity than the overweight/obese group (an average of 39 more minutes per day), and 56 more minutes per day in light-intensity physical activity. They also had significantly less sedentary behavior, spent more time standing, and took more steps. Similar patterns were found for controls, versus the overweight/obese group, although the differences were not quite as dramatic.

None of this information will come as a surprise for health/fitness professionals and readers of this journal. What is interesting though, is the measured importance of *light-intensity physical activity* with regard to weight-loss maintenance. Numerous studies (reflected in our ACSM guidelines) have previously demonstrated the importance of moderate-to-vigorous physical activity on weight loss, weight-loss maintenance, and overall health. Unfortunately, moderate-to-vigorous physical activity, defined as activity with MET levels ≥ 3.00 , along with recommendations to perform this activity for at least 150-300 minutes per week, appears to be unfeasible for many of those struggling with overweight and obesity challenges. Higher intensities are often perceived to be difficult and very uncomfortable—and therefore unsustainable—causing adherence and success levels to drop.

It seems that a greater emphasis on light-intensity physical activity is warranted (as well as an emphasis on decreasing sedentary behavior), and in fact may even be a key factor in helping reduce the obesity epidemic plaguing developed nations around the world. To be clear,

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light-intensity physical activity is defined as movements performed at MET levels between 1.50-2.99. An emphasis on activities at this level may simply be more practical and realistic for more people, and may improve compliance. In addition to the current moderate-to-vigorous exercise programs already in place, health/fitness practitioners need to develop strategies for programming and promoting achievable lower-intensity activities. In this way, perhaps we can attract and help many more of those struggling with weight challenges. Let's use our knowledge, creativity, and enthusiasm to make a difference in the health and well-being of the general public.

Blood Flow Restriction Training: Survey of Practitioners

Blood flow restriction training has become increasingly popular over the past 15 years, and is thought to promote muscle strength, muscle mass, muscle endurance, and injury rehabilitation in athletes, the general public, clinical populations, and older adults. The blood flow restriction technique generally involves placing an inflatable cuff or tourniquet proximal to the muscle being exercised, tightening the cuff to a pre-determined percentage of the individual's limb occlusion pressure, and then performing a set of weighted repetitions at approximately 20-30% of 1RM. Researchers Patterson and Brandner (2018) determined to survey practitioners and find out how blood flow restriction training is actually being utilized in the field (2).

Responses were gathered from 250 practitioners in 20 countries. A majority of the respondents were between 18-39 years of age and were from the United Kingdom; 36 were from North America. A variety of professions were represented, including strength and conditioning coaches, researchers, physiotherapists, and sport scientists.

Most of the practitioners used blood flow restriction while performing weight training exercises, although some also used the technique in passive (no exercise) conditions, and some restricted blood flow during aerobic exercise. Increasing muscle mass was the outcome sought by 32.6% of respondents, whereas 24.2% of those surveyed were promoting rehabilitation from previous injuries. Different cuff widths were often used for upper versus lower body exercises, and most practitioners recommended blood flow restriction for approximately 10 minutes per session, 1-4 times per week, reporting good-to-excellent results across various populations. These included athletes, healthy adults, those needing musculoskeletal rehabilitation, and older adults.

Patterson and Brandner were also interested in potential negative side effects of blood flow restriction techniques. Apparently, muscle soreness (delayed onset) was the most widely reported side effect (39.2%), followed by numbness (18.5%), fainting or dizziness (14.6%), and bruising (13.1%). Previous studies have reported low occurrence rates of negative effects. It should be noted however that a few studies have found rare incidences of rhabdomyolysis, retinal occlusion, thrombosis, and skeletal muscle damage. It is recommended that practitioners

be cautious when choosing the amount of pressure/restriction that is applied. The study's authors conclude by stating that blood flow restriction training appears to be a safe and valid mode of exercise, but that screening for key contraindications is needed.

Reducing Blood Pressure in the Workplace with a Stress Management Program

Hypertension (high blood pressure) is a modifiable risk factor for cardiovascular disease, and affects over one third of U.S. adults. It is commonly treated with medications and recommendations for increased physical activity, healthier eating behaviors, and weight loss. Stress management programs, especially in the workplace, are seldom performed with the specific goal of reducing high blood pressure. Therefore, researchers Clemow et al (3) aimed to test the effects of a multicomponent, cognitive-behavioral intervention for stress and anger management on the blood pressure levels of 92 medical center employees with hypertension.

Participants in this randomized, controlled trial had an average age of 48.5 years, an average BMI of 31.3, were predominantly female (77%), racially and ethnically diverse (e.g. 46% non-Hispanic black, 28% Latino), and had baseline average blood pressures of 148.0/90.8 mmHg. Several psychosocial assessments were given at baseline and again two months after the intervention. These instruments included assessments of hostility, depression, perceived stress, burnout and emotional exhaustion, social support, and the tendency for excessive rumination and brooding.

The stress management intervention consisted of 10 weekly one-hour sessions in groups of 8-10 participants; the sessions were held onsite at work during lunch breaks. Standardized protocols were followed using the Williams LifeSkills Workshop manual and video. Skills taught in this program include self-monitoring, problem solving, anger management, communication skills, empathy, and deflection skills (e.g. breathing and stretching techniques for relaxation).

The results? Systolic blood pressure was significantly reduced in the intervention group, as compared to the control group. Diastolic pressures were not significantly different between groups. Additionally, emotional exhaustion and depressive rumination scores were significantly reduced in participants assigned to the 10-session stress management program. These results show that an appropriate worksite intervention focusing on stress management can produce clinically meaningful outcomes. Health/fitness professionals administering worksite wellness programs would do well to consider the potential advantages of a multi-session, multi-component stress management initiative, especially for those with the modifiable risk factor of hypertension.

References:

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