Exercise Adherence and the Struggle for Nogymber

Emilee M. Bounds, M.S.
Health and Human Performance
Oklahoma State University

Timothy Baghurst, Ph.D.
Health and Human Performance
Oklahoma State University

Abstract

Approximately 20% of the almost 323 million people in the United States participate in regular exercise. Of those who have attempted to initiate an exercise program, only 50% are successful in becoming regular exercisers, and most will drop out from a new year’s program well before the “ember” months. Consequently, Americans struggle not only to commence regular exercise, but maintain it. Understanding the reasoning and behaviors of those who do and do not begin and adhere to exercise becomes valuable in developing strategies and programming that will lead to higher levels of exercise adherence. Accordingly, the purpose of this article is to examine exercise adherence through the lens of the Public Health Model known as the Social Ecological Model. The Social Ecological Model acknowledges an interaction of health-related behaviors at five different levels: individual, interpersonal, organizational, community, and policy. Developing support or programming recommendations for exercise behaviors at each level in the Social Ecological Model could potentially positively influence exercise adherence. An understanding of exercise history, appropriate exercise prescription, combined with a facilitation of traditional barriers to exercise as well as an improvement in exercise self-efficacy could assist individual exercise adherence. When individual desire to exercise is combined with support in each aspect of the Social Ecological Model, exercise adherence should increase, progressing individuals to exercise well into the Nogymber months.
Introduction

Negative health consequences associated with overweight and obesity are a great financial problem in the United States; $147 million dollars were spent on obesity-related health care costs in 2008 (Centers for Disease Control and Prevention; CDC, 2016b). Trends in these statistics suggest that the numbers will continue to increase in years to come, as rates of obesity have steadily increased over the last two decades (CDC, 2016b). Exercise and physical activity control costly and detrimental conditions such as heart disease, stroke, type 2 diabetes, depression, and some cancers (CDC, 2016a). While health and exercise professionals attempt to slow the progression of such conditions and significantly alter the state of health and chronic disease in the United States, a massive cultural and systemic shift must occur in regards to exercise and physical activity in order to create widespread and impactful change.

Unfortunately, only about 20% of the almost 323 million people in the United States participate in regular exercise, and of those who attempt to initiate an exercise program, only 50% are successful in sustaining exercise after six months (Dishman, 1987). Thus, individuals who begin an exercise program as part of a New Year’s Resolution, for example, will not sustain or adhere this activity through the “ember” months (i.e., Nogymber). Therefore, developing strategies and understanding how exercise adherence can be fostered becomes important given the deleterious health and economic consequences of a lack of physical activity (CDC, 2016a).

According to Bandura (1977), “Human health is a social matter, not just an individual one. A comprehensive approach to health promotion also requires changing the practices of social systems that have widespread effects on human health” (p. 143). Accordingly, this article examines exercise adherence through the lens of the Public Health Model known as the Social Ecological Model. The Social Ecological Model takes a multilevel approach as Bandura (1977) alluded to; true widespread health change requires an interaction of individual, interpersonal, organizational, community, and policy factors that all work together to create a healthier society (Melius, 2014). A desire to exercise combined with support across the Social Ecological Model may foster greater exercise adherence and progress individuals into Nogymber months.

Social Ecological Model: Individual

A multitude of variables exist that impact exercise adherence at the individual level. Examples include previous exercise experience, motivation, exercise prescription (frequency, intensity, and mode), and other traditional barriers to exercise.

Traditional Barriers to Exercise

Cadmus-Bertram et al. (2014) identified potential barriers including lack of access to place to exercise, bad weather, lack of time, pain/discomfort with exercise, embarrassment, feeling unwell, fear of injury, lack of exercise partner, and cost associated with exercise. This study examined exercise adherence among men \((n = 51)\) and women \((n = 49)\) with a mean age of 55 years in a 12-month exercise program intervention where participants were asked to exercise six days per week for 60 minutes each session. Participants were encouraged to exercise at a moderate to vigorous intensity. Exercise progression, reassessment, and goal setting were utilized.

Results of this study indicated participants exercised 5.7 days per week on average throughout the 12-month intervention, with 89% of participants meeting minimum physical activity guidelines of 150 minutes per week. Additionally, only seven exercisers dropped out of the intervention within the first three-month period. Researchers broke down many barriers to exercise including behavior training with relapse-prevention strategies, social support with fellow participants, and convenient and free access to equipment. Participants also completed daily logs and had intense exercise counseling sessions early on in the intervention. It was noted that the high overall adherence levels were attributed to the facilitation of traditional barriers to exercise as well as the intense enrollment process on the front end of the study.
Exercise Intensity and Exercise Experience

Exercise adherence at the individual level goes beyond breaking down traditional barriers to exercise. Bandura (1988) discussed Social Cognitive Theory as an interaction of previous behavior, cognitive factors, and environmental events. Anton et al. (2005) utilized Social Cognitive Theory to examine predictors of adherence and variation in exercise intensity. Participants were sedentary adults \((n = 379)\) with a mean age of 49.8 years who completed a six-month exercise intervention. It was noted that participants had a mean Body Mass Index (BMI) of 28.6 kg/m\(^2\) and were classified as overweight with poor fitness levels at baseline. Participants were randomly assigned to a combination of moderate intensity or higher intensity and moderate frequency (3-4 days/week) or higher frequency (5-7 days/week) walking 30 minutes each session. Similar to Cadmus-Bertram et al. (2014), throughout the intervention participants received targeted support based upon Social Cognitive Theory in areas such as goal setting, self-monitoring, cognitive restructuring, problem solving and relapse prevention. A key finding of this study was that higher levels of past exercise experience showed higher levels of adherence at a higher intensity.

Exercise Mode

Cheema, Davies, Stewart, Papalia, and Atlantis (2015) further investigated the concept of exercise adherence and exercise intensity. Participants \((n = 12)\) who were classified as overweight or obese were randomly assigned to either a boxing or brisk walking group. Both groups were asked to participate in exercise sessions four times per week for 50 minutes each session. The boxing group were provided a target heart rate of 75% of their age predicted maximum heart rate, while the brisk walking group was asked to walk as quickly as they could.

The boxing group had greater program structure with specific movements planned and supervised by a qualified instructor. The walking group was told that they could complete their exercise session at any time or location that was convenient to them, and intensity was self-selected based upon instructions. Conversely, the boxing group had quantifiable goals in regards to heart rate.

Exercise intensity results indicated that individuals in the boxing group participated at a consistently higher intensity (86-89%) than the walking group (64-77%) when examining percentage of age predicted maximum heart rate. Additionally, adherence to training was higher in the boxing group when compared to the walking group with 79% and 55% (inclusive of drops) average adherence respectively. However, when the two groups were compared, with or without the individuals who dropped, there was no significant difference in exercise adherence between groups.

It is important to note was the incidence of two exercise related injuries in the boxing group, but both participants were able to receive exercise modifications which allowed them to continue to participate in the intervention. This article suggested that a higher intensity boxing intervention would be more successful for exercise adherence than a walking program, but other variables seemingly unaccounted for were social support and accountability with a boxing session supervisor, the specific structure and control over the boxing intervention when compared with the walking group, and the perceived control over variables such as time and location for the walking group. Therefore, results should be interpreted with caution.

Exercise Intervention

Surakka, Alanen, Aunola, Karppi, and Lehto (2004) examined exercise adherence by exercise intervention. Participants \((n = 226)\) were middle-aged, healthy, and sedentary who completed a 22-week power-type strength training program in groups of 15-20 participants. Basic physical training constituted the first 25% of the program, followed by 50% strength and power training, and 25% power training at maximal effort. Researchers reported that 55 participants discontinued (22 men and 33 women) the
program, while 40 participants attended no more than three sessions, and 12 had an attendance rate of 30%.

After the intervention, researchers contacted those 55 participants to understand their reasons for dropping out. These included lack of motivation (40%), lack of time (33%), training injuries (14%), training intensity (4%), family reasons (4%). Three participants did not return the follow up questionnaire. With lack of motivation and lack of time cited as the primary reasons for discontinued exercise, a deeper understanding of those variables may aid in future interventions.

It is interesting that of the female dropouts, 52% were smokers, and only 15% of non-smokers discontinued the program. These results along with the Centers for Disease Control and Prevention (2016c) report that in 2014 16.5% of Americans were smokers, indicate that smoking status should be examined by exercise professionals to understand how to best approach an exercise intervention among this population. A secondary intervention of smoking cessation could be addressed by a qualified professional simultaneous to the exercise intervention for increased success.

Coping and Adherence

Evers, Klusmann, Schwarzer, and Heuser (2012) examined coping plans and prior adherence in physical and mental activity interventions. This study focused on healthy older women aged between 70 and 93 years. Participants (n = 171) were randomly assigned to either a physical activity intervention (n = 86) or a mental activity intervention (n = 85). A six-month intervention program was implemented with three weekly 90-minute sessions for each treatment group. The mental intervention group worked with computers while the exercise group completed an exercise program. Self-efficacy, intentions, and coping variables were assessed at baseline, 6 weeks, 10 weeks, and 26 weeks.

At baseline, researchers reported that both groups had high intentions to complete the treatment programs and self-efficacy was high. Participants were asked to present coping plans, which were completed by presenting potential barriers to completion of the intervention and ways to overcome those barriers. At baseline the exercise group created an average of 1.3 coping strategies (range zero to four), while the computer group created significantly more (1.9) coping strategies.

Adherence was measured for each group at the six-week mark (physical = 70.6%; mental = 86.6%), 10-week check-in (physical = 66.2%; mental = 85.5%), and 26-week conclusion (physical = 60.3%; mental = 81%). In each assessment, the mental intervention group had higher adherence than the physical activity group, and participants in the exercise group missed more sessions due to illness and other types of appointments than the mental intervention group. In this study, self-efficacy was only a significant contributor to adherence in the initial six-week period when intention was controlled.

Therefore, when initiating an exercise program, it could be assumed that most have the intention to complete the exercise, but maintaining that intention may not remain.

Social Ecological Model: Interpersonal

After individual barriers to exercise are addressed, the Social Ecological Model examines interpersonal support. Cadmus-Bertram et al. (2014) identified not having someone to exercise with as a traditional barrier to exercise. This lack of presence of an exercise partner can be examined in terms of interpersonal or social support. It is suggested that interpersonal support can break down barriers to exercise and have a positive impact on adherence (Darlow & Zu, 2011; Wilson & Rogers, 2004).

Social Support and Exercise

Darlow et al. (2011) examined the role of perceived social support on exercise by surveying undergraduate students (n = 220) about their own exercise habits, the exercise habits of their best friend
or significant other, as well as the perceived support received to exercise. For both sexes, if the exercise habits of the close friend were high then the participant’s exercise was also high, but the opposite was true when the close friend had low exercise habits. Therefore, individuals with close friends who participate in regular exercise are more likely to also participate in regular exercise.

Wilson et al. (2004) also examined the role of interpersonal support on exercise behaviors. Participants (n = 232) were female students and staff who enrolled in intramural-based physical activity. Unlike many other studies, participants were classified with a healthy BMI. The perception of support and influence from friends along with their overall attitude, outlook, and motivation in regards to exercise was impactful. It was found that in general participants viewed their friends to be supportive of their exercise behaviors and did not show signs of controlling regulations or amotivation. This suggests that positive support from friends can be a strong incentive for continued participation in exercise (Wilson et al., 2004).

Social support can be an important influence on exercise adherence. Positive exercise habits of close friends, perceived autonomous support, and social support from coworkers in worksite wellness programs can positively impact exercise adherence (Darlow et al., 2011; Linnan, Fisher, & Hood, 2013; Wilson et al., 2004).

Social Ecological Model: Organizational Level

Linnan et al. (2013) reported that most adults in the United States were employed and spend a great deal of time in the work environment. This makes worksite wellness a primary source for organizational-based support for health and exercise.

Worksite Wellness Interventions

Linnan et al. (2013) reported that individuals paired with other participants with similar health circumstances or past health circumstances could provide vital peer support for one another. Additionally, health champions can be identified within the workplace to provide support (Darlow et al., 2011; Wilson et al., 2004).

Amaya and Petosa (2011) evaluated an eight-week worksite wellness intervention which utilized principles from Social Cognitive Theory. Participants (n = 127; age range 20 - 47 years) were recruited from four companies, three of which had an onsite fitness facility, while the other gave employees an annual stipend to join an offsite facility. Inclusion criteria for participants was that they did not currently meet minimum physical activity guidelines based upon the American College of Sports Medicine (2015) (ACSM) and were either contemplating or preparing to exercise.

This study was unique as it was an educational wellness intervention rather than an exercise-based intervention. The educational intervention consisted of six, one-hour educational sessions which focused on concepts such as self-regulation, self-efficacy, social support, outcome expectations, exercise adherence, and physical-activity information. Exercise and physical activity were completed outside of work time by participants. Minutes of moderate exercise were self-reported at session one, following week eight, one-month post-intervention, and three-months post-intervention.

Minutes of exercise were found to increase at each check-in, but attrition rates were high following the completion of the program; 43% at intervention post-test, 65% at one-month post-intervention, and 76% three months post-intervention. While attrition rates were large, numbers were consistent with national trends in sedentary individuals. Therefore, wellness programs need to evaluate how to extend support beyond the duration of a program (Baghurst, Mwavita, Tapps, Volberding, & Jayne, 2014).
Pedometer-Based Worksite Wellness Interventions

A common worksite wellness method of assessment is the use of pedometers. Tudor-Locke and Chan (2006) examined adherence patterns of an eight-week worksite pedometer-based physical activity intervention. Participants ($n = 177$) of mean age of 43 ($SD = 9$) years and BMI of 29 ($SD = 6.2$) kg/m$^2$ were recruited from sedentary work duties such as clerical, administrative, or data processing jobs and wore a pedometer to measure steps taken daily.

During the first four weeks of the program, participants were encouraged to meet for lunchtime meetings where steps were logged and information was disseminated for participants to build upon their successes and set reasonable goals. Individuals who completed the program ($n = 104$) completed the pre- and post-assessments in addition to eight weeks of step data recorded. The only significant difference between those who completed all aspects of the program and those who did not was the response to the initial question which asked about “worry about completing the program” (p. 213).

Individuals in the program who were classified as overweight or obese (BMI > 25 kg/m$^2$) had over 80% completion rate compared with only 70% of participants with a BMI classified as normal weight (< 24.9 kg/m$^2$). Pedometers are a relatively inexpensive investment for a worksite wellness program, and results did show the greatest impact on the population that was in the greatest need (inactive and overweight). The lower incidence of completion in the normal weight group may shed light on finding a more appropriate intervention or program for this group of individuals. Additionally, programs should pay attention to apprehension voiced by participants when initiating a program as initial worry about completion had an impact on the outcomes.

Another pedometer based study assessed daily steps and exercise self-efficacy of university employees ($n = 121$; 85% female), while conducting weekly wellness sessions over an eight-week intervention (Butler, Clark, Burlis, Castillo, & Racette, 2015). Researchers described the program as flexible and included weekly monitoring of goals, physiological measures, and consultation opportunities available to participants throughout the program.

Fourteen percent ($n = 17$) did not complete the program, and dropouts had a higher BMI (31.6 kg/m$^2$, $p = .02$) than completers (28.1 kg/m$^2$). Results also indicated a significant daily step count increase from baseline ($M = 6566$) to week four ($M = 8605$, $p < .01$) and to week eight ($M = 9107$, $p < .05$). No significant increase was found in exercise self-efficacy over the duration of the program. Although only a minimal intervention was implemented, daily steps did increase suggesting that worksite wellness interventions can be effective in increasing participant physical activity levels.

Organizational Support Conclusions

Many models exist for worksite wellness and organizational support of exercise. Pedometer-based studies show an increase in physical activity, while interventions based upon Social Cognitive Theory improved self-efficacy. Organizational support combines interpersonal support and provides resources for the individual with desire to exercise. A comprehensive approach to worksite wellness programs should be taken, combining the knowledge from the organizational, interpersonal, and individual levels for the greatest effect on exercise adherence. Awareness of exercise history in regards to prescribed exercise intensity, specific program design to meet the needs of each participant, along with behavioral coaching and intentional design for ideal social support would pull principles from each level discussed. Time, however, is one barrier that was not necessarily addressed or broken down by the worksite wellness interventions. Perhaps more insight presented with policy would assist in organizational support of breaking down the barrier of time for worksite exercise programs.
The Struggle for Nogymber

Social Ecological Model: Community

Exercise adherence may be impacted by community in multiple ways. Community refers to the physical environment or the group of people in a specific area. Community culture and the built environment or layout of neighborhoods and towns has an effect on variables such as prevalence of overweight classification and levels of physical activity (Saelens, Sallis, Black, & Chen, 2003). Therefore, it is important to consider how the community can positively or negatively impact exercise adherence.

Community Culture

Worksite wellness interventions in locations involving staff who cared for children (elementary school and childcare center) are important sites for a physical activity intervention (Goslinger et al., 2010; Webber et al., 2012). Assessment of the health and physical activity levels of elementary school staff found that obesity rates were higher than the national average in conjunction with low levels of physical activity (Webber et al., 2012). This was problematic, as the school staff were often called upon to promote healthy habits including appropriate levels of physical activity among the young students. Bandura (1977; 1988) referred to modeling behavior as a method to promote the desired behavior. Based upon this concept, children modeled the physical activity behavior of their sedentary teachers, and recent discussion has highlighted the importance of role modeling within physical education and the health professions (e.g., Baghurst, Richard, & Boolani, in press; Baghurst, 2015; Baghurst, Sandlin, Holden, & Parish, 2015; Gosliner et al. (2010) examined the impact of a worksite wellness program and physical activity in childcare centers. The intervention consisted of information disseminated to workers on children’s health and wellness training which included individual health consultations, monthly newsletters, a walking program, and staff follow-up visits. Thirteen childcare sites participated in the study, with six receiving the intervention (participants, \( n = 43 \)) and seven serving (participants, \( n = 39 \)) as the control.

The intervention conducted impacted the health of workers, children, and parents, which improved the community as a whole. Workers in the intervention reported a significant decrease in consumption of sugar-sweetened beverages while the control group saw a significant increase. Ancillary to exercise adherence, the centers reported that the locations receiving the interventions showed a significant increase in serving fresh fruits and vegetables with again the opposite effects in the control group who served less fruits and vegetables. Workers also reported increased self-efficacy in engaging in discussions with the parents of children about physical activity and nutrition.

It is important to note that community engagement must involve individuals beyond simply providing information. Baghurst and Eichmann (2014) found that providing nutritional knowledge to elementary schoolchildren increased their knowledge, but had no impact at home, even when parents were provided with supporting nutritional information. They suggested a whole-environment approach to education if change is to take place, which supports the findings of Gosliner et al. (2010).

Social Ecological Model: Policy

Policy is the final level of support in the Social Ecological Model. A widely known policy in regards to physical activity and exercise in the United States is the presence of Physical Education in the public school systems (Oklahoma State Department of Education, 2005). Worksite tobacco use policies and their impact on health should also be considered (Glasgow, Cummings & Highland, 1997).

Physical Education Model

Ardoy and colleagues (2014) asked participants (\( n = 47, M \text{ age} = 12.8 \text{ years} \)) in a Physical Education program evaluation to complete a cognitive performance assessment. The cognitive assessment
examined variables such as verbal abilities, abstract reasoning, spatial ability, verbal reasoning, and numerical ability. Significant improvements were found in each of the cognitive variables measured following the physical education intervention. Therefore, it would be reasonable to consider that a policy which implemented physical education and thus physical activity among children could provide similar cognitive performance outcomes among adults in a work environment. Improvements in cognitive performance outcomes could translate into improved work performance among adults, potentially providing benefits to a participant and worksite from a cognitive standpoint.

Physical Education Policy Limitations

While Physical Education policy provides an excellent model for incorporating physical activity and exercise into the day of children and adults, limitations are present. For example, Oklahoma limits participant in Physical Education to 60 minutes for kindergarten through fifth grades with only a recommendation of such for middle school and high school students (Oklahoma State Department of Education, 2010). If no policy is in place to require Physical Education, the school has the freedom to not incorporate physical activity into the school day for children, despite evidence to its benefits (Ardoy et al., 2014). Additionally, these policies may not meet minimum recommendation of 60 minutes of physical activity daily (ACSM, 2015).

While a Physical Education policy can be effective in schools, variations in policies that provide below minimum recommendations can cause the policy to still fall short (Baghurst, Langley, & Bishop, 2015). To truly make a difference, physical activity policies for children and adults should allow time built into the day to meet age appropriate minimum levels physical activity. A survey conducted by Baghurst et al., (2015) found that 40% of participants who were physical educators had two hours or less of time with their students per week. These results led the authors to question how effective a physical educator can be with such limited time with students each week, further reinforcing the importance of time for students and adults to have policies which allow minimum physical activity recommendations to be met within the school or work day.

Tobacco Policy

Glasgow et al. (1997) disseminated surveys to working adults who were smokers \( n = 8271 \), which asked questions about their own smoking behaviors as well as the availability of smoking cessation materials and worksite tobacco policies. For worksites who prohibited smoking, a significant decrease \( p < .05 \) in individuals who smoked was found, while no difference occurred in smokers who worked in an environment with no restrictive tobacco policies. Results indicated that individuals who worked in locations with more restrictive tobacco policies were 25% more likely to quit smoking than in a worksite with no tobacco restrictions.

According to the CDC (2016c), at the time this study took place (1988 to 1993), approximately 25% (1990) of the United States smoked cigarettes. Since the early 1990s, there has been a steady decline in smoking rates with just over 16% of individuals smoking in 2014. Tobacco policies appear to have played a large role in this cultural shift. The United States Department of Health and Human Services (2016) reported dozens of tobacco restriction policies implemented over the last several decades, including smoke-free air laws, which prohibits smoking in many public places and worksites across the country.

Tobacco policy appears to have had a great impact in the decreased rates of tobacco use in the United States (CDC, 2016c; Department of Health and Human Services, 2016). The success of tobacco policy combined with the framework provided by Physical Education policy, creates a convincing argument for worksite exercise policy implementation.
Conclusion

The Social Ecological Model applied to exercise creates a broad picture of the multiple layers of exercise adherence. At the individual level, adherence can be affected by past exercise experience, exercise mode and intensity, coping strategies, exercise self-efficacy, goal setting, and smoking status (Anton et al., 2005; Cheema et al., 2015; Evers et al., 2012; Surakka et al., 2004). An exercise intervention should also be accompanied with behavioral support and goal setting techniques. If a participant is a smoker, an additional intervention addressing smoking cessation should be considered.

At the interpersonal or social support level, positive exercise habits of close friends, perceived autonomous support, and social support from coworkers in worksite wellness programs all had positive impacts on exercise adherence (Darlow et al., 2011; Linnan, et al., 2013; Wilson et al., 2004). Team or group settings could also have a positive impact on adherence, although this concept was not specifically measured in the studies reported.

At the organizational level, worksite wellness was examined as a method to increase exercise adherence. Organizational support could provide resources necessary for an individual to successfully adhere to an exercise program through behavioral counseling, incentives, and potential access to facilities (Amaya et al., 2011). Social support, accountability, and exercise culture could play a large part in successful adherence (Darlow et al., 2011; Linnman et al., 2013; Wilson et al., 2004).

Overlapping each of the aforementioned levels, community also can positively impact exercise adherence through cultural community, the built environment, and accessibility (Saelens et al., 2003). Also, a wellness intervention conducted at sites where adults supervised health and physical activity of children through programming and modeling behavior had a multilevel impact on the adults and children involved (Gosliner et al., 2010). At the community level, a cultural shift through knowledge, access, and support could foster the beginning and maintenance of lifelong exercise habits.

Policy is the final and perhaps the most important level of the Social Ecological Model, with tobacco and Physical Education policies serving as inspiration for worksite exercise policy. Worksite tobacco use policies played an important role in the systemic shift away from smoking cigarettes in the United States. This information supports that worksite policy support can be pivotal in creating widespread health change (Glasgow et al., 1997).

Although the majority of public schools have policies that require physical education at a certain level for students, such policies are generally unsupportive of physical activity and provide exceptions that can limit physical activity levels and duration (Baghurst et al., 2015). Such policies are counterintuitive given the positive impact on cognitive function and physical health that can be accrued from regular physical activity school-aged children (Ardoy et al., 2014).

Adults also benefit from exercise, but few companies develop worksite wellness programs or actively support physical exercise in the workday (Baghurst et al., 2014). Although worksite wellness programs can provide resources and often meet during lunch hours, the important barrier of time remains (Brown, Volberding, Baghurst, & Sellers, 2014; 2015). A policy that incorporates physical activity and exercise into the workday could have immeasurable benefits to the health and wellbeing of the American society.

If the knowledge gained from these studies does not move to practical application, exercise adherence will remain stagnant. The collaboration of key stakeholders in business and exercise to provide organizational, interpersonal, and community support through exercise policy implementation is imperative in facilitating individuals to overcoming personal barriers to exercise. Such efforts could change the trajectory of exercise and exercise adherence in the United States and help to win the exercise battle of Nogymber.
References


The Struggle for Nogymber

Centers for Disease Control and Prevention (2016c). Smoking and tobacco use.
   http://www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/
effectiveness of high-intensity boxing training versus moderate-intensity brisk walking. *BMC Sports Science, Medicine, and Rehabilitation, 7*(3), 1-10.
Darlow, S. D. & Xu, X. (2011). The influence of close others’ exercise habits and perceived social
   support on exercise. *Psychology of Sport and Exercise, 12*, 575-578.
doi:10.1016/j.psychsport.2011.04.004
   http://betobaccofree.hhs.gov/laws/
   Goldston (Eds.), *Exercise and Mental Health* (pp. 57-83), Washington, DC: Hemisphere
   Publishing Corporation.
Evers, A., Klusmann, V., Schwarzer, R., & Heuser, I. (2012). Adherence to physical and mental activity
   interventions: Coping plans as a mediator and prior adherence as a moderator. *British Journal of
   worksite wellness program on nutrition and physical activity environment of child care centers.
Linnan, L., Fischer, E., & Hood, S. (2013). The power and potential of peer support in workplace
   interventions. *American Journal of Health Promotion, 1*, 2-10. Retrieved from
Melius, J. (2014). Exploring social workers’ use of the socioecological model as an intervention and
   research framework for treating overweight and obese clients. *National Association of Social
   Worker, 60*(1). doi:10.1093/sw/swu048
   http://sde.ok.gov/sde/physical-education-and-health-legislation#312
   training program in sedentary, middle-aged men and women. *Advances in Physiotherapy, 6*, 99-
   109. doi: 10.1080/14038190310017138
   completion of a pedometer-based physical activity intervention. *Journal of Physical Activity and
   Health, 3*, 210-220.
Webber, L. S., Rice, J. C., Johnson, C. C., Rose, D., Srinivasan, S. R., & Berenson, G. S
   (2012). Cardiovascular risk factors and physical activity behavior among elementary school
   personnel: Baseline results from the ACTION! worksite wellness program. *American School
   Health Association, 82*(9), 410-416.
Wilson, P. M., & Rodgers, W. M. (2004). The relationship between perceived autonomy support, exercise
doi: 10.1016/S1469-0292(03)00003-7