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# Losing Big at Work: Effectiveness of the Biggest Loser Physical Activity–Based Obesity Program in Controlling Employee Obesity

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**Abstract** Structured physical activity programs are gaining attention as effective approaches for weight management and reducing obesity in universities and workplaces. This study evaluated the Biggest Loser Physical Activity–Based Obesity Program, implemented at a state university in the Philippines. A total of 29 obese employees, varying in terms of sex, age, and marital status, voluntarily participated in the six-week program. The research used an experimental one-group pretest–posttest design, with data analyzed using descriptive and inferential statistics. Descriptive patterns revealed that women generally lost a higher percentage of their initial body weight compared to men, and single participants showed slightly greater improvements than married participants. The Wilcoxon signed-rank test also showed a significant reduction in Body Mass Index (BMI) after the program, confirming its effectiveness. Further analysis using ANCOVA demonstrated that baseline BMI was the strongest predictor of post-intervention BMI, while sex, age, and marital status had no significant influence. These findings highlight the potential of workplace-based physical activity programs in addressing obesity and underscore the importance of institutionalizing such initiatives within organizational health policies.

**Keywords** Employee Obesity, Biggest Loser, Physical Activity Program

## 1. Introduction

Obesity is defined as a chronic, progressive, relapsing, and treatable multifactorial neurobehavioral disease. A rise in body fat leads to abnormal physical forces and dysfunction of adipose tissue, which negatively affects metabolic, biomechanical, and psychological health [1][2][3]. It is recognized not just as a condition, but as a complex and recurring disease influenced by behavioral, biological, and social factors [4][5].

In recent decades, the rise in overweight and obesity rates has become one of the most pressing health concerns worldwide [6]. The World Health Organization reports that millions of lives are lost annually due to weight-related complications [7]. Existing statistics reveal an estimated increase in obesity percentage from 13% to 38% by 2030 if secular trends continue, necessitating effective health interventions that target diet quality and lifestyle modifications [8].

In the Philippines, the rising rates of obesity and related chronic conditions present a pressing public health problem [9]. According to the Expanded National Nutrition Survey (2018), obesity rates among Filipinos nearly doubled, increasing from 20.2% in 1998 to 37.2% in 2018 [10]. Currently, 3 in every 10 Filipinos are overweight or obese. Additionally, 5 of the 10 leading causes of death are linked to obesity complications [11]. This issue extends beyond individual lifestyle choices. It also reflects broader

systemic factors, such as modern living, reduced physical activity, poor diet, and more time spent being sedentary [4]. As a result, obesity fuels chronic illness, increasing pressure on public health systems and workplace dynamics [12].

Beyond its health consequences, obesity imposes a significant economic burden on the country. Employers, in particular, face challenges not only in terms of healthcare costs but also reduced employee productivity, increased sick leave, and disengagement caused by physical or psychological complications associated with obesity [13]. While global studies have quantified the economic impact of obesity, local evidence is limited. To address this gap, the Epidemiological Burden and Cost of Obesity in the Philippines (EpiCOb-PH) study was launched in March 2025, aiming to estimate the national burden of obesity using local epidemiological and cost data [14]. As of today, its results have not yet been released.

Moreover, adults spend a significant portion of their time at work. As a result, the workplace is an ideal setting for interventions [15]. Workplace physical activity (PA) programs can reach employees in a structured and consistent manner [16]. They help promote healthier habits and reduce the risks of obesity and chronic diseases [16][17]. Physical activity refers to any movement of the body, driven by skeletal muscles, that requires energy [18].

However, many workplace PA programs have shown limited effectiveness in delivering sustained obesity-related outcomes. Studies highlight several weaknesses: they often focus narrowly on structured exercise routines, encounter barriers such as inconsistent participation, limited organizational support, and a lack of cultural tailoring [19]. Meta-analyses have shown that while workplace PA programs may temporarily increase activity levels, their long-term impact on weight loss and health markers remains modest [19]. These critical gaps necessitate innovative, theory-driven, and engaging interventions that surpass traditional wellness initiatives.

The Biggest Loser Physical Activity–Based Obesity Program introduces a novel approach to workplace health promotion. Inspired by the popular television series, this university-based PA program aims to encourage lifestyle and behavioral change among employees. Unlike conventional PA programs, it blends structured activities with peer support and accountability. This fosters a motivating and inclusive culture for individuals of all fitness levels. The program stands out by merging fun, competition, and team support, while encouraging lasting commitment to health goals.

The program is grounded in established theories of behavior change. Using Social Cognitive Theory, it builds self-efficacy through group activities, observational learning, and social connection [20]. The Transtheoretical Model also guides it, recognizing stages of readiness for change. Structured, supportive environments can facilitate this process [21]. Basing the program on these frameworks helps engage employees and increase the likelihood of sustainable results.

Furthermore, prior research has demonstrated that demographic factors, such as sex, age, and marital status, influence adherence to physical activity programs. Older employees may face physical limitations or competing professional responsibilities, while marital status has been shown to influence motivation and support for lifestyle change [22]. These findings underscore the importance of subgroup analysis to understand how employees with different demographic characteristics respond to the program.

Thus, this study explored how a workplace physical activity initiative, specifically the Biggest Loser Physical Activity–Based Obesity Program, could help address obesity among employees. By tracking changes in participants' Body Mass Index (BMI) before and after the program, the study aimed to determine whether consistent participation made a meaningful difference. Additionally, it considered whether sex, age, and marital status influenced participants' responses to the program. These insights are valuable for shaping future physical activity, health, and wellness efforts that better meet the needs of different employee groups.

Specifically, the study aimed to:

1. Describe the participants' demographic profile in terms of sex, age, and marital status;
2. Compare the participants' Body Mass Index (BMI) before and after implementing the Biggest Loser Physical Activity–Based Obesity Program, grouped according to sex and marital status;
3. Identify significant differences in the participants' BMI before and after participating in the Biggest Loser Physical Activity–Based Obesity Program; and
4. Determine the influence of participants' demographic profile on their Body Mass Index (BMI) after participation in the Biggest Loser Physical Activity–Based Obesity Program.

# 2. Materials and Methods

### 2.1. Research Design

This study employed a one-group pretest-posttest experimental design to assess the effect of an intervention on participants [23][24]. The independent variable, the Biggest Loser physical activity-based obesity program, was introduced to determine its impact on the dependent variable, participants' body mass index.

### 2.2. Research Participants

At the beginning of the Biggest Loser Physical Activity–Based Obesity Program, 60 participants initially volunteered. Of these, only 29 completed the program and were included in the final analysis. The 29 participants

were categorized by sex, marital status, and age into three groups: Youth (15-24 years old), young adults (25-44 years old), and middle-aged adults (45-60 years old). The participants were faculty and staff from various departments and units of a state university.

### 2.3. Sample Size and Power Considerations

No formal a priori calculation was conducted in determining the sample size of the study. To address this limitation, the researchers performed a sensitivity (post hoc) power analysis: with n = 29 participants who completed the program, α = .05 (two-tailed), power = .80, the study is adequately powered to detect approximately a medium standardized mean change (Cohen's d<sub>z</sub> in the ~0.5–0.6 range).

### 2.4. Research Instrument

A researcher-made questionnaire was used to collect data in this study. The questionnaire consists of two parts. Part I includes questions about the demographic profile of the participants, specifically their sex, age, and marital status. Part II is the Body Mass Index Measurement Tool, which collects the weight and height of the respondents before and after the implementation of the Biggest Loser Physical Activity–Based Obesity Program.

The table below displays the Body Mass Index Classification for adults, which categorizes participants based on their weight relative to their height (weight in kilograms divided by height in meters squared) [25].

**Table 1.** Body Mass Index Classification Table for Adults

| BMI (Kilograms/m²) | Weight Status (WS) |
|---|---|
| 0-18.5 | U (Underweight) |
| 18.51-24.99 | N (Normal) |
| 25-29.99 | O (Overweight) |
| 30-34.99 | OC I (Obese Class I) |
| 35-39.99 | OC II (Obese Class II) |
| ≥40 | OC III (Obese Class III) |

### 2.5. Data Gathering Procedure

Before conducting the study, the researcher ensured that ethical guidelines were strictly followed.

To ensure the health and safety of all participants, each of them completed the Physical Activity Readiness Questionnaire- PAR-Q (2021), which assesses their overall health and identifies any potential health concerns. Participants who reported health issues or risks were excluded from the study to ensure a safe environment during its conduct. Participants were also required to submit a medical certificate as a prerequisite for participation.

Then, baseline data were collected using the researcher-made questionnaire. Following the collection of baseline data, a 6-week Biggest Loser Physical Activity–Based Obesity Program was implemented. The primary goal was to promote increased daily movement and reduce sedentary behavior among obese employees. The program combined structured, multimodal exercises with peer support and accountability. It created an inclusive and motivating culture for all fitness levels. Unlike traditional programs, it blends fun, friendly competition, and teamwork with gradual skill building. These aspects encourage lasting behavior change.

Grounded in Social Cognitive Theory and the Transtheoretical Model, the program utilizes group formats, buddy systems, and feedback to foster self-efficacy, while progressive activities help participants transition from preparation to sustained action. Its phased design begins with simple cardiovascular exercises, followed by strength-building circuits, dance-inspired routines for social engagement, and yoga for recovery and mindfulness. This balance of challenge and enjoyment not only improves physical health but also nurtures teamwork, motivation, and long-term commitment.

After the completion of the 6-week program, post-intervention data were collected using the same researcher-made questionnaire to evaluate the effectiveness of the Biggest Loser Physical Activity–Based Obesity Program.

### 2.6. Statistical Tools

Data were analyzed using both descriptive and inferential statistics. Descriptive statistics were used to summarize participants' demographic characteristics and baseline measures. To evaluate changes in body mass index (BMI) before and after the intervention, a Wilcoxon signed-rank test was employed, as the sample size was modest and the BMI data did not meet the assumptions of normality required for parametric paired-sample t-tests.

Participants who did not meet the inclusion criteria or who withdrew from the program were excluded from the final analysis (n = 31). Missing data were not imputed; only complete cases (n = 29) were analyzed to maintain accuracy in effect estimation. No formal adjustments for multiple comparisons were applied, as the primary outcome of interest was BMI reduction, and no secondary outcomes were tested simultaneously. Effect sizes (rank-biserial correlation and Cohen's d<sub>z</sub>) were reported to complement p-values and provide information on the magnitude of change.

## 3. Results and Discussions

A total of 60 participants initially volunteered for the program. Of these, 31 were excluded: 4 due to the absence of medical clearance and reported health concerns, 17 for not meeting the required body mass index criteria, and 10

who withdrew during the intervention period. No formal a priori calculation was conducted in determining the sample size. To address this limitation, a sensitivity (post hoc) power analysis was performed. With n = 29 participants, α = .05 (two-tailed), and power = .80, the study was adequately powered to detect approximately a medium standardized mean change (Cohen's d<sub>z</sub> ≈ 0.5–0.6). The results from the 29 participants are presented in the succeeding tables.

Table 2 presents the demographic profile of the participants. The study's results revealed that of the 29 participants, 16 (55.17%) were female, and 13 (44.83%) were male. Based on the WHO (2015) category, the majority of participants (25 participants or 86.21%) were classified as young adults. 3 participants (10.34%) were the middle-aged adults, and only 1 participant (3.45%) was identified as a youth. In terms of marital status, 20 participants (68.97%) were married, while the remaining 9 (31.03%) were single.

**Table 2.** Demographic Profile of the Participants

| | **Frequency (f)** | **Percentage (%)** |
|---|---|---|
| **Sex** | | |
| Female | 16 | 55.17 |
| Male | 13 | 44.83 |
| **Total** | **29** | **100** |
| **Age Group** | | |
| Youth | 1 | 3.45 |
| Young Adult | 25 | 86.21 |
| Middle-Age Adult | 3 | 10.34 |
| **Total** | **29** | **100** |
| **Marital Status** | | |
| Married | 20 | 68.97 |
| Single | 9 | 31.03 |
| **Total** | **29** | **100** |

The results of the study, as shown in Table 2, revealed that most participants were female, young adults, and married. They were likely in their productive years, possibly with stable routines and responsibilities that could have influenced their responses in the study. This also suggests that the group was predominantly composed of individuals with family or marital commitments, which may influence their lifestyle choices and daily activities.

Table 3 presents the comparative descriptive analysis of Body Mass Index (BMI) before and after the implementation of the Biggest Loser Physical Activity–Based Obesity Program, categorized by sex and marital status. The study's findings revealed that both male and female participants experienced a decrease in BMI following the implementation. Female participants showed a drop from an average BMI of 33.155 (SD = 2.684) to 32.112 (SD = 2.837), while males decreased from 33.343 (SD = 2.911) to 32.558 (SD = 3.204). Furthermore, both married and single participants also showed reductions in their BMI, with married individuals going from 33.237 to 32.361 and single participants from 33.307 to 32.353.

The results of the study revealed that male and female participants, despite both remaining within the Obese Class I range, show a downward trend, suggesting that the intervention had a positive initial effect on weight management. These small but meaningful changes suggest that sex did not significantly impact responsiveness to the program, although men had a slightly higher average post-program BMI. Additionally, women tend to experience a higher percentage of weight loss relative to their initial body weight compared to men. Similarly, Woźniak et al. [26] reported that although overall weight loss for both men and women was modest, women tended to lose a higher percentage of their baseline weight than men. It should also be noted that there are more obese women than men in many countries. In contrast, Aadland et al. [27] found that men experienced greater weight loss for every minute increase in moderate-to-vigorous physical activity (MVPA) compared to women.

Furthermore, although both married and single participants experienced improvements, single participants had a slightly higher reduction in percent BMI compared to their married counterparts. Turnic et al. [28] emphasized that marital status should not be entirely disregarded, as their study found that the odds of obesity were 88% higher among married individuals compared to those who were single, highlighting the complex interplay between relationship dynamics and health behaviors.

**Table 3.** Participants' Body Mass Index (BMI) before and after the Implementation of the Program by Sex and Marital Status

| **Variable** | **Group** | **BMI Before the Implementation** | | | **BMI After the Implementation** | | |
|---|---|---|---|---|---|---|---|
| | | Mean | SD | WS | Mean | SD | WS |
| Sex | Female | 33.155 | 2.684 | OC I | 32.112 | 2.837 | OC I |
| | Male | 33.343 | 2.911 | OC I | 32.558 | 3.204 | OC I |
| Marital Status | Married | 33.237 | 3.033 | OC I | 32.361 | 3.288 | OC I |
| | Single | 33.307 | 2.209 | OC I | 32.353 | 2.413 | OC I |

Note: 0–18.5 = U (Underweight); 18.51–24.99 = N (Normal); 25–29.99 = O (Overweight); 30–34.99 = OC I (Obese Class I); 35–39.99 = OC II (Obese Class II); ≥ 40 = OC III (Obese Class III)

Across all demographic groups, the program contributed to a reduction in BMI. Although most participants remained within the Obese Class I range, the consistent decrease in BMI underscores the potential of targeted physical activity programs to initiate healthy changes. Moreover, the study by Gudzune et al. [29] highlighted that weight-loss preferences are shaped by individual characteristics such as gender, BMI class, and weight self-stigma, advocating for holistic, individualized obesity care plans.

Table 4 presents the analysis of Body Mass Index (BMI) among participants before and after the implementation of the Biggest Loser Physical Activity–Based Obesity Program, revealing a gradual yet meaningful improvement. Prior to the intervention, the mean BMI of the 29 participants was 33.259 (SD = 2.764), which is classified as Obese Class I. Following the completion of the physical activity-based obesity program, the mean BMI decreased to 32.358 (SD = 3.000).

**Table 4.** Participants' Overall Body Mass Index before and after the implementation of the Program

| BMI | n | Mean | SD | WS |
|---|---|---|---|---|
| Before the Implementation | 29 | 33.259 | 2.764 | OC I |
| After the Implementation | 29 | 32.358 | 3.000 | OC I |

Note: 0–18.5 = U (Underweight); 18.51–24.99 = N (Normal); 25–29.99 = O (Overweight); 30–34.99 = OC I (Obese Class I); 35–39.99 = OC II (Obese Class II); ≥ 40 = OC III (Obese Class III)

The study disclosed that although participants remained in the same weight classification, this reduction of 0.901 BMI indicates a positive movement toward better health and weight control. The findings highlight the value of targeted physical activity programs in addressing obesity concerns, especially when tailored to participants' needs and capacities. These results also offer encouraging evidence that even PA interventions can set the foundation for healthier habits and reduced health risks over time [30]. Wadden et al. [31] also confirm that high levels of physical activity are associated with long-term weight loss.

Moreover, while the reduction in BMI observed in this study was statistically significant, its clinical impact requires careful interpretation. The mean decrease of 0.901 BMI units represents a modest change relative to clinical weight-loss guidelines, which often emphasize a reduction of 5–10% of initial body weight to achieve meaningful health improvements such as lowered cardiometabolic risk. Importantly, despite the reduction, the majority of participants remained within the obese BMI classification at post-intervention. This suggests that although the program was effective in initiating weight reduction, the magnitude of change may not yet be sufficient to produce substantial clinical benefits. Nonetheless, even small reductions in BMI can mark the beginning of a positive trajectory, especially in workplace-based interventions where sustainability and long-term adherence are key. Future programs should consider extending the duration, increasing intensity, or integrating nutritional and behavioral components to enhance clinical outcomes.

Table 5 displays a significant difference in participants' Body Mass Index (BMI) before and after participating in the Biggest Loser PA-based Obesity Program. The results revealed a test statistic of W = 231.000 and a standardized test statistic of z = 4.015, indicating a substantial difference between the two sets of measures. The p-value was less than .001 (***), which is highly significant, suggesting a meaningful change occurred after the intervention. The effect size, measured using the rank-biserial correlation, was 1.000 (SE = 0.244), which suggests a very strong treatment effect. This finding confirms that participants experienced a meaningful decrease in BMI following the intervention.

These findings provide compelling evidence that the Biggest Loser PA-based Obesity program was effective in reducing participants' BMI. The consistent direction and magnitude of change underscore the potential of purposeful physical activity programs in improving health outcomes among individuals who are obese. Similarly, Power et al. [32] found a significant reduction in BMI after the PA and exercise intervention across four studies of their rapid review. Pojednic et al. [33] noted that, individuals with obesity can indeed experience a wide range of physiological gains, from better cardiovascular health to improved metabolic function after PA participation.

Table 6 presents the analysis of covariance (ANCOVA) to determine the influence of sex, age, and marital status on participants' BMI after the implementation of the Biggest Loser PA-Based Obesity Program. BMI before the implementation of the Biggest Loser significantly predicted BMI after the implementation, $F = 289.632$, $p < .001$, $\eta^2 = .883$, accounting for 88.3% of the variance. This indicates that participants' initial BMI was the strongest determinant of their BMI after the implementation of the Biggest Loser PA-Based Obesity Program. In contrast, sex ($F= 0.438$, $p = .515$, $\eta^2 = .001$), marital status ($F= 0.104$, $p = .750$, $\eta^2 = .003$), and age ($F= 0.00019$, $p = .989$, $\eta^2 = .000001$) were not significant predictors of post-intervention BMI. Furthermore, the interaction between sex and marital status was not significant ($F$ 0.002, $p = .964$, $\eta^2 \approx 0$). These results suggest that demographic characteristics did not substantially influence BMI outcomes once baseline BMI was accounted for.

**Table 5.** Wilcoxon Signed Rank Test on the Significant Differences in the BMI before and after the Implementation of the Program

| Measure 1 | Measure 2 | n | W | z | p | Rank-Biserial Correlation | SE Rank-Biserial Correlation |
|---|---|---|---|---|---|---|---|
| Before the Implementation | After the Implementation | 29 | 231.000 | 4.015 | <.001*** | 1.000 | 0.244 |

Note: *p<.05, **p<.01, ***p<.001

**Table 6.** Analysis of Covariance (ANCOVA) for BMI after the Implementation of the Biggest Loser PA-Based Obesity Program

| Effect | Sum of Squares | df | Mean Square | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|
| Sex | 0.336 | 1 | 0.336 | 0.438 | .515 | .001 |
| Marital Status | 0.080 | 1 | 0.080 | 0.104 | .750 | .003 |
| BMI before the Implementation | 222.481 | 1 | 222.481 | 289.632 | <.001 | .883 |
| Sex x Marital Status | 0.002 | 1 | 0.002 | 0.002 | .964 | .000006 |
| Age | 0.00015 | 1 | 0.00015 | 0.00019 | .989 | .000001 |

Table 6 suggests that demographic characteristics did not substantially influence BMI outcomes once baseline BMI was accounted for. The findings highlight the dominant role of baseline BMI in predicting post-intervention BMI. This result is consistent with previous research indicating that initial weight status is a strong determinant of subsequent weight-related outcomes [34]. Participants with higher baseline BMI tended to maintain relatively higher BMI levels even after the intervention, suggesting that greater initial adiposity poses challenges for significant BMI reduction.

Moreover, sex, age, and marital status were not significant predictors of post-intervention BMI. This suggests that the Biggest Loser Physical Activity–Based Obesity Program had a relatively uniform impact across demographic groups. Such a finding is encouraging, as it suggests that the intervention may be broadly applicable regardless of participants' demographic profiles. The lack of significant demographic effects also underscores the possibility that lifestyle behaviors, program adherence, and individual motivation may play a more critical role in shaping BMI outcomes than fixed demographic factors [35]. This aligns with behavioral models of weight management, which emphasize the importance of personal engagement and sustained participation in physical activity.

Nonetheless, it is worth noting that the current study involved a modest sample size, which may have limited the statistical power to detect small effects of demographic variables. Future studies with larger samples and the inclusion of psychosocial variables (e.g., motivation, social support, dietary habits) may provide a more nuanced understanding of predictors of intervention success.

# 4. Limitations and Future Directions

This study has limitations. First, no a priori sample size was calculated. Although a post hoc power analysis indicated that the final sample of 29 participants was sufficient to detect medium effects, smaller effects may have gone undetected. The study also experienced a high attrition rate, with more than half of the participants failing to complete the program. While this is common in lifestyle and weight-loss interventions, it raises concerns about attrition bias. Baseline comparisons between completers and dropouts were not conducted; however, available information suggests that dropout was largely related to BMI eligibility, lack of medical clearance, or withdrawal during the intervention. These factors may have resulted in a final sample composed of more motivated or health-conscious individuals.

Second, reliance on BMI as the sole outcome measure limits precision because it does not distinguish between fat and lean mass. Third, the absence of a control group and the short intervention period restrict both causal inference and conclusions about long-term outcomes.

Future research should address these limitations by conducting formal power planning with larger samples, systematically comparing baseline characteristics of completers and dropouts, and including additional body composition measures beyond BMI.

# 5. Conclusions and Implications

The Biggest Loser Physical Activity–Based Obesity Program resulted in modest but meaningful reductions in BMI among university employees, with women exhibiting slightly greater improvements than men. While most participants remained in the obese category, the findings highlight the potential of structured, group-based physical activity to promote small but positive health changes in the workplace. Baseline BMI emerged as the strongest predictor of post-program BMI, underscoring the importance of initial weight status in shaping outcomes.

However, the absence of a control group, reliance on

BMI as the sole outcome measure, and the high attrition rate warrant cautious interpretation of the results. Despite these limitations, the program represents a promising step toward integrating accessible physical activity initiatives into workplace settings. Future studies should incorporate more comprehensive measures of health and physical activity, longer intervention periods, and strategies to minimize attrition, thereby providing stronger evidence and sustaining long-term benefits.

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