



The Dynamics of Participation in Physical Activity in the Era of Sedentary Lifestyles: An Analysis of Visit Patterns and Exercise Consistency at Fitness Centers

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Abstract

Objectives:

The main objective of this study is to analyze the dynamics of community physical activity participation by evaluating objective secondary attendance data. Specifically, the study aims to examine visit patterns to understand how people manage their leisure time amidst busy daily routines, and to assess exercise adherence to measure the resilience of their commitment to physical activity in a sedentary era.

Background & Contribution:

The modern era is marked by a critical healthcare paradox: despite growing public knowledge regarding fitness and a parallel surge in commercial gym memberships, metabolic and cardiovascular disorders tied to physical inactivity continue to escalate worldwide. Previous sports science research has focused primarily on measuring participation via subjective self-reported surveys, which are inherently flawed due to social desirability bias and memory distortion. This study provides a vital empirical contribution by bypassing self-reports entirely, using raw administrative tracking data to expose the true behavioral patterns and attrition rates of gym-goers. It offers a realistic blueprint for sports facility managers and preventive health policymakers to transition from customer acquisition models to participation retention strategies.

Materials and Methods:

This study employed a descriptive quantitative approach with a retrospective observational design. The participants comprised 300 unique visitors from a middle-class (suburban) demographic at a commercial fitness center (Royal Gym Yon Armed 12 Kostrad) in Ngawi Regency. A total sampling technique was utilized, extracting the entire population of recorded visitors from April 1 to 30, 2026. The data collection instrument was the facility's administrative daily attendance list, focusing on three main variables: anonymized visitor ID codes, arrival dates, and arrival times. The data were analyzed using descriptive statistics, employing frequency distributions, percentages, and crosstabulation techniques via SPSS and Microsoft Excel.

Results:

The findings indicate a significant imbalance in visitation patterns, with peak attendance heavily concentrated on weekdays (66.0%) during the afternoon and evening hours (3:01 PM–10:00 PM), which collectively accounted for 71.5% of total visits. Despite this high volume of daily facility usage, individual exercise adherence was remarkably low. More than half of the visitors (55.0%) fell into the passive or sporadic category, visiting less than once a week. Conversely, only a minority (15.0%) maintained an active, consistent routine that met the minimum standard of at least three times per week.

Conclusions:

High public interest and visitation volume at fitness centers do not automatically translate to consistent individual exercise habits, demonstrating that having access to a gym does not guarantee success in combating a sedentary lifestyle. The practical implication of this study is that sports facility managers and public health policymakers must shift their focus from merely providing infrastructure and recruiting new members to implementing active participation retention programs, such as coaching for beginners and time-management-based physical literacy education.

Keywords: Exercise Adherence; Physical Activity; Fitness Center; Sedentary Lifestyle; Visit Patterns



Introduction

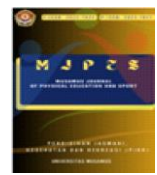
Exercise and regular physical movement have transitioned from mere leisure preferences to critical survival mechanisms required to preserve physiological health in the 21st century. Expanding public awareness about long-term metabolic health has driven an influx of individuals toward commercial fitness environments. Fitness centers are increasingly viewed as optimal spaces for structured exercise because they buffer the participant from unpredictable weather, provide highly specialized biomechanical equipment, and offer diverse social programming. Furthermore, considerations regarding environmental safety, specialized facility availability, and professional staff support are major determinants driving urban and suburban demographics to choose indoor commercial spaces over traditional outdoor public areas (Irawan et al., 2020; Lubanova et al., 2024; Wargama, 2025).

Modern humans today face a serious health paradox. On the one hand, campaigns about the importance of physical fitness continue to be widely publicized, but on the other, technological disruption and professional demands are increasingly locking society into sedentary routines (Wargama, 2026). This sedentary lifestyle phenomenon has not only triggered a global physical activity crisis, but has also seeped into the demographics of suburban areas (Wargama et al., 2026). The transformation of public spaces and busy working hours have caused people, especially workers and students, to gradually lose their natural time to move. As a result, the foundation of intergenerational physical literacy is increasingly threatened by the passive conveniences offered by the digital age (Bertuol et al., 2023; Wargama et al., 2026).

Societies are currently experiencing an acute public health crisis driven by widespread sedentary behavior. Sedentary behavior is defined as any waking activity characterized by an energy expenditure of 1.5 metabolic equivalents (METs) or less while in a sitting, reclining, or lying posture (Pinto et al., 2023). The rapid proliferation of digital occupations, automation, and screen-centric entertainment options has anchored the human body into prolonged periods of physical stasis (George et al., 2023). This physical inactivity crisis is no longer confined to major metropolitan hubs; it has progressively saturated middle-class suburban regions (Waldman & Ghertner, 2023). The systemic reduction of natural daily ambulation implies that the modern human must deliberately negotiate and isolate specific portions of their day to engage in compensatory physical activity.

To fully conceptualize this socioeconomic trend, sports science must analyze physical behavior through the lens of physical literacy and the intention-behavior gap. Physical literacy represents a holistic concept encompassing not just physical agility, but the underlying motivation, cognitive confidence, and movement knowledge required to sustain active lifestyle choices across a lifetime. Concurrently, the modern corporate environment exacerbates the intention-behavior gap, a psychosocial state where an individual's positive attitude and financial investment toward physical wellness fail to manifest as long-term behavioral consistency. Individuals frequently purchase gym subscriptions during periods of high motivation, yet their active habits collapse when confronted with routine cognitive exhaustion and time constraints imposed by sedentary work environments.

In response to this reality, commercial fitness centers have emerged and played a crucial role, transforming into essential "therapeutic fields" or "remedial spaces" designed to restore the physiological balance lost to desk-bound corporate regimens (León et al., 2020; Watanabe & Takahashi, 2022). For people in a sedentary era, fitness centers offer a space and time solution to compensate for the body's physiological needs deprived by long work hours (Wargama et al., 2021; Wintle, 2022). It's at this point social interactions,



lifestyle incentives, and health awareness merge into a new routine (Sepe, 2025). Therefore, understanding how people manage their free time to access these facilities is crucial for charting the true direction of changes in public mobility behavior. However, the true efficacy of these centers in reversing the sedentary crisis remains highly contested. Having access to an infrastructure does not automatically guarantee that individuals possess the behavioral resilience or the time-management literacy required to integrate regular physical exercise into their weekly schedules.

The fundamental research problem prompting this empirical investigation stems from direct field observations of commercial gym infrastructure utilization in suburban environments, where extreme facility overcrowding during specific late-afternoon shifts creates an inaccurate illusion of a highly active, physically fit community. Preliminary examination of administrative logbooks suggests a different reality: this high cumulative footprint is primarily driven by a revolving door of erratic, short-term visitors who drop out quickly, rather than a stable, dedicated cohort of active individuals.

To date, existing sports sociology and physical education literature has attempted to measure public exercise participation rates. However, the vast majority of these studies are methodologically dependent on subjective questionnaires or self-reported surveys. This reliance introduces severe methodological limitations, particularly social desirability bias, where respondents routinely overestimate the frequency, duration, and intensity of their workouts to conform to perceived health ideals (Teh et al., 2023). Furthermore, standard literature often misinterprets active gym memberships or registration counts as direct proof of healthy community movement (Chen et al., 2023; James et al., 2023), ignoring the actual drop-out rates occurring behind the operational check-in counters.

The state of the art and primary novelty of this study lie in its methodological departure from traditional survey-based assessments. This study utilizes zero-prompt, objective secondary administrative data derived from electronic daily tracking logs across a complete, uninterrupted monthly cycle ($N = 300$). By utilizing a total sampling approach within a middle-class suburban demographic in Ngawi Regency, this research completely eliminates the risks of memory distortion and social desirability bias. It provides a highly transparent, empirical track record of exact community physical participation and time allocation choices.

The urgency of this manuscript is grounded in the critical need to design effective behavioral intervention frameworks capable of maximizing fitness infrastructure efficacy and reversing public health deterioration. Understanding how individuals negotiate their limited leisure time and evaluating the exact point where intentional gym access fails to manifest as consistent habit formation is vital for both the economic survival of the fitness industry and the optimization of preventative public health strategies (Thompson, 2024). This research contributes directly to sports science and public health by shifting the focus from infrastructure building to behavioral retention, demonstrating that resolving sedentary lifestyles requires systematic behavioral support, basic coaching for beginners, and structural time-management literacy.

This lack of empirical data in the literature is the main research gap in this study. An objective approach is needed, not based on assumptions or respondents' memories, but rather on actual track records of participation. Without concrete attendance data, it is difficult to discern whether people's exercise awareness has become a habit or simply a fleeting lifestyle fad (FOMO). Based on the urgency and research gaps, this study aims to analyze the dynamics of community physical activity participation through an objective secondary data approach, namely the attendance record of fitness center visitors. Specifically, this study will examine two main indicators: (1) visit patterns to understand people's free time management amidst their busy daily lives, and (2) exercise adherence to measure the resilience of their exercise commitment. Through this natural and



unbiased data reading, it is hoped that empirical reality will be revealed regarding the extent to which people in the sedentary era are truly able to combat the physical activity crisis in a real and sustainable manner.

Materials and Methods

Study Design

This study utilized a descriptive quantitative approach with a retrospective observational design. By extracting and analyzing secondary administrative data, this study captures real-world behavior and eliminates the self-reporting biases (such as social desirability bias or memory distortion) commonly found in questionnaire-based sports participation research.

Study Participants

The target population comprised the demographic utilizing a prominent, participants in this study were middle-class (sub-urban) demographics who were visitors, both active members and incidental visitors, at a commercial fitness center in the 12th Army Infantry Battalion (Yon Armed Kostrad) in Ngawi Regency. The sampling technique used a total sampling method, where the entire population of visitors recorded as present during the period from April 1 to 30, 2026 (N = 300), Because this study relied on retrospective secondary administrative records, participant profiling was restricted to tracked behavioral metrics (unique anonymous ID codes, frequency metrics, and check-in times).

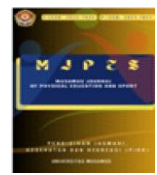
Research Instruments and Procedures

The primary data collection instrument was the facility's electronic administrative attendance logbook managed at the main entrance gate. This administrative tool records data continuously using manual sign-ins and barcode verification systems, providing a passive, objective track record of visitor flow. The collected data fields included: anonymized alphanumeric visitor identification codes, exact calendar tracking dates, and precise time check-in stamps. The systematic operational procedures were executed as follows:

1. Administrative Clearance: Official institutional permission was secured from the commanding officers and management of Royal Gym Yon Armed 12 Kostrad to access the archived retrospective logbooks from April 2026.
2. Data Extraction & Anonymization: Raw check-in logs were exported into data matrices. To protect participant privacy and conform to strict research ethics, all legal names were removed and replaced with randomized unique alphanumeric identifier codes.
3. Data Cleaning: A validation process was conducted using Microsoft Excel to identify and remove redundant data points, double check-ins on the same day, or system logging errors.
4. Data Aggregation: The verified entries were grouped into clear categories based on arrival time windows and cumulative weekly visit counts per individual. Statistical
5. Processing: The final organized datasets were imported into SPSS for descriptive statistical modeling and crosstabulation.

Statistical Analysis

Descriptive statistics, frequency distributions, percentages, and crosstabulation techniques were processed using Microsoft Excel and SPSS software. The structural matrix guiding the parameters of data categorization is outlined in Table 1.

**Table 1.** Parameters and Classification of Data Analysis

N0	Analysis Variables	Measurement Indicators	Categories / Classifications
1	Visit Patterns	Time of Visit	1). Morning (06.00 – 10.00) 2). Afternoon (10.01 – 15.00) 3). Evening (15.01 – 18.00) 4). Night (18.01 – 22.00)
		Day of Visit	1). Weekdays 2). Weekends
2	Exercise Adherence	Average Visits per Week	1). Active: ≥ 3 times/week 2). Moderate: 1 – 2 times/week 3). Passive / Sporadic: < 1 time/week
3	Presentation Format	Statistical Output	1). Visual Charts / Graphs 2). Crosstabulation Tables

Results

The descriptive statistical breakdown of the secondary data extracted from the 300 unique visitor IDs during the observation window provides clear empirical evidence regarding how the community interacts with fitness facilities. The findings are divided into temporal visit patterns and individual behavioral adherence levels.

Temporal Visitation Patterns and Leisure Time Allocation

The empirical analysis of entry timestamps highlights a distinct, uneven distribution of facility utilization across operating hours and days of the week, as detailed in Table 2.

Table 2. Distribution of Visit Patterns by Time and Day (N=300)

No	Analysis Variables	Measurement Indicators	Category / Classification	Percentage (%)
1	Visiting Patterns	Arrival Times	Morning (06:00 – 10:00)	10.5%
			Afternoon (10:01 – 15:00)	8.0%
			Evening (15:01 – 18:00)	38.0%
			Night (18:01 – 22:00)	33.5%
2	Days of Visit	Days of Visit	Weekdays	66.0%
			Weekends	34.0%

The data in Table 2 indicates a substantial temporal concentration of facility usage. The afternoon and evening shifts (15:01 to 22:00) dominate the traffic footprint, collectively accounting for 71.5% of all recorded entries. In contrast, the mid-day operating hours (10:01 to 15:00) experience severe underutilization, drawing only 8.0% of total visits. When evaluated across the weekly cycle, weekdays capture the majority of interactions (66.0%) compared to weekend periods (34.0%). To illustrate this high concentration of traffic during specific hours, the density of arrival times is mapped in Figure 1:

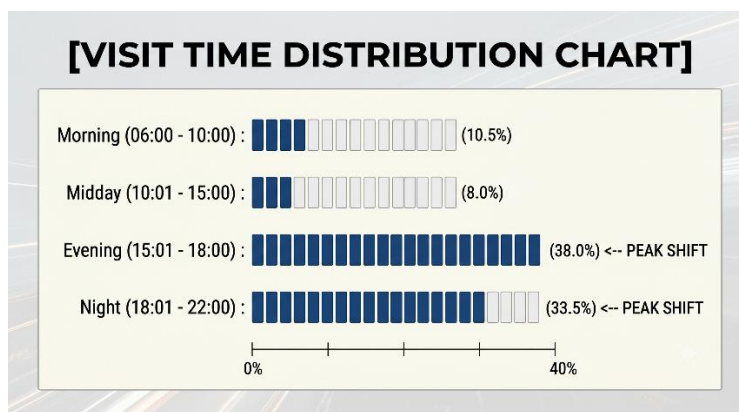


Figure 1, Visit Time Distribution

Exercise Consistency and Adherence Levels

Tracking individual attendance profiles over the monthly cycle reveals a clear discrepancy between total facility usage volume and regular individual exercise adherence, as shown in Table 3.

Table 3. Exercise Consistency and Adherence Levels

No	Adherence Level	Attendance Indicator	Number of Visitors (n)	Percentage (%)
1	Active (Consistent)	≥ 3 times / week	45	15.0%
2	Moderate (Fluctuating)	1 – 2 times / week	90	30.0%
3	Passive (Sporadic)	< 1 time / week	165	55.0%
Total	Unique Visitors		300	100%

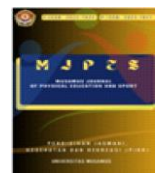
The data in Table 3 points to a notable paradox within community health habits. Facing high cumulative entrance volumes that cause crowded equipment areas during evening hours, individual exercise consistency remains critically low. A substantial majority of unique visitors (55.0%) are categorized as passive or sporadic participants, attending less than once a week on average. Conversely, the dedicated core group meeting standard clinical recommendations for cardiorespiratory and muscular health (the active category, attending ≥ 3 times per week) represents only 15.0% of the sample. This objective tracking confirms that regular gym access does not automatically guarantee consistent exercise habits or improved physical literacy for most of the population.

Discussion

This study aims to analyze the dynamics of community sports participation through the track record of fitness facility attendance. Objective findings from attendance data present two contrasting realities: high frequency of visits at certain times, but accompanied by low levels of adherence or consistency of exercise at the individual level. These findings provide empirical significance: the availability of access to sports facilities does not automatically convert a sedentary lifestyle into a sustainable active behavior.

Interpretation of Visiting Patterns and Leisure Negotiations

The results of the visitation pattern analysis (Table 2) show that more than 70% of visits are concentrated in the afternoon and evening (3:01 PM–10:00 PM) on weekdays. Sociologically, this phenomenon aligns with the concept of "third space," where commercial sports facilities serve as a place to relieve stress after work or school hours. People allocate time at the end of the day for exercise as a form of compensation for their bodies being forced to be passive (sitting/sedentary) for eight hours straight. These findings corroborate the study Jeong, 2025 and Wargama, 2025 which states that lifestyle sports offer meaningful experiences as a stress relief valve from modern



routines. Instead of exercising in the morning before starting activities, urban and suburban communities now prefer to use exercise as a way to end the day, where social interaction with fellow gym members also serves as a pull factor.

The Gap Between Intention and Consistency of Exercise

While attendance in the afternoon and evening appears high, findings on the level of consistency of exercise (Table 3) reveal a worrying reality. As many as 55% of visitors fall into the passive category, attending less than once a week, and only 15% meet the consistency standard (≥ 3 times per week). This high dropout rate can be explained by the intention-behavior gap theory. Purchasing a gym membership is often driven by momentary euphoria, false sense of security, or lifestyle trend impulses (FOMO) (Nafisah et al., 2025). However, to maintain this routine requires physical literacy and strong intrinsic motivation.

These results reinforce previous findings, highlighting a physical activity crisis that has even plagued sports students due to screen and device exposure. When cognitive and physical fatigue from work collides with the desire to exercise, most people ultimately succumb to the comfort of sedentary behavior. This also proves that self-reported questionnaire-based data often misrepresents people's fitness levels, as registering as a gym member is not a definitive indicator of a person's regular exercise.

Practical Implications

The significance of these findings offers important practical implications for public health policymakers and sports facility managers. For fitness center managers, a business model that focuses solely on recruiting new members without considering retention programs (maintaining members to attend regularly) will not significantly impact public health. Strategic interventions are needed, such as providing personal trainers to accompany new members in the first few weeks to help them turn their intention into a habit. For policymakers, education on physical literacy must shift from simply "the importance of exercise" to "how to manage time to exercise consistently" amidst busy work hours.

Limitations and Recommendations for Further Research

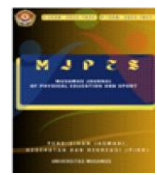
This study has limitations because it only analyzes attendance figures (what and when) without exploring psychological motivations in depth (why). Therefore, it is recommended that future research use a mixed-methods approach. Combining attendance track record analysis with in-depth qualitative interviews with "passive" visitor groups would be very useful in uncovering the specific barriers preventing them from maintaining consistent exercise. Furthermore, expanding observations to several fitness centers with different tariffs or economic classes could provide a more comprehensive map of physical activity inequality.

Conclusions

This study demonstrates that high public interest and initial attendance at fitness facilities do not automatically translate to consistent individual exercise habits in modern suburban communities. Objective administrative logs show that facility usage is heavily concentrated during post-work hours (15:01-22:00) on weekdays, confirming that gyms function primarily as physical recovery spaces following sedentary work routines. Crucially, 55% of unique visitors utilize these spaces sporadically, failing to meet baseline health recommendations, while only 15% maintain consistent habits. Ultimately, having access to or purchasing a gym membership does not guarantee success in overcoming a sedentary lifestyle.

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Conflict of Interest

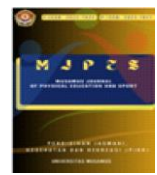
The authors declare no conflict of interest. The facility provider (Royal Gym Yon Armed 12 Kostrad) had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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