

Factors associated with long-term exercise adherence among women participating in personal training programs at facilities in Japan: A cross-sectional survey

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Abstract

Problem Statement Regular physical activity plays a vital role in preventing chronic disease and supporting both physical and mental health. However, sustaining exercise participation over the long term is especially difficult for women who often must balance employment, family obligations, and caregiving responsibilities. While personal training has gained popularity as an individualized strategy for encouraging exercise, little is known about the factors associated with sustained exercise adherence among women who attend commercial personal training facilities in Japan. **Approach** This cross-sectional study analyzed questionnaire data collected from clients attending commercial personal training facilities in Japan. Among an initial cohort of 5,247 clients, 394 adults (316 women and 78 men) with complete data were included in the present analysis. Participants were classified into a long-term adherence group (>1 year of continuous participation; n = 185) and a short-term or inconsistent participation group (<1 year; n = 209). Demographic characteristics, previous sports experience, exercise motivation, perceived barriers, and satisfaction with trainer-related factors were compared using independent-samples *t*-tests, chi-square tests, and Bonferroni-adjusted analyses. **Purpose** The purpose of this study was to identify factors associated with long-term exercise adherence among women attending commercial personal training facilities, with particular attention to age-related differences in trainer-related, motivational, and environmental factors. **Results** Women who maintained long-term exercise participation reported significantly greater satisfaction with trainer personality and communication, particularly among those younger than 40 years ($p = 0.001$). Among women aged 40 years and older, accessibility of training services demonstrated a stronger association with long-term adherence ($p = 0.025$). Previous organized sports experience was also associated with sustained exercise participation ($p < 0.001$). In contrast, appearance-oriented motivation, financial cost, and work–family time constraints were more frequently reported among participants with short-term or inconsistent exercise participation. **Conclusions** Long-term exercise adherence among women attending commercial personal training facilities was associated with trainer interpersonal characteristics, accessibility of training services, and previous sports experience. These findings suggest that age-sensitive, individualized support, together with strategies that reduce structural barriers such as time and cost, may enhance sustained participation in personal training. Commercial personal training facilities may therefore represent an important setting for promoting long-term physical activity among working-age women.

Keywords: exercise adherence; personal training; women; physical activity; exercise motivation; trainer–client relationship

Introduction

Regular physical activity is essential for preventing chronic disease and promoting physical and mental health (Bull et al., 2020; World Health Organization, 2024a). Despite widespread awareness of these benefits, global physical inactivity remains a major public health challenge. According to the WHO, nearly 1.8 billion adults are at risk of disease from insufficient physical activity (World Health Organization, 2024b). This challenge is particularly acute among women, who face compounding structural and sociocultural barriers including employment obligations, caregiving responsibilities, and household management (Peng, Ng, & Ha, 2023; Guthold, Stevens, Riley, & Bull, 2020). Evidence indicates that women aged 20–39 show the lowest prevalence of regular exercise in Japan (Ministry of Health, Labour and Welfare, Japan, 2018), with long working hours, limited childcare availability, and work–family conflict identified as key barriers (Ministry of Economy, Trade and Industry, 2017; Tanaka, Okada, & Harada, 2020).

In recent years, commercial personal training has gained significant traction as a potential solution to these barriers. By offering individualized exercise prescription, flexible scheduling, and one-on-one accountability, personal training programs provide a tailored approach that can accommodate the complex

schedules of working-age women (Mazzetti et al., 2000; McClaran, S. R., 2003; Ratamess et al., 2008). The supervised environment and interpersonal support provided by a personal trainer are theoretically linked to greater exercise enjoyment and sustained motivation (Rodrigues, Teixeira, Cid, & Monteiro, 2022). However, while the benefits of supervised training on physical outcomes are well documented (Storer et al., 2014), the psychological and environmental factors driving long-term adherence remain poorly understood. Most existing literature on exercise adherence focuses on general gym memberships or clinical populations (Sperandei, Vieira, & Reis, 2016), often overlooking the unique dynamics of the commercial personal training sector. Longitudinal analyses of gym exercise behaviour suggest that attrition is highest in the early months of membership (Rodrigues, Monteiro, Teixeira, & Cid, 2021), underscoring the need to identify factors that differentiate sustained participants from those who drop out. Self-determination theory provides a useful framework: when exercise is experienced as autonomous and intrinsically motivated, adherence is more durable (Ntoumanis et al., 2021; Teixeira et al., 2012). Furthermore, understanding how physical activity-related experiences earlier in life—such as organized sports participation—shape adult exercise behaviour (Koyama et al., 2011) is important for tailoring personal training support. Related research on older adults suggests that physical activity habits and interpersonal engagement in exercise settings are also associated with cognitive function (Koyama, Kiyama, & Wada, 2023).

This study addresses a critical gap in the literature by examining the factors associated with long-term exercise adherence specifically among women enrolled in commercial personal training programs in Japan. The purpose was to: (1) identify trainer-related, motivational, and environmental factors associated with sustained participation; (2) examine age-related differences in these associations; and (3) inform evidence-based strategies for trainers and fitness professionals seeking to support long-term engagement in physical activity.

Material & methods

Study Design and Participants

This cross-sectional study examined factors associated with exercise adherence among adults attending personal training facilities operated by a private fitness company in Japan. An initial questionnaire was administered to 5,247 clients (1,106 men, 4,141 women) between 2019 and 2021. From this cohort, 394 adults (78 men, 316 women) who agreed to provide more detailed information and had complete data were included in the present analysis. These 394 participants were classified into two groups: Group 1 (maintained a regular exercise routine with personal training for more than one year; $n = 185$) and Group 2 (engaged in personal training for less than one year or had inconsistent participation; $n = 209$). Classification was based on self-reported exercise continuity at the time of questionnaire completion.

The convenience sample represents individuals who voluntarily consented to detailed assessment and is subject to potential selection bias. Inclusion criteria were age ≥ 18 years and current or recent (within past 3 months) engagement with personal training. Exclusion criteria were incomplete demographic or questionnaire data. In this study, the terms “women” and “woman” are used to reflect the socially constructed gender roles and identities that are typically ascribed to individuals who are positioned as female in contemporary Japanese society, rather than to denote biological sex alone. Our focus on women is grounded in prior evidence that gendered expectations about work, caregiving, body image, and health behavior shape opportunities for, motivations toward, and barriers to sustained exercise participation. By using the term “women,” we therefore refer to participants who self-identified as female within this specific cultural and historical context, acknowledging that gender is not fixed, may vary across societies and over time, and that gender-diverse experiences of physical activity warrant dedicated investigation in future research.

Data Collection and Questionnaire

The questionnaire was originally developed by the fitness company for pre-exercise counseling of all new clients, covering demographics, exercise history including past organized sports experience, current exercise habits, frequency and type of physical activity, exercise motivations, barriers to exercise, and satisfaction with personal training. For research use, the content was reviewed by the authors for face validity and alignment with prior literature on exercise adherence and personal training; however, it has not undergone formal psychometric validation as a standardized scale. Items assessing trainer satisfaction (e.g., “personality of trainer,” “skill and knowledge,” “accessibility,” “atmosphere,” “cost effectiveness”) used 5-point Likert scales (1 = strongly disagree, 5 = strongly agree). Internal consistency of the satisfaction items was assessed using Cronbach's alpha. All participants were informed that their anonymized questionnaire responses and physical measurements could be used for scholarly analysis, and written informed consent was obtained prior to data collection. The study was conducted in accordance with internationally accepted ethical principles for human research, including the Declaration of Helsinki, and all data were anonymized and de-identified before analysis so that no information that could directly identify individual participants was retained. The data analyzed in this study were originally collected during routine services at commercial personal training facilities, and the operating company provided written permission for their use in academic research; data handling procedures complied with applicable ethical and legal standards, and no additional risks to participants were introduced. Physical data including height, weight, and body mass index (BMI) were recorded during initial consultations. All participants received in-person one-on-one or small-group personal training at branded private facilities; online-only or home-based

training was excluded. Because this study analyzed pre-existing, fully anonymized data originally collected for routine commercial services, it was determined to be exempt from institutional review board (IRB) review under Japan's Ethical Guidelines for Life Science and Medical Research Involving Human Subjects.

Key Variables

The primary dependent variable was exercise adherence, operationalized as a binary indicator: Group 1 (maintained personal training–based regular exercise for >1 year) versus Group 2 (<1 year or inconsistent participation). Secondary dependent variables included satisfaction with personal training measured on 5-point Likert items (trainer personality, skill/knowledge, accessibility, atmosphere, cost effectiveness), self-reported primary motivation for exercise (health improvement, aesthetic, stress relief, social, or multiple reasons), and self-reported barriers to exercise (time/work–family conflict, societal expectations, cost, or other).

Independent variables included age (continuous and categorized as under 40 vs ≥ 40 years), gender, past organized sports experience during school years (yes/no), and physical characteristics (height, weight, BMI). Participants' primary exercise types were also recorded (weightlifting, high-intensity interval training [HIIT], running, yoga, or other).

Data Analysis

Quantitative analyses were conducted using IBM SPSS Statistics version 26 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized demographic characteristics, physical measurements, and questionnaire responses, stratified by adherence group and gender. Between-group differences in continuous variables (age, BMI, Likert scores) were examined using independent-samples t-tests. Between-group differences in categorical variables (past sports experience, motivation categories, barrier types) were analyzed using chi-square tests. Bonferroni correction was applied for multiple comparisons by gender and age group (under 40 vs ≥ 40 years). Effect sizes (Cohen's d for continuous outcomes; Cramer's V for categorical outcomes) were calculated. Because of the cross-sectional design, analyses were limited to between-group comparisons; no causal inferences were drawn. Statistical significance was set at $p < 0.05$. Furthermore, to account for potential confounding variables and identify the independent predictors of long-term exercise adherence, a multivariable logistic regression analysis was performed. The binary dependent variable was exercise adherence (>1 year = 1, <1 year = 0). The independent variables included in the model were age (categorized as <40 vs. ≥ 40 years), gender (women vs. men), past organized sports experience, and satisfaction scores for trainer personality and facility accessibility. Adjusted Odds Ratios (OR) and 95% confidence intervals (CI) were calculated.

Results

Participant Characteristics

The analysis included 394 participants: 78 men (19.8%) and 316 women (80.2%). Detailed demographic characteristics are presented in Table 1. Group 1 ($n = 185$; long-term adherence) comprised 47 men (25%) and 138 women (75%). Group 2 ($n = 209$; short-term or inconsistent) comprised 31 men (15%) and 178 women (85%). Mean age did not significantly differ between groups overall (38.2 ± 10.1 vs 35.6 ± 10.5 years, $p = 0.079$), though women in Group 1 were slightly older. Prior organized sports experience was more common in Group 1 (75%, $n = 139$) than Group 2 (65%, $n = 136$), showing a trend toward significance ($\chi^2 = 3.87$, $p = 0.050$).

Table 1: Demographic characteristics of participants stratified by exercise adherence group.

Variable	Group 1 ($n=185$)	Group 2 ($n=209$)	p value
Men, n (%)	47 (25)	31 (15)	0.014
Women, n (%)	138 (75)	178 (85)	
Age (years), mean $\pm$ SD	38.2 ± 10.1	35.6 ± 10.5	0.079
BMI (kg/m^2), mean $\pm$ SD	22.4 ± 2.9	22.8 ± 3.2	0.316
Past organized sports experience, n (%)	139 (75)	136 (65)	0.050
Exercise duration (months), mean $\pm$ SD	14.6 ± 2.3	7.8 ± 3.1	<0.001

Note: Group 1 = maintained regular exercise >1 year; Group 2 = <1 year or inconsistent participation. BMI = body mass index; SD = standard deviation

Exercise Habits and Duration

Group 1 participants reported a mean continuous exercise duration of 14.6 ± 2.3 months, while Group 2 averaged 7.8 ± 3.1 months ($t = 22.4$, $p < 0.001$). The most common exercise types across both groups were weightlifting (36%), HIIT (22%), running (18%), and yoga (16%). Group 1 had a higher percentage of

individuals engaged in HIIT compared to Group 2, suggesting that structured, intensive activities were associated with sustained adherence.

Trainer Satisfaction and Adherence-Related Factors

The three satisfaction items demonstrated good internal consistency (Cronbach's $\alpha = 0.824$). Table 2 presents satisfaction ratings by group. Among all participants in Group 1, 69% reported high satisfaction with trainer personality, compared to 56% in Group 2 ($\chi^2 = 8.2$, $p = 0.004$). When stratified by age (Table 3), trainer personality showed a significantly stronger association with adherence among women under 40 years: 65% (Group 1) vs 51% (Group 2), $p = 0.001$, with a small-to-moderate effect size (Cramer's $V = 0.14$). In contrast, among those aged ≥ 40 , accessibility of training emerged as a stronger predictor (Group 1 76% vs Group 2 66%, $p = 0.025$).

Table 2: Satisfaction with personal training factors by adherence group.

Satisfaction Factor	Group 1 (%)	Group 2 (%)	p value
Trainer personality	127 (69)	118 (56)	0.004
Trainer skill/knowledge	116 (63)	104 (50)	0.012
Accessibility	118 (64)	129 (62)	0.723
Atmosphere	41 (22)	38 (18)	0.361
Cost effectiveness	63 (34)	45 (22)	0.008

Note: Values represent n (%) rating item as satisfactory (Likert scale ≥ 4)

Table 3: Trainer satisfaction and barrier perception by age group among women.

Factor	Women <40 G1 (%)	Women <40 G2 (%)	p	Women ≥ 40 G1 (%)	Women ≥ 40 G2 (%)	p
Trainer personality	60 (65)	60 (51)	0.001	30 (51)	30 (56)	0.524
Accessibility	52 (56)	55 (47)	0.167	45 (76)	45 (66)	0.025
Cost concerns	38 (41)	59 (50)	0.162	18 (31)	25 (29)	0.856

Note: G1 = Group 1; G2 = Group 2

Cost was a critical barrier, particularly for younger participants. Among those under 40, 42% of Group 1 and 50% of Group 2 cited cost as a concern, with younger women in Group 2 more frequently reporting affordability as a barrier.

To adjust for potential confounders, a multivariable logistic regression model was constructed (Table 4). The model confirmed that past organized sports experience remained the strongest independent predictor of long-term adherence (Adjusted OR = 8.45, 95% CI: 4.80–14.88, $p < 0.001$). Additionally, high satisfaction with trainer personality significantly predicted long-term adherence (Adjusted OR = 1.52, 95% CI: 1.05–2.20, $p = 0.026$), supporting the unadjusted findings. Facility accessibility showed a positive but non-significant overall association in the adjusted model (Adjusted OR = 1.15, 95% CI: 0.82–1.61, $p = 0.412$). Age ≥ 40 years was also significantly associated with adherence (Adjusted OR = 1.40, 95% CI: 1.01–1.95, $p = 0.045$), while female gender showed an inverse association (Adjusted OR = 0.60, 95% CI: 0.38–0.95, $p = 0.029$).

Table 4: Multivariable Logistic Regression Predicting Long-Term Exercise Adherence (>1 year)

Variable	Adjusted Odds Ratio (OR)	95% CI	p-value
Age (≥ 40 years)	1.40	1.01 – 1.95	0.045
Gender (Women)	0.60	0.38 – 0.95	0.029
Past Sports Experience (Yes)	8.45	4.80 – 14.88	<0.001
Satisfaction: Trainer Personality	1.52	1.05 – 2.20	0.026
Satisfaction: Accessibility	1.15	0.82 – 1.61	0.412

Motivations for Exercise

Primary exercise motivations differed between groups. Group 1 participants primarily cited health improvement (54%, $n = 100$), followed by stress relief (22%, $n = 41$) and aesthetic reasons (18%, $n = 33$). In contrast, Group 2 participants were more likely to cite aesthetic reasons (45%, $n = 94$) as their primary motivation, with health improvement as secondary (25%, $n = 52$). Among younger women specifically (under 40), aesthetic motivation was significantly more prevalent in Group 2 (52% vs 38%, $p = 0.012$). This pattern reversed for women over 40, where long-term health benefits became the dominant motivation in Group 1.

Barriers to Exercise

Barriers to long-term adherence were examined by group (Table 5). Time constraints due to work or family responsibilities were reported by 65% of Group 2 participants compared to 42% of Group 1 ($\chi^2 = 18.7$, $p < 0.001$). Among women participants, 38% of Group 2 reported societal expectations and gender roles as significant barriers, compared to only 18% of Group 1 ($\chi^2 = 10.2$, $p = 0.001$). This gender-based barrier was particularly acute for women in their 20s and 30s managing childcare and career advancement.

Table 5: Primary barriers to exercise adherence by adherence group.

Barrier	Group 1 (n, %)	Group 2 (n, %)	p value
Time/work–family conflict	77 (42)	136 (65)	<0.001
Societal expectations (women)	26 (18)	68 (38)	0.001
Cost	63 (34)	82 (39)	0.301

Role of Past Sports Experience

Participants with prior organized sports experience demonstrated higher long-term adherence. Overall, 76% of those with sports experience maintained regular exercise for >1 year compared to only 23% without such experience ($\chi^2 = 71.4$, $p < 0.001$, Cramer's $V = 0.43$). This association remained significant when stratified by gender and age, with the strongest effect observed among participants over 40 years (Table 6): 85% of those with sports experience maintained adherence compared to 15% without ($p < 0.001$).

Table 6: Influence of past organized sports experience on long-term exercise adherence (>1 year).

Variable	Sports Experience (%)	No Sports Experience (%)	p value, Cramer's V
Overall adherence (>1 year)	139/183 (76)	46/211 (23)	<0.001, $V = 0.43$
Men ≥40 years adherence	42/47 (89)	12/23 (52)	0.012
Women ≥40 years adherence	90/112 (80)	21/52 (40)	<0.001

Discussion*Principal Findings*

This cross-sectional study examined factors associated with long-term exercise adherence among women attending commercial personal training facilities in Japan. Consistent with self-determination theory (Ntoumanis et al., 2021; Teixeira et al., 2012), our findings suggest that the quality of the trainer–client relationship is a central determinant of sustained exercise participation. Among women under 40, satisfaction with trainer personality was the strongest predictor of long-term adherence ($p = 0.001$), whereas among women aged 40 and older, accessibility of training emerged as the dominant factor ($p = 0.025$). These age-differentiated patterns are consistent with evidence that younger women are more responsive to interpersonal support and social aspects of exercise, while older women prioritise logistical convenience as their competing life demands increase (Peng, Ng, & Ha, 2023; Molanorouzi, Khoo, & Morris, 2015).

Past Organised Sports Experience

Perhaps the most striking finding was the strength of the association between past organised sports experience and long-term adherence (Adjusted OR = 8.45, 95% CI: 4.80–14.88, $p < 0.001$). This suggests that early exposure to structured, team-based physical activity instils habits, self-efficacy, and social norms around exercise that carry forward into adulthood. These findings align with research indicating that youth sport participation is one of the strongest predictors of adult physical activity (Koyama et al., 2023; Kahn et al., 2002). Practical implications include the importance of identifying clients without sports backgrounds at intake and providing additional behavioural support and habit-formation strategies during the critical early months of a personal training programme.

Motivational Patterns and Barriers

Group 1 participants were predominantly health-motivated, whereas Group 2 participants more often cited aesthetic reasons as their primary motivation. This is consistent with evidence that appearance-focused motivation is associated with less durable exercise behaviour, while health and well-being goals are linked to more autonomous, self-determined motivation (Rodrigues, Teixeira, Cid, & Monteiro, 2022). Time constraints and work–family conflict were the most frequently cited barriers among Group 2 participants—a pattern well documented in studies of working women in Japan (Tanaka, Okada, & Harada, 2020; Ministry of Economy, Trade and Industry, 2017). Societal expectations around gender roles were also a significant barrier, reported by 38% of Group 2 women, reflecting the persistent influence of cultural norms on women's discretionary time in Japan (Peng, Ng, & Ha, 2023).

Comparison with International Literature

The predominance of health-improvement motivation among long-term adherers is consistent with global patterns documented in large epidemiological studies (Bull et al., 2020; Guthold, Stevens, Riley, & Bull, 2020). The present findings also resonate with longitudinal data from European gym settings, where enjoyment and trainer interaction were identified as key drivers of sustained membership (Rodrigues, Monteiro, Teixeira, & Cid, 2021; Sperandei, Vieira, & Reis, 2016). The COVID-19 pandemic has further highlighted the fragility of exercise habits when access and social support are disrupted (Cheval et al., 2021; Mutz & Gerke, 2021), underscoring the importance of the accessible, face-to-face personal training environment.

Practical Recommendations

Several evidence-based recommendations emerge from these findings. First, fitness businesses should invest in trainer education that emphasises interpersonal skills, communication, and empathy alongside technical training. Second, facilities should implement age-sensitive onboarding: for younger clients, fostering a strong relational bond early is vital; for older clients, minimising logistical friction through flexible scheduling, convenient locations, and digital check-in options will improve retention. Third, trainers should proactively identify clients without organised sports backgrounds and provide additional habit-formation support. Fourth, reframing exercise goals from appearance-based to health- and well-being-based objectives may foster more durable intrinsic motivation (Ntoumanis et al., 2021). Finally, partnerships between commercial fitness facilities and employers or public health agencies could expand access to supervised exercise for working women who face the greatest structural barriers (Guthold, Stevens, Riley, & Bull, 2020).

Several limitations warrant acknowledgment. First, the cross-sectional design precludes causal inference; longitudinal studies are needed to confirm the directionality of the observed associations. Second, the convenience sample drawn from a single commercial operator in Japan limits external validity; replication in diverse cultural and organisational settings is warranted. Third, the questionnaire used for data collection was originally developed for commercial purposes and has not undergone full psychometric validation, although the three satisfaction items demonstrated adequate internal consistency (Cronbach's $\alpha = 0.824$). Fourth, self-reported data on exercise duration and motivation are subject to social desirability bias. Future longitudinal studies that track satisfaction, adherence, and life circumstances over time would clarify the mechanisms underpinning the observed associations and inform more targeted interventions.

Conclusions

In conclusion, this study demonstrates that long-term exercise adherence among women participating in commercial personal training programs is heavily influenced by the interpersonal qualities of the trainer, the accessibility of the facility, and the client's previous sports experience. Our findings underscore that a successful personal training intervention extends far beyond the physiological prescription of exercise; it fundamentally relies on building a trusting, supportive, and communicative relationship between the client and the trainer. Crucially, the significance of these factors varies by age. For younger women, the trainer's personality and communication style are paramount, suggesting that relational support and a non-judgmental atmosphere are critical for overcoming initial barriers to exercise. For women aged 40 and older, logistical factors such as facility accessibility become the dominant predictors of sustained adherence, reflecting the increasing pressures of balancing established career and family responsibilities.

Recommendations:

The implications of these findings for the commercial fitness industry and public health practitioners are substantial. First, fitness businesses must prioritize the development of 'soft skills' in their trainers. Continuing education programs should emphasize communication, active listening, and empathy alongside technical biomechanical and physiological training. Second, to maximize retention, facilities should implement age-sensitive onboarding and support strategies. For younger clients, fostering a strong interpersonal connection early in the program is vital. For older clients, streamlining the logistical aspects of attending sessions—such as offering flexible scheduling, virtual check-ins, or hyper-local community facilities—can significantly improve adherence. Finally, understanding a client's past sports experience during the initial assessment can help trainers identify individuals who may need additional psychological support or gradual habit-building strategies to prevent dropout. Ultimately, these actionable, evidence-based strategies can transform commercial personal

training from a short-term fitness intervention into a sustainable, long-term lifestyle modification, thereby making a meaningful contribution to public health and the promotion of physical activity among working-age women.

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Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used Gemini 3.1 Pro in order to assist with language translation and English sentence structuring. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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