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Multidimensional determinants of health behaviors among fitness club members: a one health perspective on physical activity, nutrition, and psychosocial well-being*

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ABSTRACT

Introduction: The One Health paradigm recognizes the intricate interdependencies between human health, environmental factors, and behavioral patterns. Within this framework, lifestyle is a multidimensional construct encompassing physical activity, dietary practices, stress management strategies, and substance use behaviors. Despite the global proliferation of fitness facilities, there is limited empirical evidence regarding the comprehensive lifestyle profiles of fitness club members.

This cross-sectional observational study sought to characterize the multifaceted lifestyle determinants of adults engaged in structured fitness club activities in northwestern Poland, with specific emphasis on physical activity patterns, nutritional behaviors, stress coping mechanisms, and substance use.

Methods: A convenience sample of 40 adult participants (32 women, 8 men; mean age range 31–40 years) attending a multipurpose fitness facility in Police, West Pomeranian Voivodeship, completed a structured 30-item questionnaire in May 2018. The instrument assessed sociodemographic characteristics, physical activity engagement (frequency, duration, and modality preference), dietary patterns (meal frequency, hydration, and fruit/vegetable consumption), perceived stress and coping strategies, and substance use behaviors (alcohol, tobacco, illicit drugs, and passive smoke exposure).

Results: The majority of participants (60%) self-identified as physically active, with 42.5% engaging in exercise 2–3 times weekly and 40% training at the facility 3–4 times weekly. Notably, 72.5% supplemented club-based activities with additional recreational physical activity. Regarding nutrition, 60% consumed 4–5 meals daily, though only 42.5% achieved adequate hydration (1.0–1.5 L/day). Stress was experienced several times weekly by 30% of respondents; however, 50% perceived stress as a mobilizing force rather than a debilitating one. Social support, particularly from close relationships, emerged as the primary stress-management resource (35% of participants). Substance use was minimal: 60% reported no regular substance use, 67.5% were non-smokers, and 90% denied recent illicit drug use.

Conclusions: The cohort demonstrated a predominantly health-promoting lifestyle profile characterized by regular physical activity, relatively balanced nutrition, adaptive stress responses, and low substance use. However, residual suboptimal behaviors (passive smoking exposure, snacking between meals, and inadequate hydration among subgroups) suggest targets for tailored health promotion interventions within fitness settings. These findings align with the One Health conceptual framework by demonstrating how structured community environments can facilitate positive health behaviors across multiple domains.

Keywords: one health; lifestyle medicine; health behaviors; physical activity; fitness adherence; behavioral epidemiology.

INTRODUCTION

Conceptual framework: One Health and lifestyle medicine

Contemporary health science increasingly recognizes that human well-being cannot be separated from broader ecological and social contexts. The One Health paradigm articulates this interdependence, positioning human health outcomes as emergent properties of complex interactions among biological, environmental, and behavioral systems, often visualized as the "One Health Umbrella" [1]. Within this framework, lifestyle – defined as the aggregate of habitual behaviors, deliberate choices, and socially mediated practices – functions as a critical nexus linking individual agency with population-level health outcomes.

Empirical evidence consistently demonstrates that regular physical activity reduces all-cause mortality risk and enhances multiple dimensions of health-related quality of life [2]. Beyond physiological benefits, exercise engagement correlates positively with subjective well-being and psychological resilience [3]. The COVID-19 pandemic underscored the malleability of physical activity patterns in response to environmental disruptions, revealing both vulnerabilities and adaptive capacities within populations [4]. Concurrently, the global fitness industry has witnessed the emergence of novel training modalities – functional training, small-group instruction, and high-intensity interval protocols – that reflect evolving consumer preferences and evidence-based practice innovations [5].

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The fitness club as a health-promoting microenvironment

Fitness facilities are more than mere exercise venues; they constitute socially embedded microenvironments in which health behaviors are shaped, reinforced, and sustained. Gjestvang et al. [6] identified several factors mediating long-term membership retention, including intrinsic motivation, social cohesion, and alignment between individual needs and facility offerings. Their work suggests that fitness clubs functioning as communities of practice – rather than transactional service providers – may more effectively support adherence and thereby amplify public health impact [7].

Longitudinal research further illuminates the differential health effects of various physical activity domains. Gjestvang et al. [8] documented that sports participation yields stronger associations with cardiometabolic health and functional capacity than occupational or household physical activity, a finding with important implications for exercise prescription and health promotion strategy. Similarly, American cohort data [9] reveal that fitness club membership correlates with guideline-concordant physical activity levels and favorable metabolic profiles, suggesting that structured facility access may reduce barriers to regular exercise.

Multidimensional lifestyle constructs: beyond exercise

While physical activity is a central pillar of health-promoting lifestyles [10], it does not operate in isolation. Historical conceptualizations of lifestyle focused narrowly on discrete behaviors without distinguishing salutogenic patterns from pathogenic ones [11]. Contemporary frameworks, however, embed lifestyle within broader psychosocial and environmental contexts, acknowledging that behaviors are shaped through socialization processes, peer influence, media exposure, and structural determinants [12].

Similarly, health also defies unitary definition. Biomedical models emphasizing homeostasis and functional capacity coexist with the World Health Organization's multidimensional definition, i.e. "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", which foregrounds positive health states rather than pathology [11]. This positive health orientation aligns with constructs such as well-being, encompassing life satisfaction, positive affect, eudaimonic functioning, and low negative emotionality [12].

Decades of epidemiological research have identified core lifestyle components with demonstrable effects on longevity and health span: regular physical activity, prudent dietary patterns, adequate sleep, stress management competence, and avoidance of harmful substances [13, 14]. Sygit [15] defined lifestyle as a syndrome of daily behaviors distinguishing individuals or groups, including rational nutrition, comprehensive physical activity, physiological conditioning, substance avoidance, judicious use of medication, and personal hygiene maintenance.

Study rationale and hypotheses

Despite the public health significance of fitness club participation, empirical characterizations of members' comprehensive lifestyle profiles remain sparse. Most existing research focuses on specialized populations (e.g. students or clinical cohorts) or isolated behavioral domains. This knowledge gap limits our ability to design contextually appropriate, evidence-based interventions within fitness settings.

The present study therefore sought to characterize selected lifestyle dimensions among adult fitness club members in northwestern Poland, examining sociodemographic correlates and behavioral patterns across physical activity, nutrition, stress management, and substance use domains. We hypothesized that female gender, age 31–40 years, favorable socioeconomic status, good self-rated health, exercise frequency ≥3 sessions/week, balanced dietary patterns, effective stress coping, and minimal substance use would collectively characterize a health-promoting lifestyle profile.

MATERIALS AND METHODS

Study design and setting

This cross-sectional observational study employed a diagnostic survey methodology. Data were collected in May 2018 at Butterfly Fitness Club, a multi-purpose recreational facility located in Police, West Pomeranian Voivodeship, Poland. The facility serves a catchment area encompassing Police, Szczecin, and the surrounding municipalities, attracting members aged 16–55 years. As the largest fitness venue within a 15-kilometer radius, it offers diverse programming, including group fitness classes, pole dance instruction, personal training services, strength training facilities (2-floor gymnasium), a sauna, a tanning salon, and ancillary services.

Participants and sampling

A convenience sample of 40 adult club members volunteered to participate. The inclusion criteria were (1) current active membership at the study facility, (2) age ≥18 years, and (3) ability to provide informed consent. No other exclusion criteria were applied. While convenience sampling limits generalizability, it provided access to a well-defined population within a natural fitness environment, enhancing ecological validity.

Measurement instrument

An author-developed structured questionnaire comprising 30 closed-ended items assessed 5 domains:

1. sociodemographic characteristics (8 items): gender, age, occupational status, work type, marital status, socioeconomic self-assessment, number of children, self-rated health status;
2. physical activity (8 items): self-perceived activity level, preferred activity modality, overall weekly exercise frequency, club-based training frequency, exercise duration/training age, modality preferences among club offerings, participation in activities outside the club;
3. nutritional behaviors (5 items): subjective diet quality assessment, daily meal frequency, between-meal snacking, daily water intake, fruit and vegetable consumption;

4. stress and coping (4 items): stressor frequency, stress perception (debilitating vs. mobilizing), primary coping strategies, predominant stress sources;
5. substance use (5 items): regular substance use (yes/no), alcohol consumption frequency, tobacco smoking status, recent illicit drug use (past 6 months), passive smoke exposure.

All items utilized single-response categorical formats. The questionnaire was administered anonymously to minimize social desirability bias.

Ethical considerations

Participation was voluntary and anonymous. Respondents provided implicit consent by completing the questionnaire. The study adhered to the ethical principles outlined in the Declaration of Helsinki for research involving human subjects.

Data analysis

Descriptive statistics characterized the sample and response distributions. Categorical variables are presented as frequencies and percentages, stratified by gender where appropriate. No inferential statistical testing was conducted due to the exploratory nature of the research and the limited sample size. Results are presented graphically and narratively.

RESULTS

Sociodemographic profile

The sample comprised 40 participants: 32 women (80%) and 8 men (20%). The modal age category was 31–40 years (n = 14, 35%), followed by 18–25 years (n = 12, 30%), 26–30 years (n = 6, 15%), 41–50 years (n = 5, 12.5%), and ≥51 years (n = 4, 10%).

Occupational status predominantly reflected salaried employment (55%), with university students and entrepreneurs each comprising 15%. Work type was distributed as follows: cognitive/intellectual (35%), mixed cognitive-physical (30%), and predominantly physical (15%).

Marital configurations included married (32.5%), partnered (25%), single (22.5%), and divorced (12.5%). Socioeconomic self-assessment yielded responses of "quite good" (40%), "moderately good" (30%), "average" (22.5%), and "very good" (7.5%).

Nearly half of respondents (47.5%) had no children, 32.5% had 1 child, 17.5% had 2, and 2.5% had 3. Self-rated health was predominantly positive: 55% rated their health as "quite good", 30% as "very good", 10% as "excellent", and only 5% below "quite good".

Physical activity patterns

When asked whether they considered themselves physically active, 60% responded "yes, I think so" (the modal response), with women predominating (52.5%) over men (7.5%). Fitness classes were the preferred activity modality for 47.5% of participants – exclusively women.

Regarding overall weekly exercise frequency, the largest subgroup (42.5%) engaged in physical activity 2–3 times weekly. However, club-specific training frequency was higher, with 40% attending 3–4 sessions weekly at Butterfly Fitness Club. Importantly, 72.5% supplemented club-based training with additional recreational activities elsewhere, a phenomenon consistent with broader recreational activity trends reported in Poland.

Training tenure was substantial: 47.5% had exercised regularly for "several years". Modality preferences within the club revealed that 35% favored unsupervised individual training, while 77.5% participated in group classes, placing value on elements such as instructor guidance, peer motivation, and structured programming.

Nutritional behaviors

Subjective diet quality assessments were mixed: only 12.5% reported that their diet was "definitely healthy", though many selected intermediate categories suggesting awareness of nutritional principles. The majority (60%) consumed 4–5 meals daily, approximating evidence-based recommendations for metabolic regulation and satiety management outlined in dietetics literature.

For 40% of participants, frequency of between-meal snacking was at most once daily. Hydration patterns revealed that 42.5% consumed 1.0–1.5 L of water daily – below optimal recommendations for active individuals. Fruit and vegetable intake was variable: equal proportions (35% each) reported consuming either approx. 1 serving or approx. 2 servings daily, indicating suboptimal adherence to "5-a-day" guidelines.

Stress and coping mechanisms

Stressor exposure was common: 30% experienced stressful situations several times weekly, and 20% reported stress 1–2 times weekly. However, stress perception diverged beyond mere frequency: fully 50% characterized stress as mobilizing rather than debilitating, suggesting adaptive appraisal processes.

Social support emerged as the predominant coping resource: 35% identified contact with close others (family or friends) as their primary stress-management strategy (Fig. 1). Random life events were the most frequently cited stressor category (27.5% of respondents), followed by work-related and interpersonal stressors (Fig. 2).

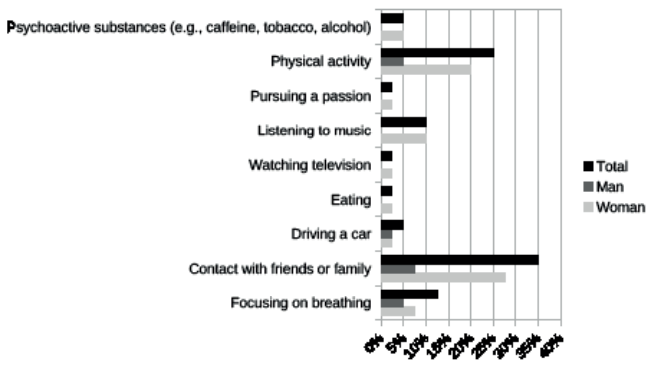

FIGURE 1. Breakdown of respondents according to means of coping with stress

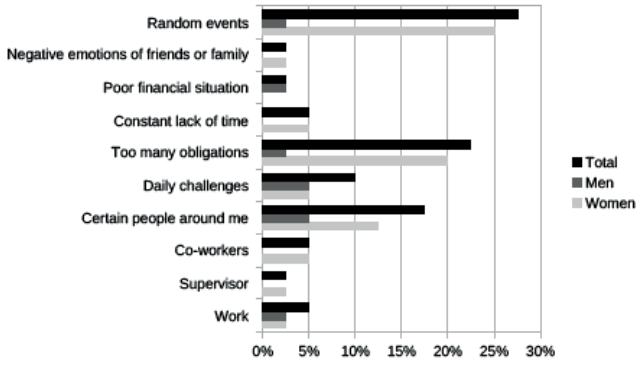

FIGURE 2. Breakdown of respondents according to main causes of stress

Substance use behaviors

The cohort exhibited minimal substance use: 60% reported no regular substance use whatsoever. Alcohol consumption patterns were predominantly occasional (42.5% of participants). Tobacco smoking prevalence was low, with 67.5% identifying as non-smokers. Illicit drug use was rare: 90% denied any use within the preceding 6 months.

Passive smoke exposure – an underappreciated health risk – elicited more variable responses: 35% answered "not really", but a substantial minority indicated some degree of involuntary exposure, highlighting a residual environmental health concern.

DISCUSSION

Principal findings in context

This study characterized the lifestyle profiles of adult fitness club members across multiple behavioral domains, revealing a predominantly health-promoting pattern tempered by specific areas needing improvement [5, 6]. Our findings align with and add to existing literature demonstrating that users of fitness facilities tend toward favorable health behaviors, while also illuminating domain-specific vulnerabilities (suboptimal hydration, fruit/vegetable intake, and passive smoke exposure).

Physical activity: beyond frequency to quality and context

The participants' physical activity patterns – 60% self-identifying as active, with modal engagement of 2–3 sessions weekly and substantial participation in activities outside the club – corroborate international research demonstrating that fitness club membership facilitates guideline-concordant activity levels [6, 16]. Moreover, the finding that nearly three-quarters of participants engage in exercise beyond club offerings suggests that facility use serves as one node within broader active lifestyle networks, rather than constituting participants' sole activity source.

This aligns with longitudinal evidence presented by Gjestvang et al. [8] indicating that participation in sports yields more robust health benefits than incidental activity, likely due to greater intensity, structure, and social embedding. The predominance of group class participation (77.5%) further underscores the importance of social context, consistent with research identifying peer support, instructor relationships, and community belonging as key adherence determinants [17, 18, 19].

Importantly, Gjestvang et al. [6] demonstrated that club type – particularly "boutique" models emphasizing community and social cohesion – predicts member engagement and retention. While our study did not formally assess club typology, the emphasis participants placed on group class elements (instructor quality and peer motivation) suggests that social capital within the fitness environment may function as a critical adherence mechanism, an insight with direct implications for facility management and health promotion programming.

Nutritional behaviors: a domain requiring targeted intervention

Dietary patterns presented a more nuanced picture. While the majority consumed 4–5 meals daily – approximating recommendations for metabolic optimization and appetite regulation – hydration remained suboptimal (42.5% consuming only 1.0–1.5 L/day, below the 2–3 L typically recommended for active adults). Similarly, fruit and vegetable intake fell short of public health guidelines, with most participants consuming 1–2 servings daily rather than the recommended minimum of five.

These findings echo national survey data (CBOS) [20] indicating that Poles identify diet as the most important health determinant, yet often struggle to translate nutritional knowledge into consistent behavior. The discrepancy between perceived importance and actual adherence likely reflects barriers including time constraints, food environment factors, cost, and inadequate practical cooking skills – factors inadequately addressed by nutrition education focused exclusively on theoretical knowledge.

International research increasingly emphasizes integrated lifestyle interventions addressing physical activity and nutrition synergistically [21]. However, Haakstad et al. [22] documented concerning patterns of weight cycling and restrictive dieting among fitness club members, suggesting that exercise engagement alone does not guarantee nutritionally balanced behaviors. This underscores the need for fitness facilities to incorporate evidence-based nutritional counseling, meal planning support, and environmental modifications (e.g., healthy food availability on-site) as complements to physical training programs.

Stress, coping, and the psychosocial functions of exercise

The finding that 50% of participants perceived stress as mobilizing – rather than debilitating – merits particular attention. This adaptive stress appraisal suggests high self-efficacy and resilient coping orientations, qualities associated with sustained behavior change and positive health trajectories. Moreover, the prominence of social support as a coping resource (35% of participants) reinforces the importance of relational contexts in health behavior maintenance, as recommended by the Community Preventive Services Task Force [23].

These results converge with extensive evidence demonstrating bidirectional relationships between physical activity and psychological stress. Exercise functions not merely as

a stress buffer, but as an active coping strategy that enhances affect regulation, sleep quality, and cognitive function [24]. The American College Health Association [25] has documented strong inverse associations between guideline-concordant physical activity and perceived stress among college populations, relationships likely mediated by neurobiological (e.g., endorphin release or HPA-axis regulation) and psychosocial (e.g., mastery experiences or social connection) mechanisms.

Critically, the fitness club environment itself may facilitate stress management through multiple pathways: structured time away from stressors, embodied mindfulness during focused movement, and access to supportive social networks [26, 27, 28]. Whiteman-Sandland et al. [29] documented that CrossFit participants specifically valued the community belonging aspect of their training, which enhanced both adherence and perceived stress management capacity. While our study did not employ qualitative methods to explore participants' subjective experiences, the quantitative data suggest that similar dynamics may operate within this Polish fitness context, consistent with regional studies on lifestyle.

Substance use: low prevalence but persistent environmental exposures

The cohort exhibited commendably low rates of active substance use: minimal tobacco smoking (67.5% non-smokers), predominantly occasional alcohol consumption, and negligible illicit drug use. These patterns contrast favorably with general population norms and regional studies in Poland [30] and likely reflect both self-selection (health-conscious individuals seeking fitness venues) and reinforcement (fitness culture discouraging substance use).

However, passive smoke exposure – reported by a meaningful minority – represents a persistent environmental health threat. Even second-hand smoke exposure carries cardiovascular and respiratory risks, which are particularly problematic for individuals engaged in aerobic exercise. This finding suggests that health promotion efforts should extend beyond individual behavior modification to address environmental determinants, potentially through smoke-free policies in and around fitness facilities.

Situating findings within the One Health framework

The One Health paradigm emphasizes that human health outcomes emerge from complex interactions among biological, behavioral, social, and environmental systems. Our findings exemplify this principle: participants' health-promoting lifestyles reflect not merely individual choices, but also the structured environment of the fitness club (providing equipment, instruction, and social networks), broader community factors (walkability and recreational infrastructure), economic resources (membership affordability and disposable income for healthy foods), and cultural norms (valuing fitness and body image ideals).

This systems perspective has important implications. Effective health promotion cannot rely solely on exhorting individuals to "make better choices"; it requires creating environments that make healthy behaviors accessible, affordable, socially normative, and intrinsically rewarding. Fitness facilities, when thoughtfully designed and programmed, can function as such health-enabling environments – microcosms in which exercise, social connection, stress management, and health education synergistically support well-being.

International perspectives and comparative insights

Our findings resonate with research [6, 8, 17, 23] emphasizing the importance of autonomy, competence, and relatedness – the core psychological needs articulated in Self-Determination Theory – for initiating and maintaining lifestyle changes. Sevild et al. [17] demonstrated that participants in Norwegian healthy life centers who experienced greater autonomy support, skill development, and social belonging achieved more durable behavior changes, a pattern likely generalizable across cultural contexts.

Similarly, Dąbrowska-Galas et al. [18] documented that physically active Polish adults report higher quality of life across age groups, an effect that strengthens with age. This suggests that fitness engagement may not only extend healthspan but also compress morbidity, allowing individuals to maintain functional independence and subjective well-being into later life and also to prevent the development of back pain [31].

Comparative research on sedentary behavior patterns highlights the fact that domain-specific sedentary time (e.g., occupational, leisure, or transportation time) differentially relates to health outcomes, underscoring the complexity of activity-health relationships [32]. Future research should employ device-based measurement (accelerometry) and ecological momentary assessment to capture fine-grained activity patterns, complementing self-report data.

Methodological strengths and limitations

This study's primary strength lies in its comprehensive, multidimensional assessment of lifestyle across physical activity, nutrition, stress, and substance use domains – an approach aligned with contemporary lifestyle medicine frameworks and the One Health paradigm. The natural fitness club setting enhances ecological validity, and anonymous administration likely reduced social desirability bias.

However, several limitations should be acknowledged. The convenience sample of 40 participants from a single facility limits its statistical power and generalizability. Self-report measures are vulnerable to recall bias and socially desirable responding, particularly for sensitive behaviors (such as substance use and dietary intake). The cross-sectional design precludes causal inference; we cannot determine whether fitness club participation promotes healthy lifestyles or whether health-conscious individuals selectively join such facilities (likely both processes operate).

Future research should employ longitudinal designs tracking behavior change trajectories among new members, use validated psychometric instruments rather than author-developed questionnaires, incorporate objective measures (e.g., accelerometry or biomarkers), and sample diverse facility types and geographic regions. Qualitative methods could elucidate participants' subjective meanings, motivations, and barriers, enriching quantitative findings.

CONCLUSIONS

This cross-sectional study characterized the multidimensional lifestyle profiles of adult fitness club members in northwestern Poland, revealing a predominantly health-promoting behavioral pattern characterized by regular physical activity, relatively balanced nutrition, adaptive stress appraisals, and minimal substance use. Nonetheless, specific suboptimal behaviors – inadequate hydration, insufficient fruit/vegetable intake, between-meal snacking, and passive smoke exposure – suggest targets for tailored health promotion interventions within fitness settings.

These findings align with the One Health conceptual framework by demonstrating how structured community environments can facilitate positive health behaviors across multiple domains. Fitness clubs represent more than exercise venues; they are socially embedded microenvironments in which physical activity, social support, stress management, and health education synergistically support well-being.

Moving forward, fitness facilities should consider integrating evidence-based nutritional counseling, stress management programming, and environmental health policies (e.g., smoke-free zones) to complement physical training offerings. Such comprehensive, multidimensional interventions hold promise for amplifying the public health impact of the rapidly expanding global fitness industry, ultimately contributing to healthier, more resilient populations in the spirit of One Health.

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