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Un análisis conductual de los predictores de la adherencia al ejercicio y su impacto económico en el contexto del fitness

A Behavioral Analysis of Exercise Adherence Predictors and Its Economic Impact in the Fitness Context

Uma análise comportamental dos preditores de adesão ao exercício e do seu impacto económico no contexto do fitness

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RESUMEN

Este estudio pretendía examinar la relación entre las percepciones de los clientes sobre los comportamientos de los fisiólogos del ejercicio, los tipos de motivación y su influencia posterior en la adherencia al ejercicio durante un periodo de seis meses. Además, evaluamos el impacto financiero del abandono de los clientes en los ingresos de los gimnasios durante este periodo. Métodos: Una muestra de 1.803 individuos (edades 18-54; M = 26,61, SD = 5,48) inscritos en gimnasios de todo Portugal participaron en este estudio. Resultados: Durante el periodo de seis meses, el 42% de los clientes cancelaron sus abonos, lo que supuso una pérdida de ingresos mensual estimada de 28.659,60 euros al final del sexto mes. Acumulativamente, los gimnasios experimentaron una pérdida total de ingresos de 110.393,27 euros durante el periodo de estudio. Conclusiones: Los hallazgos sugieren que los comportamientos de apoyo a las necesidades por parte de los fisiólogos se asocian positivamente con la motivación autónoma, que a su vez promueve la adherencia al ejercicio a largo plazo. Por el contrario, los comportamientos que frustran las necesidades están relacionados con la motivación controlada, que afecta negativamente al mantenimiento del ejercicio. Estos datos ponen de relieve la importancia de las estrategias de motivación tanto para la retención de clientes como para la sostenibilidad financiera de los gimnasios.

Palabras clave: ejercicio; forma física; salud; economía.

ABSTRACT

This study aimed to examine the relationship between clients' perceptions of exercise physiologists' behaviors, motivational types, and their subsequent influence on exercise adherence over a six-month. Additionally, we assessed the financial impact of client dropout on fitness center revenues during this timeframe. Methods: A sample of 1,803 individuals (ages 18-54; $M = 26.61$, $SD = 5.48$) enrolled in fitness centers across Portugal participated in this study. Results: Over the six-month period, 42% of clients canceled their memberships, resulting in an estimated monthly revenue loss of €28,659.60 by the end of the sixth month. Cumulatively, the fitness centers experienced a total revenue loss of €110,393.27 during the study period. Conclusions: The findings suggest that need-supportive behaviors from physiologists are positively associated with autonomous motivation, which in turn promotes long-term exercise adherence. In contrast, need-thwarting behaviors are linked to controlled motivation, which negatively impacts exercise maintenance. These insights highlight the importance of motivational strategies in both client retention and financial sustainability for fitness centers.

Keywords: exercise; fitness; health; economy.

RESUMO

Este estudo teve como objetivo examinar a relação entre os comportamentos dos fisiologistas do exercício percebidos pelos clientes, os tipos de motivação e a sua subsequente influência na adesão ao exercício durante um período de seis meses. Adicionalmente, avaliamos o impacto financeiro da desistência de clientes nas receitas do centro de fitness durante este período. Métodos: Participaram neste estudo 1.803 indivíduos (idades 18-54; $M = 26,61$, $DP = 5,48$) inscritos em ginásios em Portugal. Resultados: Durante o período de seis meses, 42% dos clientes cancelaram as suas subscrições, resultando numa perda de receitas mensais estimada em 28.659,60 € no final do sexto mês. Cumulativamente, os centros de fitness registaram uma perda total de receitas de 110.393,27 euros durante o período do estudo. Conclusões: Os resultados sugerem que os comportamentos de apoio às necessidades dos fisiologistas estão positivamente associados à motivação autónoma, que por sua vez promove a adesão ao exercício a longo prazo. Em contraste, os comportamentos que frustram as necessidades estão associados à motivação controlada, o que tem um impacto negativo na manutenção do exercício. Estas conclusões realçam a importância das estratégias motivacionais tanto na retenção de clientes como na sustentabilidade financeira dos centros de fitness.

Palavras chave: exercício; fitness; saúde; economia.

INTRODUCTION

Although the health benefits of regular physical activity are evident and indisputable (Bull et al., 2020; Warburton & Bredin, 2017), studies conducted in recent decades indicate that, gradually, the global population is spending more time engaged in sedentary behaviors and becoming less physically active compared to previous years (Barreto, 2013; Bauman et al., 2009; Guthold et al., 2018). This trend is reflected in Portugal, where a significant portion of the population does not engage in regular physical activity (Eurobarometer, 2004, 2010, 2014, 2018a, 2018b, 2022). De acordo com o Eurobarómetro do Desporto e Atividade Física publicado pela Comissão Europeia em setembro de 2022, 73% dos portugueses afirmam nunca se exercitar ou praticar desporto, enquanto 5% o fazem apenas "raramente". Apenas 4% dos inquiridos em Portugal praticam desporto "regularmente", e 18% indicam fazê-lo "com alguma regularidade". De acordo com o mesmo relatório, 80% das mulheres portuguesas não praticam atividade física ou desporto regularmente, em comparação com 75% dos homens, indicando que as mulheres em Portugal apresentam uma taxa de sedentarismo ligeiramente superior à dos homens (Eurobarometer 2022). Adherence to regular physical exercise among respondents has shown a decreasing trend in recent years, suggesting a trajectory of continuous decline. When asked regarding local preference, respondents mainly choose

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fitness centers or outdoor activities as the main locations for physical exercise practice. Specifically observed in the context of fitness centers, these are spaces where evaluation, prescription, and supervision of physical exercise practice by qualified professionals are assumed, and they have been gaining some notoriety over the past few years (Rodrigues et al., 2023). An increase of 18% since 2010 can be highlighted, with currently 30% of the physically active Portuguese population practicing physical exercise in a fitness centers. Considering that these spaces provide monitoring and supervision services for the physical exercise practiced by individuals, it makes perfect sense to understand and analyze the existing data in this specific context.

The number of people attending fitness centers seems to align with the current trend of increasing physically inactive Portuguese, as indicated by the Eurobarometers. Analyzing the available data from the Fitness Barometers (AGAP, 2017, 2018, 2019, 2020, 2021, 2022, 2023), there has been a slight growth in the number of members until 2020, with a significant reduction in active members since that year. An understandable drop, given the pandemic and, consequently, the temporary closure of fitness centers due to COVID-19. In 2022, the number of members grew again, with the main reason being the reopening of fitness centers in Portugal. It is crucial to note that the attrition rate has remained high, with over two-thirds of enrolled members canceling their membership. Thus, retention rates tend to be low. Fitness centers in Portugal have been able to retain an average of approximately 21% of members since 2016, where it is possible to calculate an average of 292,188 cancellations per year and a total loss of 24,867 members in fitness centers since 2018. Knowing the high attrition rate and consequently the low member retention rate by fitness centers, it is likely that there are many more former practitioners than actual practitioners (IHRSA, 2018). These values are alarming, especially considering that fitness centers have (or should have) the objective of promoting physical exercise in a supervised space, something that is questionable whether it is currently happening (Teixeira et al., 2020).

Motivation as indicator of exercise adherence

Clients who enroll in fitness centers are motivated to engage in physical activity. However, motivation plays a pivotal role not only in the initiation but also in the long-term maintenance of exercise participation within this studied context (Ryan & Deci, 2017). Autonomous motivation presupposes that behavior occurs due to intrinsic values, with individuals integrating the behavior into their daily lives and finding enjoyment in doing so (Rodrigues et al., 2020). Consequently, a client who autonomously regulates their behavior experiences more enjoyment, incorporates exercise into their personal identity, and considers it essential for their well-being (Ryan & Deci, 2017). In contrast, controlled motivation implies that behavior is contingent on coercive or self-imposed factors. This form of motivation suggests that clients engage in physical activity due to external values, often associated with rewards or internal imposition (e.g., feelings of guilt and anxiety), driving their behavior (Howard et al., 2017).

Finding factors that predict motivation and, consequently, ongoing adherence to fitness services can provide valuable insights into who will sustain their monthly memberships (Hooker et al., 2016). Existing literature appears to be unanimous about the determinants of autonomous and/or controlled motivation for exercise in fitness centers in Portugal, with one factor standing out: the behaviors of fitness professionals (Rodrigues et al., 2020). The way clients perceive the behaviors and motivational climates from professionals can decide the quality of motivation and, consequently, the continued engagement or abandonment of physical exercise (Ntoumanis et al., 2021). When clients perceive interpersonal support behaviors (e.g., physiologists allow practitioners to choose exercises or workouts they enjoy, supply efficient feedback, and establish genuine emotional connections), they are more likely to demonstrate higher levels of autonomous motivation, predisposing them to maintain their practice over time. Conversely, when clients perceive thwarting behaviors (e.g., instructors ignore practitioners, impose their behaviors on them, view practitioners solely as financial ends, or manipulate practitioners without concern for their well-being), they tend to exhibit and/or develop controlled motivation, which has been suggested as a significant determinant in gym or health club attrition.

Economic burden of high attrition rates

In addition to the fitness sector's difficulty in reducing attrition rates in recent years, it is losing revenue annually, which has financial consequences. Cancellations represent the inability of fitness center managers to create exercise-promoting policies in these contexts, resulting in financial loss. Through the average monthly fee charged to Portuguese and the number of reported cancellations, it is possible to estimate losses of around €57,566,078 and an approximate revenue of €99,815,898 between 2018 and 2022 (for deeper analysis see AGAP, 2022-2018). The losses represent approximately 58% of the revenue that could have been generated. These are estimated values considering that the monthly fee varies depending on promotional packages, the market segment where the gym is located, the month of client registration or cancellation, among other factors. However, the values presented align with the estimates provided in the Fitness Barometer of 2023 (AGAP, 2023). This overall revenue results from the membership fees that members pay for the standard service of each segment (e.g., use of the weight room, group classes, towel, pool) and/or for exclusive services purchased separately such as personalized training, nutrition consultations, or exclusive modalities (e.g., Crossfit).

To better understand this panorama of cancellations in fitness centers, there is an urgent need to comprehend the reasons that may be indicating this trend. According to available data, the main reasons for non-practice are "lack of time," "lack of motivation," having limitations/being ill," and "it's expensive" (Eurobarometer 2022-2004). Special attention should be given to the first two reasons cited, which explain more than 70% of physical inactivity at the national level. Most notably, both refer to a psychological state of lack of motivation, also known as amotivation, which means that the person does not feel motivated or lacks intention to engage in physical exercise (Rodrigues et al., 2018). The data reinforce recent evidence on physical exercise practice, explaining that favorable motivational patterns of cognitive or affective nature tend to be key factors in the adoption and maintenance of healthy behaviors (Rodrigues & Teixeira, 2023).

Current study

Customer retention in a fitness facility is understood as keeping long-term membership (MacIntosh & Law, 2015), posing a challenging phenomenon for fitness centers. This interdependence between organizational retention and customer exercise adherence needs thoughtful reflection, where exercise adherence to practice should lead to retention. In this sense, it seems clear that the primary goal of fitness centers is to provide a service that aligns with the demands and needs of current customers, as a mean to increase retention and thus increase financial return (MacIntosh & Law, 2015; Withall et al., 2012). Indeed, customer fees form the main factor in the economic sustainability of the fitness center, with complementary services (e.g., personal training, physiotherapy, nutrition consultations) contributing to monthly revenues (IHRSA, 2016, 2020). Thus, it is clear that a customer perceiving supportive behaviors and showing autonomous motivation will consequently adhere to the purchased service in the long term, leading the fitness center to cyclically invoice the monthly fee (Rodrigues et al., 2020). On the other side of the coin, a customer perceiving controlling behaviors from fitness professionals will experience controlled motivation, where dropout is the most expected result. This coercive motivation translates into the cancellation of monthly subscription, meaning one less billing monthly, which is crucial for the fitness centers (Rand et al., 2020). From a fitness center management perspective, knowing that there is a 50% probability of enrolled customers canceling their subscription after the first year, it is essential to analyze in detail how fitness professionals could be the key variable in the economic development of the gym or health club (Gomes et al., 2018). Additionally, finding predictors of cancellation may help find at-risk members who may need additional support or intervention to sustain their efforts in adhering to fitness services.

Despite indications of the crucial role that physiologists' behaviors play in customer retention, previous studies present several limitations: I) the majority focus solely on a behavioral approach, neglecting the financial analysis of fitness centers (Gomes et al., 2018); II) studies examining revenues in fitness are scarce, with most being reports from non-academic entities presenting trends rather than concrete values (AGAP, 2020, 2021, 2022); III) few studies have observed behavior persistence (Nguyen et al., 2008); IV) to date, there are still numerous gaps in the literature, especially in the longitudinal and observable analysis of revenue losses in the fitness market (Rand et al.,

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2020). Considering the existing literature and all the aforementioned assumptions, the main aim of this study was to analyze the relationship between clients' perceptions of exercise physiologists' behaviors, motivational types, and their subsequent influence on exercise adherence over a six-month period. Additionally, we assessed the financial impact of client dropout on fitness center revenues during this timeframe.

MATERIAL AND METHODS

Participantes

Prior to conducting the study, sample size calculations were performed using the Soper calculator for structural equation modeling (Soper, 2022). The aim was to determine the minimum sample size required to effectively test the hypothesized factor structure of the measurement model. Considerations such as the anticipated effect size ($f = 0.1$), desired statistical power level ($p = 0.95$), significance level ($p = 0.05$), number of latent variables (4), and observed variables (1) were considered. The calculations indicated that a minimum sample size of 991 participants was necessary.

A total of 1803 clients enrolled in fitness centers in Portugal participated in this study, with ages ranging from 18 to 54 years ($M = 26.61$; $SD = 5.48$). These practitioners had an average practice experience of 20.34 months ($SD = 8.92$) and a mean weekly frequency of 1.98 ($SD = 0.87$) training sessions. Inclusion criteria considered for the study were as follows: age over 18 years; voluntary participation in the study; practice experience in a gym and health club context at least 6 months, considering this as a critical period for dropout or persistence according to the literature (Buckworth et al., 2013; Gjestvang et al., 2020).

Instrumentos

The applied questionnaire consisted of two instruments validated for the Portuguese population, along with a brief preliminary questionnaire regarding sociodemographic questions related to sample characterization, such as gender, age, and experience in practice.

The study employed the Interpersonal Behaviors Questionnaire Portuguese version (Rodrigues et al., 2021). This questionnaire consisted of 24 items organized into six factors, with four items allocated to each factor. The factors encompass autonomy support (e.g., "My trainer provides support for my decisions"), competence support (e.g., "My trainer motivates me to improve my abilities"), relatedness support (e.g., "My trainer enjoys spending time with me"), autonomy thwarting (e.g., "My trainer imposes their own viewpoints on me"), competence thwarting (e.g., "My trainer doubts my ability to overcome obstacles"), and relatedness thwarting (e.g., "My trainer does not display empathy towards me"). Composite factors were created for both need-supportive and need-thwarting behaviors as described by Rodrigues et al. (Rodrigues et al., 2021). Participants responded to each item using a 7-point rating scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"), showing the degree to which, they concurred with each statement.

The Behavioral Regulation in Exercise Questionnaire Portuguese version was utilized to assess exercisers' behavioral regulations in the exercise context (Cid et al., 2018). This questionnaire consisted of 24 items organized into six factors, with four items allocated to each factor. Participants were asked to indicate their level of agreement with a series of statements that reflect intrinsic motivation: (e.g., "I engage in exercise because it is personally important to me"), integrated regulation (e.g., "I engage in exercise because it aligns with my personal values and fits with who I want to be as a person"), identified regulation (e.g., "I engage in exercise because I value the benefits it brings to my physical and mental well-being"), introjected regulation ("I engage in exercise because I would feel guilty or ashamed if I didn't"), external regulation (e.g., "I engage in exercise because others expect me to"), and amotivation ("I don't see any reason why I should engage in exercise."). Composite scores for autonomous motivation and controlled motivation were calculated to stand for the different forms of motivation assessed by the questionnaire. Responses were recorded on a rating scale, ranging from 1 ("not at all true") to 7 ("very true").

Adherence was measured using the electronic records of fitness centers. Considering weekly accesses, all entries the practitioner had in the six months following the first assessment were summed. Earlier studies that measured adherence similarly proved high reliability (Maffetone & Laursen, 2019). Additionally, clients who dropped out each month during the six months following the first assessment was considered.

We gathered data on monthly subscriptions from each participant by cross-referencing gym records. Managers supplied the monthly subscription information for each participant based on recorded ID, enabling researchers to compute monthly losses in the event of a client dropout. Dropout was defined as a participant who canceled their membership and did not return during the study period.

Procedimiento

Prior to commencing data collection, ethical approval was obtained from the institution where the first author is affiliated (omitted for review purposes), following the ethical guidelines stated in the Helsinki Declaration of the World Medical Association (World Medical Association, 2013) and the Ethical Standards in Sport and Exercise Science Research (Harriss et al., 2019). To ensure a diverse and representative sample of exercisers, the recruitment process involved contacting several fitness centers ($n = 20$). The selection of these clubs was based on practical considerations, including factors such as geographic location, with the aim of enhancing the generalizability of the study findings within the specific context. Permissions were obtained from exercises gym managers, and informed consent was obtained from all participants, ensuring ethical compliance and confidentiality. After explaining the aims and obtaining guaranteed approval, the researchers approached potential participants in the reception areas of fitness centers. Those who agreed to take part voluntarily in the study individually signed an informed consent before completing the questionnaires. Questionnaires were administered before training sessions. Data collection was anonymous, and strict confidentiality was assured to managers regarding participant monthly subscription cost. The customer ID was collected during the questionnaire delivery and only used to reference the customer's subscription during the study period. This information was communicated to all potential participants.

Análisis estadístico

Initially, the cases of dropout and the revenue losses due to cancellations were analyzed. The cumulative losses were calculated based on weighted losses related to clients who canceled their subscription. Subsequently, a structural equation modelling was conducted following the recommendations proposed by Hair et al. (Hair et al., 2019) using the statistical program Mplus 7.4 with the robust maximum likelihood estimator, given its robustness against data non-normality. Analysis of the model followed traditional absolute and incremental indexes: comparative fit index (CFI), Tucker-Lewis index (TLI), standard root mean residual (SRMR), root mean square error of approximation (RMSEA), and its 90% confidence interval (CI90%). Recommendations from Hair et al. (Hair et al., 2019) were followed for these indexes, with thresholds set at CFI and TLI ≥ 0.90 , and SRMR and RMSEA ≤ 0.8 . The significance of standardized coefficients was measured through the 95% confidence interval (CI), with direct and indirect effects considered significant when the CI did not encompass the value of 0 (Williams & MacKinnon, 2008).

RESULTS

According to the results, 760 clients (42%) canceled their subscription to the fitness center they were enrolled in over the six months under study (Table 1). This figure translates to a loss of approximately €28,659.60 in monthly revenue from the fifth month onwards ($M = €2,388.30$ per fitness center). In total, the fitness centers considered in this study experienced a cumulative loss of €110,393.27 over the six months under study ($M = €9,199.43$ per fitness center).

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Table 1

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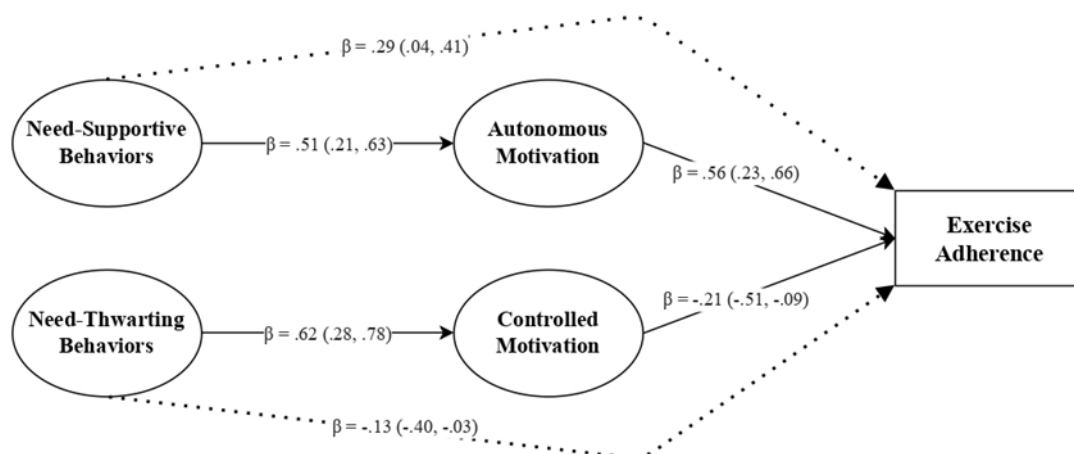
Month	Cancellations	Losses	Weighted Losses *	Accumulated Losses
1	284	11.109,64 €	55.548,20 €	55.548,20 €
2	215	7849,71 €	31.398,84 €	86.947,04 €
3	113	4357,68 €	13.073,04 €	100.020,08 €
4	56	2354,87 €	4709,74 €	104.729,82 €
5	61	2247,47 €	4494,94 €	109.224,76 €
6	31	1168,51 €	1168,51 €	110.393,27 €

Notes: Calculations were made from the month of abandonment and the study period starting from the month 1.

The structural model showed acceptable fit: [$\chi^2(61) = 23.45$, CFI = 0.918, TLI = 0.909, SRMR = 0.073, RMSEA = 0.069 (CI 90% = 0.063, 0.082)]. Figure 1 illustrates the direct and indirect effects among motivational determinants, which showed significance at 95%, as supported by the literature: a) need-supportive behaviors positively predict autonomous motivation; b) need-controlling behaviors positively predict controlled motivation; d) autonomous motivation positively predicts exercise maintenance; e) controlled motivation negatively predicts maintenance. The coefficients presented are standardized.

Figure 1

Structural Equation Model.



Notes: straight lines = direct effects; dashed lines = indirect effects: β = standardized coefficients; in parentheses = Confidence Interval at 95%.

DISCUSSION

The present study aimed to analyze the relationship between clients' perceptions of exercise physiologists' behaviors, motivational types, and their subsequent influence on exercise adherence over a six-month period. Additionally, it examined the revenues during this period, considering the losses caused by monthly client dropouts. The analysis of the results indicates that the overall trend of dropout in fitness centers within the first 6

months is observed in the sample of national fitness centers included in the study (AGAP, 2020; Gjestvang et al., 2020; Hooker et al., 2016; Sperandei et al., 2016). However, this study quantifies, for the first time objectively, the potential monthly financial impact of abandonment through the loss of subscriptions, with an accumulated value of €110,393.27 over six months. Additionally, as hypothesized, clients' perceptions of the interpersonal behaviors promoted by professionals showed clear indicators of their importance in the quality of motivation and exercise adherence. Supportive interpersonal behaviors and autonomous motivation showed predictive values in the tested model towards exercise adherence.

A method of analysis focused on individuals helps pinpoint those with a higher likelihood of dropping out. Identifying these individuals early in their membership is vital for keeping members engaged and promoting the sustained adoption of exercise adherence (Rodrigues et al., 2021). Examining the outcomes of the structural equation model, it becomes evident that individuals with greater levels of autonomous motivation tend to exhibit higher adherence to exercise. Conversely, those with higher levels of controlled motivation tend to demonstrate lower adherence to exercise. These results are consistent with prior research, highlighting a significant association between motivation quality and adherence, thus influencing persistence (Ntoumanis et al., 2017; Rodrigues et al., 2021). Thus, it is speculated that participants with higher levels of controlled motivation are more likely to drop out. While the authors cannot confirm this due to data privacy constraints, existing literature supports this hypothesis. For instance, Rodrigues et al. (2023) discovered that athletes with higher levels of external motivation and amotivation were more prone to dropping out of football. Similarly, Sperandei et al. (Sperandei et al., 2016) found that gym members who primarily exercised for intrinsic reasons (e.g., health, weight loss) were at lower risk of dropout. The nature of motivation appears to be intricately linked to interpersonal dynamics, particularly those perceived by gym members in the behavior exhibited by physiologists. The findings of the current study indicate that behaviors conducive to fulfilling psychological needs were positively associated with autonomous motivation, whereas behaviors obstructive to these needs were positively associated with controlled motivation. These findings align with prior research on exercise persistence (Gomes et al., 2018; Ntoumanis et al., 2017; Rodrigues et al., 2021), underscoring the pivotal role physiologists play in fostering exercise adherence.

The focal aspect of the present study lies in the evaluation of revenue loss stemming from membership cancellations. Specifically, the findings reveal that 42% of participants terminated their subscriptions to the enrolled fitness centers over the six-month study period. This collective action resulted in a total cumulative deficit of €110,393.27 during the observed timeframe (with an average of €9,199.43 per fitness center). Notably, the existing literature lacks explicit measures of the economic ramifications associated with membership cancellations, rendering this investigation exploratory in nature. However, within the context of the Portuguese fitness industry, our findings offer partial comparability to those documented by AGAP (AGAP, 2018, 2019, 2020, 2021, 2022, 2023). Although the attrition rate observed in this study was lower than those documented in previous literature (AGAP, 2018, 2019, 2020, 2021, 2022, 2023), it aligns closely with findings reported by Buckworth et al. (Buckworth et al., 2013) regarding the dropout curve model. This model suggests that nearly 50% of physically active individuals are prone to discontinue physical activity within the initial six months of engagement. It is noteworthy, however, that participants in our study had an average experience of over one year. Hence, notwithstanding their prolonged engagement compared to the customary dropout timeframe, the attrition risk persisted significantly high. It appears that there could be an association between the interpersonal behaviors of physiologists, attrition rates, and consequently, financial loss.

Limitations and agenda for future research

As with any scientific inquiry, this study is subject to certain limitations, warranting suggestions for future research endeavors to address them comprehensively. Firstly, there is a need to establish correlations between questionnaire outcomes and individual levels of adherence and persistence. Such an endeavor could facilitate the quantification of the impact of controlled motivation on dropout risk, thereby enabling managerial stakeholders to critically assess professional conduct within fitness environments. Furthermore, the regular monitoring of motivational trends holds promise in fostering introspection among physiologists regarding their professional behaviors and the potential need for recalibration. Secondly, notwithstanding the prospective analysis of participants' adherence levels, the

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study adopted a cross-sectional design. Future investigations might profitably explore diverse client training follow-up methodologies to elucidate the salient factors influencing perceptions of supportive interpersonal behaviors. Lastly, while the study predominantly scrutinized motivation as a determinant of adherence, considering the insights gleaned from Eurobarometer reports on reasons for engagement and disengagement, it is imperative to extend the inquiry to encompass affective and emotional dimensions, indicative of hedonic motivation, in elucidating the nuances of physical exercise adherence.

CONCLUSIONS

This behavioral and financial examination of the fitness landscape in Portugal sheds light on critical factors influencing customer retention, motivation, and the economic sustainability of fitness centers. The study underscores the multifaceted challenges faced by the industry, particularly in keeping clients over the initial six months of their memberships. A staggering 42% of clients cancelled their subscriptions during this period, resulting in a significant mean monthly revenue loss of approximately €28,659.60 for each fitness center. Motivation appears as a significant element in the retention equation, with autonomous motivation positively correlating with long-term adherence to exercise. The influence of fitness professionals, particularly in fostering supportive interpersonal behaviors, proves instrumental in shaping clients' motivation and, so, their commitment to regular exercise. Notably, the study quantifies, for the first time, the tangible financial impact of monthly cancellations, revealing a cumulative loss of €110,393.27 across all participating fitness centers over six months. The need for a paradigm shift in management approaches becomes evident, emphasizing the integration of evidence-based behavioral models in training programs and strategic decision-making. Fitness professionals are positioned as crucial influencers, tasked with assisting clients in incorporating exercise into their daily lives, fostering self-regulation, and cultivating enduring, healthy relationships.

PRACTICE APPLICATIONS

Based on the findings of this study in the national context, but primarily considering the overall evidence on the subject, there is an urgent need to promote a change in mindset and approach in the management processes of gyms and health clubs (Gjestvang et al., 2020). Fitness professionals should assist clients in incorporating physical exercise into their daily lives so that they can feel and experience its benefits and develop forms of self-regulation (i.e., autonomous motivation) that enable the maintenance of this practice over time. These professionals should guide and support individuals in their growth process and responsiveness to their needs, contributing to a healthy, sustainable, and lasting membership. The study provides practical insights into the relationship between interpersonal behaviors and motivation in the context of fitness. It responds to the call for research on trainer-exerciser dynamics, highlighting the significance of dyadic relationship in predicting motivation and consequently exercise adherence. The findings suggest that supportive perceptions of exercisers towards physiologists foster greater autonomous motivation related to exercise engagement. However, the study identifies a potential gap in the awareness of fitness trainers regarding their behavior's impact on exercisers, suggesting a need for behavioral-enhanced training interventions. The proposal of videotaping sessions for self-reflection and regular evaluations by stakeholders underscores the importance of ongoing professional development in fostering need-supportive behaviors among fitness professionals.

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REFERENCES

1. AGAP. (2017). Barómetro do Fitness em Portugal.
2. AGAP. (2018). Barómetro do Fitness em Portugal.
3. AGAP. (2019). Barómetro do Fitness em Portugal.
4. AGAP. (2020). Barómetro do Fitness em Portugal.
5. AGAP. (2021). Barómetro do fitness em Portugal.
6. AGAP. (2022). Barómetro do Fitness em Portugal.
7. AGAP. (2023). Barómetro do Fitness em Portugal.
8. Barreto, P. de S. (2013). Why are we failing to promote physical activity globally? *Bulletin of the World Health Organization*, 91(6), 390-390A. <https://doi.org/10.2471/BLT.13.120790>
9. Bauman, A., Bull, F., Chey, T., Craig, C. L., Ainsworth, B. E., Sallis, J. F., Bowles, H. R., Hagstromer, M., Sjostrom, M., Pratt, M., & The IPS Group. (2009). The International Prevalence Study on Physical Activity: Results from 20 countries. *International Journal of Behavioral Nutrition and Physical Activity*, 6(1), 21. <https://doi.org/10.1186/1479-5868-6-21>
10. Buckworth, J., Dishman, R. K., O'Connor, P. J., & Tomporowski, P. D. (2013). *Exercise psychology*, 2nd ed (pp. xv, 527). Human Kinetics. <https://doi.org/10.5040/9781492595502>
11. Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J.-P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., ... Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, 54(24), 1451–1462. <https://doi.org/10.1136/bjsports-2020-102955>
12. Cid, L., Monteiro, D., Teixeira, D., Teques, P., Alves, S., Moutão, J., Silva, M., & Palmeira, A. (2018). The Behavioral Regulation in Exercise Questionnaire (BREQ-3) Portuguese-Version: Evidence of Reliability, Validity and Invariance Across Gender. *Frontiers in Psychology*, 9. <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.01940>
13. Eurobarometer. (2004). The citizens of the European Union and Sport. European Commission.
14. Eurobarometer. (2010). Special Eurobarometer 334—Sport and Physical Activity. European Commission.
15. Eurobarometer. (2014). Special Eurobarometer 412—Sport and Physical Activity,. European Commission, 1-135.
16. Eurobarometer. (2018a). Special Eurobarometer 472—Sport and Physical Activity. European Commission, 1-133.
17. Eurobarometer. (2018b). Special Eurobarometer 575—Sport and Physical Activity. European Commission, 1-95.
18. Eurobarometer. (2022). Special Eurobarometer 575—Sport and Physical Activity. European Commission.

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19. Gjestvang, C., Abrahamsen, F., Stensrud, T., & Haakstad, L. A. H. (2020). Motives and barriers to initiation and sustained exercise adherence in a fitness club setting—A one-year follow-up study. *Scandinavian Journal of Medicine & Science in Sports*, 30(9), Article 9. <https://doi.org/10.1111/sms.13736>
20. Gomes, A. R., Gonçalves, A. M., Maddux, J. E., & Carneiro, L. (2018). The intention-behaviour gap: An empirical examination of an integrative perspective to explain exercise behaviour. *International Journal of Sport and Exercise Psychology*, 16(6), 607–621. <https://doi.org/10.1080/1612197X.2017.1321030>
21. Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: A pooled analysis of 358 population-based surveys with 1·9 million participants. *The Lancet Global Health*, 6(10), e1077–e1086. [https://doi.org/10.1016/S2214-109X\(18\)30357-7](https://doi.org/10.1016/S2214-109X(18)30357-7)
22. Hair, J., Babin, B., Anderson, R., & Black, W. (2019). *Multivariate Data Analysis* (8th ed). Pearson Educational.
23. Harriss, D. J., MacSween, A., & Atkinson, G. (2019). Ethical Standards in Sport and Exercise Science Research: 2020 Update. *International Journal of Sports Medicine*, 40(13), 813–817. <https://doi.org/10.1055/a-1015-3123>
24. Hooker, S. A., Ross, K. M., Ranby, K. W., Masters, K. S., Peters, J. C., & Hill, J. O. (2016). Identifying groups at risk for 1-year membership termination from a fitness center at enrollment. *Preventive Medicine Reports*, 4, 563–568. <https://doi.org/10.1016/j.pmedr.2016.10.016>
25. Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, 143(12), 1346–1377. <https://doi.org/10.1037/bul0000125>
26. IHRSA. (2016). The 2016 IHRSA Global Report: The state of the health club industry.
27. IHRSA. (2018). The 2018 IHRSA Global Report: The state of the health club industry.
28. IHRSA. (2020). The 2020 IHRSA Global Report: The state of the health club industry.
29. MacIntosh, E., & Law, B. (2015). Should I stay or should I go? Exploring the decision to join, maintain, or cancel a fitness membership. *Managing Sport and Leisure*, 20(3), 191–210. <https://doi.org/10.1080/23750472.2015.1025093>
30. Maffetone, P. B., & Laursen, P. B. (2019). Decision-Making in Health and Fitness. *Frontiers in Public Health*, 7. <https://www.frontiersin.org/articles/10.3389/fpubh.2019.00006>
31. Nguyen, H. Q., Ackermann, R. T., Maciejewski, M., Berke, E., Patrick, M., Williams, B., & LoGerfo, J. P. (2008). Managed-Medicare health club benefit and reduced health care costs among older adults. *Preventing Chronic Disease*, 5(1), A14.
32. Ntoumanis, N., Ng, J. Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, C., & Williams, G. C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review*, 15(2), 214–244. <https://doi.org/10.1080/17437199.2020.1718529>
33. Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of training group exercise class instructors to adopt a motivationally adaptive communication style. *Scandinavian Journal of Medicine & Science in Sports*, 27(9), Article 9. <https://doi.org/10.1111/sms.12713>
34. Rand, M., Goyder, E., Norman, P., & Womack, R. (2020). Why do new members stop attending health and fitness venues? The importance of developing frequent and stable attendance behaviour. *Psychology of Sport and Exercise*, 51, 101771. <https://doi.org/10.1016/j.psychsport.2020.101771>
35. Rodrigues, F., Bento, T., Cid, L., Pereira Neiva, H., Teixeira, D., Moutão, J., Almeida Marinho, D., & Monteiro, D. (2018). Can Interpersonal Behavior Influence the Persistence and Adherence to Physical Exercise

- Practice in Adults? A Systematic Review. *Frontiers in Psychology*, 9. <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02141>
36. Rodrigues, F., Pelletier, L., Neiva, H. P., Teixeira, D. S., Cid, L., & Monteiro, D. (2021). Initial validation of the Portuguese version of the Interpersonal Behavior Questionnaire (IBQ & IBQ-Self) in the context of exercise: Measurement invariance and latent mean differences. *Current Psychology*, 40(8), 4040–4051. <https://doi.org/10.1007/s12144-019-00374-y>
 37. Rodrigues, F., & Teixeira, D. (2023). Testing Assumptions of the Physical Activity Adoption and Maintenance Model: A Longitudinal Perspective of the Relationships Between Intentions and Habits on Exercise Adherence. *Perceptual and Motor Skills*, 130(5), 2123–2138. <https://doi.org/10.1177/00315125231188240>
 38. Rodrigues, F., Teixeira, D., Cerca, L., Bastos, V., & Pereira, H. (2023). History of Fitness in Portugal: A Brief Review of the Influences that Shaped the Current National Panorama: História do Fitness em Portugal. *Motricidade*, 19(4), Article 4. <https://doi.org/10.6063/motricidade.32045>
 39. Rodrigues, F., Teixeira, D. S., Neiva, H. P., Cid, L., & Monteiro, D. (2020). The bright and dark sides of motivation as predictors of enjoyment, intention, and exercise persistence. *Scandinavian Journal of Medicine & Science in Sports*, 30(4), Article 4. <https://doi.org/10.1111/sms.13617>
 40. Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. Guilford Publications.
 41. Soper, D. (2022). Factorial Calculator [Software] [Computer software].
 42. Sperandei, S., Vieira, M. C., & Reis, A. C. (2016). Adherence to physical activity in an unsupervised setting: Explanatory variables for high attrition rates among fitness center members. *Journal of Science and Medicine in Sport*, 19(11), 916–920. <https://doi.org/10.1016/j.jsams.2015.12.522>
 43. Teixeira, D., Monteiro, D., Rodrigues, F., Sousa, A., Chaves, C., & Cid, L. (2020). Ginásios e Health Clubs em Portugal: Estaremos perante uma República das Bananas? *Motricidade*, 16(1), Article 1. <https://doi.org/10.6063/motricidade.19688>
 44. Warburton, D. E. R., & Bredin, S. S. D. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology*, 32(5), 541–556. <https://doi.org/10.1097/HCO.0000000000000437>
 45. Williams, J., & MacKinnon, D. P. (2008). Resampling and Distribution of the Product Methods for Testing Indirect Effects in Complex Models. *Structural Equation Modeling: A Multidisciplinary Journal*, 15(1), Article 1. <https://doi.org/10.1080/10705510701758166>
 46. Withall, J., Jago, R., & Fox, K. R. (2012). The effect a of community-based social marketing campaign on recruitment and retention of low-income groups into physical activity programmes—A controlled before-and-after study. *BMC Public Health*, 12(1), 836. <https://doi.org/10.1186/1471-2458-12-836>
 47. World Medical Association. (2013). World Medical Association. (2013). World Medical Association Declaration of Helsinki ethical principles for medical research involving human subjects. *Journal of the American Medical Association*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>. JAMA.