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Adherence to physical activity in an unsupervised setting: Explanatory variables for high attrition rates among fitness center members

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ABSTRACT

Objectives: To evaluate the attrition rate of members of a fitness center in the city of Rio de Janeiro and the potential explanatory variables for the phenomenon.
Design: An exploratory, observational study using a retrospective longitudinal frame.
Methods: The records of 5240 individuals, members of the fitness center between January-2005 and June-2014, were monitored for 12 months or until cancellation of membership, whichever occurred first. A Cox proportional hazard regression model was adjusted to identify variables associated to higher risk of 'abandonment' of activities. This study was approved by Southern Cross University's Human Research Ethics Committee (approval number: ECN-15-176).
Results: The general survival curve shows that 63% of new members will abandon activities before the third month, and less than 4% will remain for more than 12 months of continuous activity. The regression model showed that age, previous level of physical activity, initial body mass index and motivations related to weight loss, hypertrophy, health, and aesthetics are related to risk of abandonment. Combined, those variables represent an important difference in the probability to abandon the gym between individuals with the best and worse combination of variables. Even individuals presenting the best combination of variables still present a high risk of abandonment before completion of 12 months of fitness center membership.
Conclusions: Findings can assist in the identification of high risk individuals and therefore help in the development of strategies to prevent abandonment of physical activity practice.

1. Introduction

The growing awareness and dissemination of the benefits of regular physical activity (PA), particularly for the prevention and treatment of non-communicable diseases, have raised the level of general interest in PA.[1] However, it is well established that only continued practice provides the desired physiological benefits, which disappear wholly or partly after its discontinuation.[2] Furthermore, individuals who train for a very short period may not even reach the desired physiological adaptations.[2]

Dishman et al.[3] reported that 50% of adults engaged in a physical exercise program will abandon the activity within a period of one year. In this sense, the high attrition rates in PA programs may keep the proportion of active people stable while at the same time failing to ensure individuals participate long enough to achieve their objectives.[4]

The adoption and maintenance of recommended levels of PA are determined by personal, social and environmental factors, such as intention to be physically active, being a member of an exercise recreational group or having access to recreational facilities.[5–7] Although several studies have been published assessing the factors associated with the initiation and cessation of PA in general,[8,9] few studies have analyzed the temporal dynamics of adherence to exercise programs.[10,11] In addition, most of the research available is focused on supervised and structured exercise programs, such as those conducted for rehabilitation or disease control.[5,10] However, most individuals do not require or have access to supervised/structured exercise programs and frequently engage in PA in informal settings (e.g., jogging in the neighborhood) or go to fitness centers, which have become one of the most popular places for physical training in urban areas throughout the world.[12] A gap

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in the literature is therefore evident when it comes to the temporal dynamics of adherence to PA in unsupervised/unstructured settings.

In order to provide a contribution to filling this important gap, the aim of this study was to analyze the attrition of members of a fitness center in the city of Rio de Janeiro and the potential explanatory variables of such a phenomenon.

2. Methods

The fitness center selected is located in Rio de Janeiro's central business district, near the workplace of most of its users, a characteristic that enables attendance during working-day breaks (i.e., lunch or small intervals) or before or after work, as users avoid the heavy traffic on the main highways of the city. It is characterized as a medium-sized fitness center, with a monthly number of users ranging between 550 and 700 members, and an average inflow of 41 ± 3.1 new users per month. It offers a variety of activities over 16 h of daily operations. A monthly fee is charged and this includes all activities offered by the fitness center, such as resistance training, cardio and stretching classes.

This study was approved by Southern Cross University's Human Research Ethics Committee (approval number: ECN-15-176). It is based on data from all clients who registered during the period between January 2005 and June 2014, and includes registry information (i.e., demographics) as well as details of the initial physical assessment performed at the time of joining. In order to ensure anonymity and confidentiality, no information related to any individual's identity was used. Only individuals who registered for the first time in this period were included in the sample. In a previous analysis, using all entries for each individual combined, it was determined that the inclusion of reentries had no significant impact on the retention curve (unpublished data). This analysis also established that only 16% of individuals returned to their activities after 30 days of stopping their membership payment and another 16% within 12 months. Thus, in the present study, an individual who returned to the fitness center during the period of analysis did not have this new entry considered, in order to avoid contamination of the results due to the dependence between the two (or more) observations of the same individual. In addition, the same physical assessment information would have been used for different periods, further contaminating the data.

The monitoring was conducted by using monthly payment records from the selected fitness center, being considered "active" the members who duly paid their fees during a particular time period. The first payment was classified as the 'entry date' and lack of payment in a given month classified the individual as having 'abandoned' the activity.

Each individual was monitored for 12 months or until 'abandonment', whichever occurred first. Regardless of the year or month of the 'entry date', the number of months in which the individual remained active was recorded.

A total of 5240 individuals, with a mean age of 31.1 ± 8.23 years, were included in the study.

The following data were selected as co-variables: month and year of entry; sex; age (up to 25 years, 26–35 years and over 35 years); level of PA (never engaged in PA before, active or inactive); smoking habit (smoker, former smoker or never smoked); Body Mass Index (BMI) (normal—up to 25 kg/m^2; high—above 25 kg/m^2); and motivation for practicing PA at the fitness center (weight loss, physical fitness, physical training, leisure, wellness, hypertrophy, health, musculoskeletal rehabilitation, posture and aesthetics; allowed multiple answers). The division of the variable 'age' was established to create categories with representative size, avoiding spurious results associated with very small sized

categories. Information about the month and year of entry was used for weighting the model for any seasonality dynamics that may have occurred over the years. The level of PA of individuals was established through self-reporting, where inactive was defined as not having engaged in any form of regular PA for, at least, the past 30 days.

In the first step of the nonparametric analysis the overall survival curve was analyzed using the Kaplan-Meier method.[13] Then, a series of Harrington–Fleming[14] tests was performed, with the r parameter varying among 0, 0.5 and 1. This procedure is equivalent to executing the log-rank, Tarone–Ware and Wilcoxon tests,

Table 1
Sample characteristics.

Variables	n	%	Final model exp(Coef)	p
Sex				
Female	3084	58.8		
Male	2164	41.2		
Age				
Up to 25 years	1401	26.7	1.27	<0.001
26–35 year	2631	50.1	1.09	0.04
36 years and older	1216	23.2	–	–
Level of physical activity				
Never before	90	1.7	1.55	<0.001
Inactive[a]	3830	73.0	1.20	<0.001
Active	1328	25.3	–	–
Smoking habits				
Smoker	528	10.1		
Former smoker	347	6.6		
Non-smoker	4373	83.3		
Body Mass index[b]				
High	2363	45.0	1.08	0.015
Normal	2885	55.0	–	–
Motivation: weight loss				
No	1663	31.7	–	–
Yes	3585	68.3	1.09	0.009
Motivation: physical fitness				
No	3563	67.9		
Yes	1685	32.1		
Motivation: physical training				
No	5084	96.9		
Yes	164	3.1		
Motivation: leisure				
No	5185	98.8		
Yes	63	1.2		
Motivation: wellness				
No	4742	90.4		
Yes	506	9.6		
Motivation: hypertrophy				
No	3561	67.9	1.10	0.003
Yes	1687	32.1	–	–
Motivation: health				
No	4143	78.9	1.07	0.049
Yes	1105	21.1	–	–
Motivation: musculoskeletal rehabilitation				
No	4982	94.9		
Yes	266	5.1		
Motivation: posture				
No	4969	94.7		
Yes	279	5.3		
Motivation: aesthetics				
No	2817	53.7	1.06	0.035
Yes	2431	46.3	–	–

[a] No regular engagement in PA within, at least, the past 30 days.
[b] Normal: up to 25 kg/m^2; high: above 25 kg/m^2.