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original article

The length of stay in community physical activity program does not exceed two years

O tempo de permanência em programa comunitário de atividade física não ultrapassa dois anos

Glauber Rocha Monteiro[1]
Roberto Jerônimo dos Santos Silva[1]

Abstract – The aim of this study was to estimate the length of stay of participants in a Community Physical Activity Program (CPAP). This is a retrospective cohort study that estimated the length of stay of 727 participants (55.16 +12.78 years) stratified into three age groups (Group 1: 18-35 years, group 2: 36-59 years; Group 3: above 60 years) in a CPAP by observing evaluations performed by the program during the period of 26.5 months. Survival Analysis was applied by the Kaplan Meier method to analyze the length of stay of participants and Log-Rank to estimate the length of stay in relation to the age groups considered in the study. Significance level of 5 % was adopted in all analyses. The mean length of stay of participants was 16 ± 7.9 months. Of the 727 participants, only six (0.08%) remained the entire cohort. The highest dropout (68%) was observed in the first year of CPAP. When considering the age groups, difference statistically significant (p= 0.025) was observed among length of stay of participants, and individuals in Group 1, with mean length of stay of 12.4 ± 6.2 months, did not remain after 20 month of program and for the other two groups, this time was 16 ± 7.9 months. The maximum length of stay of participants in the program was approximately two years and most participants dropped out in the first year and a greater permanence of adults and elderly subjects was observed.

Key words: Length of stay; Motor activity; Survival analysis.

Resumo – *O objetivo do estudo foi estimar o tempo de permanência de participantes em um Programa Comunitário de Atividade Física (PCAF). Trata-se de uma coorte retrospectiva em que foi estimada a permanência de 727 participantes (55,16+11,78 anos) estratificados em três grupamentos etários (Grupo 1: 18 a 35 anos; Grupo 2: 36 a 59 anos; Grupo 3: acima dos 60 anos) de um PCAF através da observação às avaliações realizadas pelo programa no período de 26,5 meses. Aplicou-se a Análise de Sobrevivência pelo método de Kaplan Meier para analisar o tempo de permanência dos participantes e Log-Rank para estimar a permanência em relação às faixas etárias consideradas no estudo. Utilizou-se nível de significância de 5% em todas as análises. A média do tempo de permanência dos participantes foi de 16±7.9 meses. Dos 727 participantes somente seis (0,08%) permaneceram durante toda a coorte. A maior desistência (68%) foi percebida no primeiro ano do PCAF. Quando observados os grupamentos etários verificou-se diferença estatisticamente significativa (p= 0,025) entre o tempo de permanência dos mesmos, sendo que os indivíduos do Grupo 1, com média de permanência de 12,4± 6,2 meses, não permaneceram após o 20º mês no programa e a permanência para os outros dois grupos foi de 16±7,9 meses. O tempo máximo de permanência dos participantes no programa foi de aproximadamente dois anos, com desistência de maioria dos participantes até o primeiro ano e maior permanência dos sujeitos adultos e idosos.*

Palavras-chave: *Análise de sobrevida; Atividade motora; Permanência.*

1 Federal University of Sergipe. Center for Biological and Health Sciences. Graduate Program in Physical Education. Aracaju, SE. Brazil.

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INTRODUCTION

One of the concerns of health agencies regarding Physical Activity (PA) is the adoption of this practice as a regular activity, becoming part of the population's lifestyle[1]. Accordingly, several factors among which effectiveness, defined as the effect of a particular service on a population group, have been studied both in relation to the object of the evaluation of health services and in regard to the time of implementation/intervention[2], considered important factor in characterizing the quality of the health service offered to the community[3].

Regarding PA, the length of stay of the population in Community Physical Activity Programs (CPAP) is considered as an important point of observation. This item favors the understanding of the impact of these programs, especially when associated with the acquired knowledge and behaviors, as well as user's satisfaction about the health service offered[4].

This discussion has led researchers[5-8] to estimate the length of stay in CPAP, since maintaining the population in community programs has become a tool of great importance to public health, since programs with proven effectiveness have greater sustainability, thus becoming strong tools for the production of information[9].

In this perspective, the National Policy for Health Promotion - NPHP (2006) in order to improve the health conditions of the population has proposed regular practice of physical activities[10]. Likewise, community interventions held in Brazil and Latin America through partnerships between the Brazilian Ministry of Health and the Center for Disease Control and Prevention of the United States and Brazilian and American Universities identified classes of Physical Activity performed in community settings as useful to improve the levels of PA practice among the Latin American population[10].

Recognizing physical inactivity as a major factor of global risk of morbidity and mortality[11], WHO has shown that men and women of all ages, ethnicities and socioeconomic groups have become healthier by reaching the recommendation of at least 150 minutes of PA per week of mild to moderate intensity[12,13]. It is noteworthy that PA is a protection factor against chronic degenerative diseases, which are a concern to health agencies.

However, although contributing to the adoption of healthy behaviors among the population, CPAP exhibit a gap regarding the application of precise evaluation methods to identify the effectiveness and impact on primary care and communities[13]. For Pereira and Okuma[14], the actions that theoretically mobilize the health behavior of individuals and groups do not appear to be sufficiently influential to sensitize the population to keep in regular physical activity programs.

Although a growing demand and population interest in physical exercise and oriented sporting activities have been observed, generally, these turn out not to be continued, with low commitment and adherence to programs aimed at achieving positive results[15]. It is estimated that half

of individuals who begin a regular physical activity program give up in the first six months[16].

Therefore, there is need to seek information about the impact of these initiatives in communities, identifying actions that have shown to be more efficient and effective results regarding the health of individuals can be achieved[17].

Studies on the length of stay in programs aimed at the practice of PA in public recreational areas are limited to a few cities, making it difficult to extrapolate results[18]. It should be stressed that studies on the length of stay in supervised programs in our country are recent[6,7] and therefore, there are still few works emphasizing the adherence of subjects to the practice of physical activities in community spaces (parks and squares), making it difficult to extrapolate results[18,19].

Therefore, the aim of this study was to estimate the length of stay of participants in CPAP and to compare it between different age groups.

METHODOLOGICAL PROCEDURES

Study Type

This is a retrospective cohort study that analyzed information regarding exposure and outcome described before the beginning of the study[20] in order to assess the occurrence of a certain event after an intervention. In this study, the event is the length of stay observed and estimated from assessments conducted at CPAP considering the cohort time.

Population and Sample

The study population was composed based on the Database of a Community Physical Activity Program. Overall, 1990 individuals were regularly followed from January 2008 to March 2010, totaling 26.5 months.

The sample consisted of 15 CPAP units, 727 individuals (34 men and 693 women) of both sexes with mean age of 55 $\pm$ 12 years, who met the following inclusion criteria: age > 18 years and those who underwent more than one evaluation at CPAP along the study period. Individuals that even performing more than one evaluation showed absence of more than one evaluation were excluded from this study. This, theoretically, includes absences in the program for more than six months, not considering that this fact is censored because the time interval of absences was too long when compared to the cohort period observed.

The sample was divided into the following age groups: a) Group 1: Young adults aged 18-35 years (40 participants); b) Group 2: Adults aged 36-59 years (422 participants) using recommendation of ACSM[21] as reference; c) Group 3 (265 participants): Elderly aged over 60 according to Brazilian legislation[5].

Follow-ups were established considering seven time intervals corresponding to averages of CPAP evaluations during the observation period. Due to database limitations, the first assessment referred to the time of entry of the individual in the study and not the date of adhesion to CPAP.

Characteristics and activities performed at CPAP

CPAP was developed from a partnership between the Center for Research on Physical Fitness and Olympism of Sergipe - NUPAFISE, the Department of Physical Education – DEF, Federal University of Sergipe - UFS and the Municipal Health Department of Aracaju - SMS/PMA, linked to Basic Health Units (UBS) and carrying out their activities with other programs of Surveillance in Health and Primary Care.

CPAP was implemented in 15 regional centers, representing 15 distinct neighborhoods in the city of Aracaju - SE, considering the criteria of location preferably on a low socioeconomic context, with public space (parks and squares) under conditions of regular practice of Physical Activity (PA) and be close to a Basic Health Unit (UBS), which is a reference also for users who adhered to the program for medical advice.

At CPAP, the activities were performed five times a week, including fitness classes, guided walk, anthropometric, biochemical, and functional assessments performed three to four times a year. Activities also included a protocol composed of blood pressure and heart rate measurement, stretching, gymnastics, yoga, dance, recreational activities and other activities specific to each community[17]. Each center had a teacher, two interns and one evaluator responsible for the physical evaluation of participants.

Activities were planned to be performed five times a week according to some principles of physical training periodization. Each session lasted 60 minutes of cardio-respiratory activities (walking and recreational activities) and neuromotor exercises (strength, agility, balance, flexibility and coordination). Physical exercises were in general organized respecting the protocol of measuring blood pressure at the beginning of classes, stretching, localized exercises for, on average, 50 minutes and relaxation and / or recreational activities.

Data Collection Procedures

Secondary record, referring to CPAP evaluations provided by the program coordination was used. Surveys data of all PACF units were transferred to a spreadsheet considering: overall number of participants, number of participants who underwent more than one evaluation and age.

Length of stay

For purposes of assessing the length of stay, records of frequency in evaluations of program participants followed for a period of 26.5 months were analyzed (January 2008 to March 2010), which enabled verifying the time in which participants remained in the program.

Individuals who have missed three or more evaluations at CPAP without subsequent return were considered dropouts. In case of return, the period of absences was not computed in the survival time (stay in the program); however, the count of months from the date of return was considered.

This strategy was adopted due to the characteristics of the type of analysis used and to the fact that the absents could not result from dropping out the

program, but some transitional difficulties such as illness or family problems that could prevent the subject from attending evaluations within the study period.

Ethical care

This work is part of survey entitled "Evaluation of the *Academia da Cidade* Program Effectiveness - Aracaju," and was approved by the CEP/UFS under number 4316.0.000.107-08.

Data Analysis Procedures

Elements of descriptive statistics were used in order to characterize the group and the Kaplan-Meier survival estimator along with the Log Rank estimator to verify differences between age groups using the open source Bioestat software 5.3®. In all analyses, significance level of 5% was used.

RESULTS

Considering the inclusion criteria and characteristics of the statistical analysis, of the 1990 individuals enrolled in CPAP, only data of 727 (36.57%) were used, considering the fact that two thirds of those enrolled did not meet the inclusion criteria and were excluded from the study.

Table 1 shows the probability of stay of 727 CPAP participants observed between 2008 and 2010, and the length of stay showed an average of 16 $\pm$ 8 months, with an average of 292 subjects remaining in the project and 130 dropouts. For all age groups, less than 1% of subjects remained until the end of the entire cohort observed.

Table 1. Length of stay of individuals in the Community Physical Activity Program, 2008-2010

Intervals	Length of stay (months)	Remaining individuals	Dropouts	Permanence at time t	Permanence up to time t	Risk estimation	CI (95%)
1	4.50	727	191	0.7373	0.7373	0.2627	0.7053 to 0.7693
2	8.50	536	175	0.6730	0.4966	0.3265	0.4602 to 0.5329
3	12.50	361	131	0.6371	0.3164	0.3629	0.2826 to 0.3502
4	16.50	230	98	0.5739	0.1816	0.4261	0.1535 to 0.2096
5	20.00	132	77	0.4167	0.0757	0.5833	0.0564 to 0.0949
6	23.50	55	49	0.1091	0.0083	0.8909	0.0017 to 0.0148
7	26.50	6	0	1.0000	0.0083	0	0.0017 to 0.0148
Mean	16	292.43	103				
Standard deviation	7.9948	264.87	68.24				

It was observed that most withdrawals occurred during the first interval (4.5 months), about one quarter of CPAP participants. By the end of the second interval (8.5 months), the proportion of participants was 49%.

At each time interval, decline regarding the permanence of individuals was observed. By the end of the observation period, it was found that only 0.08% of subjects reached the end of the evaluations.

According to Table 1, of the 361 participants who remained in the third interval, which corresponds to about one year in the program, 131 gave up to the third assessment. Thus, of 727 individuals observed, approximately two thirds dropped out within the period of 12.5 months, and the average proportion of participants up to that time was 32%, i.e. more than half of the subjects dropped out during the first year.

According to Figure 1, which shows the comparison of the length of stay among the three age groups, a statistically significant difference was observed (p = 0.025).

Considering the behavior of variables for individuals aged 18-35 years, of the 40 participants, about 38% dropped out in the first interval and the maximum length of stay was 20 months, with average of 12.4 months.

For individuals aged 36-59 years, of 422 participants observed at baseline, about 27% of them dropped out up to 8.5 months of program and up to one year, the length of stay was 31%, verifying for the group of elderly that withdrawal up to 8.5 months was higher compared to other periods. For both, the average length of stay was 16 months.

Furthermore, it was observed that approximately 49% of the 265 elderly participants remained on average one year at CPAP and this result is similar to participants in Group 2.

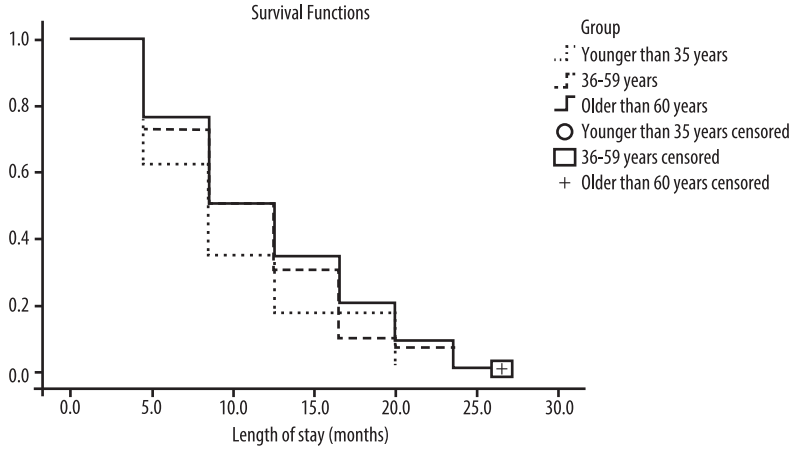

Figure 1. Permanence as a function of time according to age groups. CPAP, 2008-2010 (p = 0.025).

DISCUSSION

The present study revealed average length of stay at CPAP of 16 months. A study evaluated the length of stay in a PA program for hypertensive individuals and found average length of stay of 198.5 days (6.6 months)[8]. Another study[7], which examined the adherence and length of stay of individuals participating in a Physical Activity Program for Diabetic, Hypertensive and Obese individuals, found average length of stay of 27 months.

The studies above suggest that differences related to the length of stay appear to be related to local specificities in relation to spaces to perform PA such as parks and squares, intervention protocol (logical model), when

related to the planning and organization of activities with the goals and needs of the treatment group, when considering the role of physical activity in people's lives, considering aesthetic or health issues when proposed and directed by a physician and purposes of the various programs.

The results showed that two thirds (68%) of participants dropped out within the 3rd time interval, approximately one year. A study evaluating individuals in a long-term changing lifestyle program concluded that 47% of participants remained at least one year in the program[22].

In the first four months of observation, dropout of about one quarter of participants was observed. Dropout was also observed after a brief period of participation, sometimes with insufficient participation for obtaining positive results from the activity performed. Other studies found high dropout rate before completing five months in fitness programs[18]. Low frequency and length of stay in the first months in physical activity programs highlighted in literature[16] suggests greater attention in the planning and specificities of a CPAP, especially in the first months of intervention, which seems to be an element of great importance.

Nearly half of subjects exceeded the first six months in the program, result also reported in literature[17], and in the present study, the highest dropout rate occurred during the first year of intervention. High dropout rate particularly in the first six months was also observed in a study on subjects enrolled in a long-term changing lifestyle program[22]. Due to the low frequency of those who remain in the first months, ACSM[21] draws the attention of physical education professionals and health administrators to take measures to reduce dropout in the initial period of PA programs.

Regarding the CPAP observed in this study, professionals were concerned in working with less complex physical activities involving physical and cognitive, social and affective aspects, of mild to moderate intensities, respecting the limit of each participant and encouraging them.

The average length of stay of those who dropped out from January 2008 to March 2010 was 40%, slightly more than one third, or 292 people, which is smaller than value found in the study by Costa et al.[7], who assessed individuals who adhered to a physical activity program for diabetic, hypertensive and obese subjects and found dropout rate of 49.2% in the period of sixty-two months of observation. It is noteworthy that the cohort time observed limits the extrapolation of results. The withdrawal seems to be higher in individuals aged 18-35 years.

By observing the results for the mean length of stay of each age group studied, individuals aged 18-35 years showed average length of stay of 12.4 ± 6.2 months and remained in the program only until the twentieth month.

A study[8] showed that age, gender and prior physical activity are not considered crucial to quitting. In another study[23], younger individuals, in general, adhered to physical activity programs easier, and it seems that the adherence of adults and elderly is more difficult, with increasing age being a determining factor in the withdrawal from programs[15], unlike what was observed in this work.

It is noteworthy that the physical activity characteristic of a community PA program seems to favor the permanence of adults and the elderly. Thus, the length of stay in the present study may be related to clinical guidance and the demand for those involved in UBS and consequently with health problems. Therefore, it is believed that the low length of stay of younger people is due to the fact that they seek physical activities related to fitness centers and other purposes.

Thus, the greater permanence of adults[25] and the elderly[26,27] considers the activity characteristics[7], intervention methodology at each CPAP, which can be considered as a determining factor for the program to approach a group or another and the level of satisfaction with the service[4], suggesting the need for adjustment of program objectives to the target age group and also considering that a Community Physical Activity Program needs to have objectives and logical models for each age group, which tends to favor the permanence of participants.

In relation to the high length of stay observed in older adults, few studies consider encouragement, attention and the creation of the professional relationship with participants as essential to the maintenance of older people in exercise programs.

Cohen-Mansfield et al.[26] observed that in almost 70% of elderly, factors such as medical advice for the practice of physical exercise and being monitored by a health professional were significant for permanence. In the present work, change of habits, mostly by adults and elderly, the link that participants have with Basic Health Units[17], the medical advice for the practice of physical exercise and the involvement with physical education professionals (incentive attention and creation of link between professionals and participants), possibly may have led to greater engagement by older people in the program, which shows the positive influence of CPAP in the community[17]. The concept of "health belief"[15] should also be considered , in which when the individual realizes the risks to which he is exposed, he ends up by adopting behaviors that promote the prevention and control of any health problem.

Limitations of this study were the difficulty of identifying specific information throughout the period of occurrence of events, since it was a survey conducted from secondary sources and difficulty of verifying associations among variables that characterize health determinants (age, economic status, educational level, among others), which may be associated to the permanence of individuals in the program[25], i.e., some results may not be extrapolated to the present study, which only estimated the length of stay comparing different age groups.

CONCLUSIONS

According to results, it was concluded that the total length of stay in Community Physical Activity Programs does not exceed two years, with higher dropout in the first year of program. It also appears that subjects who comprised the groups composed of adults and elderly were those who stayed longer in the program.

The findings of this study characterized the group and estimated the length of stay in other community physical activity programs and served for the planning and development of programs aimed at minimizing the withdrawal in the early months of participation and to stimulate young individuals for the practice of physical activities at CPAP.

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Corresponding author

Roberto Jerônimo dos Santos Silva
Universidade Federal de Sergipe
PPGEF – Mestrado em Educação Física
Departamento de Educação Física
Cidade Universitária Prof. "José Aloísio de Campos"
Av. Marechal Rondon, s/n Jardim Rosa Elze
CEP 49100-000
São Cristóvão – SE, Brasil
Email: rjeronimoss@ufs.br