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# Adherence of females to Fitcor's cardiopulmonary and metabolic rehabilitation program during 34 years

## Summary

**Introduction:** In recent decades the number of deaths from heart disease among women in Brazil has increased a lot considerably, however those who accumulate more risk factors do not practice physical exercises.

Objective: to investigate the adherence behavior of women aged between 12 and 80 years, to a specialized cardiac prevention and rehabilitation program (CPRP).

**Method:** This cross-sectional descriptive study was carried out in a clinic specialized in cardiology diagnosis and CPRP between 1972 and 2006. Patients were separated into two groups, prevention (PG) and rehabilitation (RG) after physical evaluation and diagnosis. Both groups of women were separated by age and by the date of beginning CPRP.

**Results:** Based on the entry diagnosis in the records of 958 women who attended the CPRP, we identified that 655 of them were in the prevention group (PG) and 303 in the rehabilitation group (PG). In both groups, the adherence to the program decreased with advancing age and worsening of risk factors.

**Conclusions:** Contrary to the increase on statistics of women victims of cardiovascular diseases in Brazil, the number of those who seek CPRP through physical exercises has decreased and, what is worse, the number or places that facilitate women's access to this type of intervention has also decreased.

**Keywords:** cardiovascular diseases, risk factors, aging, physical exercise, adherence, dropout, prevention and rehabilitation

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## Introduction

Despite there is a consensus among health professionals on the importance of regular physical exercise and, mainly, cardiac prevention and rehabilitation programs (CPRP) for women with risk factors or already undergoing treatment for cardiovascular diseases, few adhere to this type of treatment. In this study, carried out in a private clinic in the São Paulo's city, we followed, for 34 years, between 1972 and 2006, the adherence of women post-infracted and post-revascularized, with metabolic syndrome, valvar diseases and sedentary with risk factors.

Unfortunately, 17 years later, the situation has deteriorated. In Brazil, the number of deaths from heart attacks increased by 62% among young women, between 15 and 49 years old, and 176% among those between 50 and 69 years old, according to data from Brazilian Society of Cardiology. The main reasons remain sedentary lifestyle, stress, smoking, alcoholism and misinformation.

During the period studied, São Paulo's city had more specialized clinics and more hospitals that facilitated access for women who, on the advice of physicians, sought for physical exercise programs supervised by a multidisciplinary team. Even so, the number of women assisted was much smaller than that of men and, to make matters worse, they dropped out more quickly.

Currently, only the most differentiated hospitals offer prevention and rehabilitation programs and few private clinics have survived. Since 2006, Fitcor, where this study was carried out, has had the Sírio Libanês Hospital as its address. Private gyms and social and sports clubs that receive elderly women with risk factors associated with aging, do not have a competent medical department for diagnostic evaluation and emergency care. They hire physical education teachers without requiring specialized training to work with healthy elderly women or those undergoing treatment for cardiovascular diseases, a fact that further alienates women who most need regular physical activity.

## Material and method

CPRP were implemented in São Paulo in early 1972. In this study, carried out in a private clinic specialized in cardiology diagnosis and individualized physical conditioning, we followed the adherence of females to CPRP. A total of 958 women, indicated by their respective physicians, started CPRP in the nearly four decades studied, a number ten times lower than that of men starting in the same period. After an initial diagnostic evaluation carried out with clinical examination, stress electrocardiogram and, eventually, other cardiology and orthopedic examinations, they were referred to begin the practice of physical exercises. The training sessions had three steps; 1-aerobics exercises on a treadmill, bicycle or track's walk; 2-strength exercises with free weights and machine and 3-stretching exercises.

The training prescription of strength exercises were not preceded by a maximum load test. Exercises and loads were selected for each woman and the objective was to improve muscular resistance. This stage lasted 20 to 30 minutes. Stretching and relaxation exercises, lasting 15 to 20 minutes, were performed at the end of gym session. The first class, scheduled by appointment, aimed to facilitate the candidate's adaptation to the environment and the training program. A specialized physical education professional was responsible for explaining the purposes of each stage of physical exercise session and justifying the need to control physiological variables before, during

and after aerobic training performed on ergometric bicycles and treadmills. Training sessions lasted between 60 and 90 minutes.

To carry out this study, they were separated into two groups in order to identify whether there was a difference between them in terms of adherence to CPRP. In the first group, called preventive (PG), there were asymptomatic women with normal results in cardiac evaluations. The second group, called rehabilitation (RG), those who were diagnosed with metabolic syndrome, valvar diseases, post-myocardial revascularization, post-myocardial infarction or with abnormal results in test performed were include.

## Results

Both groups called PG an RG, aged between 12 and 80 years and had, respectively, 655 and 303 participants that were divided according to the age of adherence to CPRP (Table 1). As expected, in the age group between 12 and 20 years old, only 16 females participated and they were adolescents or young people who, were overweight although did not present additional risk factors in the assessment performed and were included in the PG. PG continued to be predominant among women aged between 21 and 30 years old and this fact is justified because many companies provided, through agreements, the opportunity for their executives to exercise preventively. Only 10 women from the RG joined the program in this age group and most had been diagnosed with mitral valve prolapse.

In the following decade, from 31 to 40 years old, the RG increased (40 women), but continued to be much lower than the PG (187 women) and represented only 17,6% of the women who joined the CPRP. Between 41 and 50 years old, the number of women identified as belonging to the RG, despite the growth, represented 27,8% of the total adherence to Fitcor's CPRP, number that was still much lower than the PG, which was 72,2% of adherence. As expected, the percentage of women in the RG increased in the age group between 51 and 60 years old, it became 41% of the adhesions against 59% on the PG. However, contrary to expectations, the total number of adhesions fell by 26% compared to the previous decade, a worrying finding because aging, itself, is an important risk factor. Adherences continued to fall in the age group between 61 to 70 years old in both groups when compared to those registered between 41 to 50 years old, being 69,5% lower. In the age group where the demand for specialized guidance in CPRP should increase, exactly the opposite happened. There was a drop of 86% in adherence in the PG when compared to the age group between 41 and 50 years old, what clearly shows that older women are less concerned with prevention to avoid effects of a sedentary life on the heart´s health.

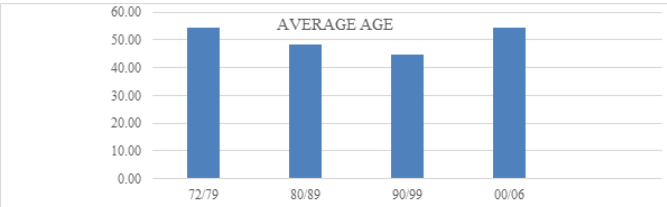
**Table 1** Women's adherence, aged between 12 and 80 years old, to CPRP previously diagnosed as members of PG and RG

| Age | 12 a 20 | 21 a 30 | 31 a 40 | 41 a 50 | 51 a 60 | 61 a 70 | 71 a 80 | Total |
|---|---|---|---|---|---|---|---|---|
| PG | 16 | 78 | 187 | 210 | 127 | 29 | 8 | 655 |
| RG | 0 | 10 | 40 | 81 | 88 | 60 | 24 | 303 |
| TOTAL | 16 | 88 | 227 | 291 | 215 | 89 | 32 | 958 |

Among women from the RG, the drop in the number of adherences was only 26% because, for the first time, the number of women from RG referred to the CPRP was greater than the PG. The decline in adherence to CPRP continued to be significant in the age group between 71 and 80 years old, even considering that, in CPRP, the individualization of procedures was intended to provide safety and respect the limits imposed by age and result of the cardiology evaluation. The impressive drop in the total of adherences to CPRP in this age group, 90% lower, when compared with the highest registered between 41 and 50 years old, justifies further studies. The need for more emphatic position of physicians with their clients regarding the importance of CPRPs is evident. They, like all health professionals, are responsible for changes in women's lifestyle and, above all, for recognizing the seriousness of sedentary lifestyle on physical and mental health. On the other hand, physical education professionals need to review their methods to attract more seniors and reduce the high dropout rate in this population.

After a thorough survey of records of each female patient we identified in each of nearly four decades of the study, the average age of all 958 women who joined the program (Graph 1) was 50 years old. It is surprising to find that, although aging and sedentary lifestyle is important risk factors for coronary disease and responsible for a high mortality rate among women, this was the mean age of greatest adherence to the CPRP. Between 1972 e 1979 there were few adhesions and the average age was 55 years old. Important to point out that, in the two intervening decades (between 1980 and 1999), when a greater number of women joined the CPRP, the average age was even lower, between 45 and 50 years old, and PG stood out with greater adherence of women.

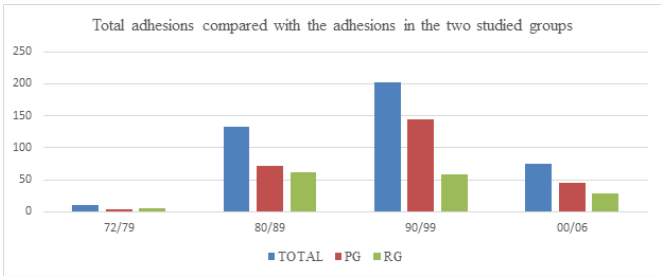
In the six years of the last decade of the survey, the average age of women joining the CPRP reached 55 years old, the same as in the first decade. In During both decades (1972 to 1979 and 2000 to 2006), the number of accessions to the program was lower than expected given the known relevance of the practice of physical exercises for cardiac prevention and rehabilitation. Between 1972 and 1979 there was still a certain distrust of physicians and patients themselves regarding the indication of the practice of physical exercises for people over 50 years' old who were sedentary and had cardiovascular diseases, but the justification was no longer the reason for low adherence when it was already scientifically proven (between 2000 and 2006) the identification of a sedentary lifestyle as one of the main causes of cardiovascular diseases and deaths among all ages women. This study corroborates the findings of others who showed that women over 60 years 'old are the ones who need it the most and the ones who least adhere to and remain in CPRP's.




**Graph 1** Average age of all women who attended Fitcor's CPRP in each decade of follow-up.

In Graph 2 we compare the number of adherences to the CPRP of the PG and RG in relation to the total number of women who adhered to the physicians' prescription in the almost four decades studied. We found that, between 1972 and 1979, there were few adherences because there was still no consensus among physicians on the safety

of including the practice of physical exercises for the treatment and prevention of cardiovascular diseases for both sexes. In the following decade, there was a significant growth in the number of adherences in both groups (PG and RG) because the guidelines already included physical exercise among the therapies for the prevention and rehabilitation of cardiovascular diseases. During 80's even with the growth in the number of gyms and the increase in advertising encouraging the need to practice exercises, sedentary middle-aged women in PG and RG still opted for the safety of specialized clinics. This growth trend in the total number of adhesions was confirmed in the following decade, however, curiously, it was more significant in the PG when compared to the RG.




**Graph 2** Mean values of the total women's number who entered to CPRP compared with PG and RG in four decades of follow-up.

The greater women's adherence to CPRP, aged between 30 and 60 years old, diagnosed as belonging to the PG in the 80's and 90's shows greater attention, from them and the physicians, with the importance of preventive behavior. However, in the two decades mentioned above, the women's adherence from the RG to the CPRP remained unchanged and lower than that of the PG. What reasons justify the choice of women in this group for other forms of treatment that do not include the practice of physical exercises? Is there a lack of a more forceful medical attitude or do the programs not meet their expectations? In the first six years of the 2000's, the number of members dropped significantly and coincided with the transfer of Fitcor's patients to a space within a large gym in São Paulo. Our patients, of both sexes, who had an exclusive place for the development of the physical conditioning program, began to share the locker room space with young people whose training objectives were different. The shock alienated hundreds of clients and drastically reduced the entry of new CPRP's candidates.

## Discussion

Systematic reviews and meta-analyses were carried out to identify the low women's adherence, compared to men, to CPRP, in different countries. One of the studies[1] published in 2014, examined papers published over the previous ten years to investigate whether the significant difference related to CPRP adherence between sexes persisted despite evidence supporting benefits for both sexes. The authors selected 26 articles that totaled 297,719 participants with the presence of 128,499 women and concluded that men were more likely to participate in CPRP. Others researchers, in a study published in 2015,[2] also identified gender differences in CPRP's adherence. They selected 623 articles, but only 19 met the inclusion criteria. The authors concluded that patient referral to CPRP remains low for both sexes, but are significantly lower for women. They suggest that evidence-based interventions need to be adopted to increase adherence to CPRP and new strategies need to be implemented for women to adhere. Although the effects of physical exercise, with personalized prescription and practiced regularly, are associate with significantly lower mortality, the adherence rate of women to CPRP remains low.

Researches[3] selected 149 articles, which were fully examined among the 5148 identified to analyze adherence to CPRP, to verify if there was difference between genders. After focusing attention on 14 high-quality studies, they concluded that adherence among women is significantly lower and that news strategies need to be implemented to change the scenario. A literature review study, published in 2017,[4] was carried out to identify barriers and evidence-based solutions for women's participation in CPRP. Among the selected titles and abstracts, 24 of them referred to barriers that hindered women's participation in CPRP and 31 evaluated the impact of several interventions aimed at improving the demand for adherence to individualized physical conditioning. The barriers that stood out as impediments to adherence to the CPRP were: low educational level, multiple comorbidities, lack of social support and high burden of family responsibilities.

On the other hand, there are few studies that suggest strategies based on incentives and household programs to improve rates of interest and adherence to CPRP. The authors concluded that in order to overcome the barriers, automatic physician referral should be implemented in the clinical routine, however further studies are needed to help identify the best methods of convincing and subsequent care in specialized centers. In addition to the barriers, and there are many of them, that prevent women from accessing CPRP, others factors that are being studied are the reasons responsible for the early interruption of the program among those who attend specialized gyms.

The authors of a study published in 2017[5] also sought to understand why, knowing that cardiovascular disease is a major health problem worldwide and that physical exercises are effective in reducing mortality and improving the quality of life of women, they are underrepresented and have a higher dropout rate than men. After a systematic review started in September 2016,[6] where the following terms were searched: heart disease, non-participation and/or abandonment; 24 studies were selected (17 descriptive, 6 qualitative and 1 randomized controlled trial). Several barriers divided into five categories were grouped: intrapersonal, interpersonal, logistical, CPRP and health system barriers. The authors concluded that women reported multilevel barriers to non-participation and non-adherence to the program and suggested that, in the future, new clinical guidelines may assess and eliminate barriers to improve women's adherence to CPRP. More recently, in September 2021,[7] a systematic review was published on the nature, availability, use and satisfaction or CPRP aimed at women. We identified 3,498 citations and selected 28 from studies in more than 10 countries. The authors found that CPRP was present in 40.9% of the countries, however it was not accessible for women very often. They suggested that adherence could be greater if the content of CPRP were adapted to gender.[8]

In this study, observing the behavior of adherence to CPRP in a private clinic between 1972 and 2006 (34 years),[9–14] the authors found results very similar to those already published in others countries. Health care and the need, scientifically proven, for greater concern with prevention have long required the adoption of healthy habits, however, the exact opposite is happening. Few women over 60 were identified in both PG and RG and the reasons for low adherence are not different from those mentioned in the studies that preceded us. On the other hand, the presence of some children and adolescents in the CPRP was due to a physician's recommendation due to obesity.

Among the adult women, aged between 18 and 30, included in the PG were company employees that facilitated access to the CPRP through an agreement with Fitcor. Public policies need to be implemented to raise women's early awareness of the importance of prevention, which includes the regular practice of physical exercise and its benefits for physical and mental health.

## Conclusion

The results found in this study are similar to those presented in other meta-analysis studies cited in the bibliography, which indicate the need to eliminate the barriers that limit women's adherence to CPRP. Among the causal factors for the drop in women's over 50 years' adherence, the lack of content adaptation to attract older women stands out. This problem only can be solved when physical education professionals become aware of the importance of adapting biopsychosocial-physiological procedures needs of elderly women. On the other hand, based on evidence, physicians need to increase the referral of patients for both prevention and rehabilitation of cardiopulmonary and metabolic rehabilitation disease. The data from this study clearly show that the greater adherence to the PG of women under 60 years' old, indicates that physicians are not being sufficiently effective to convince those included in the RG about the importance of CPRP. Although supervised physical exercise is recognized as one of the main tools for prevention and rehabilitation of cardiovascular diseases, in the studied groups (PG and RG), the entry and adherence of women to the program was inversely proportional to the needs related to aging.

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None.

## Conflicts of interest

The author declares that there are no conflicts of interest.

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