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REVIEW

Evaluation of community physical activity programs in Brazil: a scoping review

Avaliação de programas comunitários de atividade física no Brasil: uma revisão de escopo

Evaluación de programas comunitarios de actividad física en Brasil: una revisión de alcance

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Abstract

Community physical activity programs were created to encourage and increase the practice of physical activity in the Brazilian population and promote healthy life habits. The Brazilian Ministry of Health invested in the evaluation of these programs and consolidated partnerships that favor the development of relevant evidence on the topic. The current study aimed to identify and summarize the scientific highlights on the approaches and results of evaluations performed in the Health Academy Program and City Academy Program. This is a scoping review based on the methodology of the Joanna Briggs Institute. We used the MEDLINE via PubMed, LILACS, Scopus, and Cochrane databases, the website of the Health Academy Program, the Catalogue of Theses and Dissertations of the Brazilian Graduate Studies Coordinating Board, and the Brazilian Digital Library of Theses and Dissertations. The sample included quantitative or qualitative primary studies with no limit on year of publication. Twenty-four studies published from 2009 to 2020 were selected and subdivided according to the approaches to evaluation: evaluability, sustainability, process (supply and structure), outcome (impact and satisfaction), and degree of inference (adequacy, plausibility, and probability). The results of the evaluations showed that the programs offer various activities, positively impact users' health indicators, and contribute to the increase in leisure-time physical activity. The evaluation of these programs is essential for the administration, health services, and healthcare workers, since it allows verifying the implementation of the proposed activities, coverage, access, impact, and interference by the political context in their continuity.

Program Evaluation; Health Promotion; Motor Activity; Review

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Introduction

Insufficient physical activity is one of the leading modifiable risk factors for chronic noncommunicable diseases (NCDs), reducing life expectancy and negatively affecting mental health and quality of life [1]. In 2016, 27.5% of the world's adult population was insufficiently active [1]. In Brazil, in 2013, the proportion was 46% [2]. This unfavorable scenario urged international and Brazilian organizations to include physical activity on the global health agenda [3].

In Brazil's domestic context, policies, programs, and actions were implemented with the objective of incentivizing and increasing physical activity [4]. These initiatives feature the City Academy Program (*Programa Academia da Cidade* – PAC), created as a local strategy since 2002, initially in Recife (Pernambuco State), and subsequently in other cities of Brazil. The program aims to promote healthy life habits, increase the population's level of physical activity, and expand knowledge on the benefits of exercise [3,5]. The year 2006 witnessed the approval of the *Brazilian National Health Promotion Policy* (PNPS), which defined physical activity as a priority on the national agenda [6]. The PNPS also allowed the creation of a community program to encourage physical activity under the Brazilian Unified National Health System (SUS), called the Health Academy Program (*Programa Academia da Saúde* – PAS), launched by the Brazilian Ministry of Health in 2011 [4,7,8].

The main objective of the PAS is the population's health promotion based on implementation of hubs/gyms throughout Brazil, with infrastructure, equipment, and multidisciplinary staff [9]. The program complements and empowers activities in primary healthcare (PHC) and has a territorial reference, serving as a point of attention in the healthcare network [10]. The PAS also allowed the expansion of community physical activity programs, in addition to financial transfers to community programs that join the program [11,12]. The preexisting municipal programs that joined the PAS feature those in Aracaju (Sergipe State), Belo Horizonte (Minas Gerais State), and Recife. The incorporation of these programs, accredited as similar hubs, allowed horizontal expansion in the implementation and continuity of actions to promote physical activity in Brazil [4,13]. The PAC and PAS expanded access and fostered physical activity for the population, including among more vulnerable groups and communities. These programs promote health and materialize the principles of the SUS: universal coverage, equity, and comprehensiveness [14].

Surveillance, monitoring, and evaluation are operational lines of the PNPS [6]. The evaluation offers tools for improvement, management, and strengthening of PHC, especially in times of political and economic instability and threats to social and health rights [7,13]. Evaluation should thus be a continuous and permanent object, aimed at reorienting actions and backing decisions, interventions, and implementation of public policies in health [7,13]. The Brazilian Ministry of Health financed the evaluation of community physical activity programs and consolidated national and international partnerships that favor the production of important evidence on the programs [15]. However, the evaluation of health promotion programs is a challenging process, due to the multiplicity of activities, multi-disciplinarity, heterogeneity of local and regional problems, and cultural and socioeconomic diversity [16]. Therefore, evaluations should be developed with a set of knowledges and practices influenced by distinct approaches, scientific disciplines, and technical and methodological traditions [17] that are able to demonstrate relevant evidence for the program [18]. Given the above, our searches yielded no studies that mapped the evidence on the approaches used or the results obtained from evaluations of the PAC and PAS that allowed generalizations on the mechanisms and strategies developed by these programs for the promotion of physical activity in Brazil.

In this sense, the objectives in this study were to identify and summarize the scientific evidence on the approaches and results of evaluations conducted in the PAS and PAC in Brazil.

Methods

This is a scoping review, which summarizes the evidence from studies to map the literature on a given subject in terms of nature, characteristics, and volume [19]. This review had its study protocol registered in the *Open Science Framework* on July 27, 2020 (https://osf.io/zk6eg/). It was conducted according to the recommendations of the international guide *Preferred Reporting Items for Systematic Reviews and*

Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) [20] and the method proposed by the Joanna Briggs Institute (JBI) [21].

To orient the formulation of the underlying question, we adopted the *Population, Concept, and Context* (PCC) strategy, and the following question was defined: what is the scientific evidence on the approaches and results of evaluations conducted in the PAS and PAC? We thus defined based on the guiding quesion: *Population* – users, healthcare workers, and administrators involved in the programs' evaluations; *Concept* – approaches and results of the evaluations; and *Context* – PAS and PAC.

Eligibility criterion for the studies

The review included quantitative or qualitative primary studies. It also included theses, dissertations, books, and technical and government documents, and with no time limit on the selection as to year of publication. It included publications in English, Spanish, and Portuguese that contained the following descriptors or keywords: evaluation studies, evaluation of health programs and projects, evaluation of healthcare processes and results, health gyms, and city gyms. The review excluded studies that did not have the evaluation of the PAS or PAC as the main objective, that did not specifically address these programs, and narrative and integrative reviews, Internet texts, editorials, essays, and articles not available as full texts in the databases.

Information sources and search strategy

Searches were performed from March to June 2020. The search for scientific articles included the databases MEDLINE (via PubMed); LILACS (via Virtual Health Library); Scopus (via CAPES Portal), and Cochrane (via CAPES Portal), on the website of the PAS/Ministry of Health, in the CAPES Catalogue of Theses and Dissertations and the Brazilian Digital Library of Theses and Dissertations (BDTD) of the Brazilian Institute of Information in Science and Technology (IBICT).

The references from the selected articles were verified to identify new studies not located in the previous searches, according to the same previously established inclusion criteria. Based on the inclusion criteria, a search strategy was elaborated in PubMed, based on the *Medical Subject Headings* (MeSH) plus the following keywords: "Academia da Saúde" OR "Academias da Saúde" OR "Academia da Cidade" OR "Academias da Cidade" OR "Health Academy" OR "City Academy" AND "Evaluation Study" [MeSH Terms] OR "Program Evaluations" [MeSH Terms] OR "Outcome and Process Assessment, Health Care" [MeSH Terms] OR "Evaluation Study" OR "Program Evaluations" OR "Outcome and Process Assessment, Health Care".

The strategy was adapted to each database's specificities. The searches in all the databases considered the date of publication up to May 4, 2020.

The final study's results were exported to Mendeley (https://www.mendeley.com) and duplicates were removed.

Selection of the sources of evidence

Two reviewers independently screened the studies and selected them based on the titles and abstracts. The reviewers later independently read the full texts of the preselected articles and precisely identified their relevance to the review and determined whether the inclusion criteria had been met. Divergences between the reviewers were resolved by discussion and in collaboration with a third reviewer to reach a consensus.

Data collection process and synthesis of the results

The extraction and synthesis of the essential elements found in each publication were performed by two independent reviewers using a structured instrument prepared for this study, and Microsoft Excel (https://products.office.com/) was used for data tabulation.

The extracted data included details on authorship, year of publication, type (article, dissertation, government documents), objectives, design, site, level of evidence, program assessed, population,

approaches of evaluations (type of evaluation, indicators, degree of inference), and principal relevant discoveries for the review's objective.

The studies' level of evidence and degree of recommendation were categorized according to the JBI classification [22] and are shown in Box 1.

The evaluation approaches were categorized according to type of evaluation, indicators, and degree of inference when applicable. Since the authors used various evaluation approaches, we based the categories on the conceptual frameworks of evaluation according to Vieira-da-Silva [23]; Pluye et al. [24]; Habicht et al. [25]; and Donabedian [26] (Box 2).

The synthesis of findings was done by similarity of the themes, and descriptive statistics were used for analysis of the results, through absolute and relative frequencies.

Results

The search strategy identified 255 articles, and 217 more were included from other sources (n = 472). The sample excluded 20 duplicate documents and another 317 that failed to meet the inclusion criteria based on reading of the title. We selected 135 studies for reading the abstracts, and 89 were later excluded because they did not meet the inclusion criteria. Finally, 46 were read as full texts, and 22 of these were excluded for the following reasons: evaluation of the programs was not an objective (16/22), review articles (2/22), and articles that did not address the PAC or PAS (4/22). Finally, 24 studies were included in this review (Figure 1).

Box 1

Level of evidence and degree of recommendation in studies according to the Joanna Briggs Institute (JBI) classification [22].

LEVEL OF EVIDENCE	DEGREE OF RECOMMENDATION
Level 1: Experimental studies	1.a – Systematic review of controlled randomized clinical trials.
	1.b – Systematic review of controlled randomized clinical trials and other study designs.
	1.c – Controlled randomized clinical trial.
	1.d – Controlled randomized pseudo-clinical trial.
Level 2: Quasi-experimental studies	2.a – Systematic review of quasi-experimental studies.
	2.b – Systematic review of quasi-experimental studies and other designs with less evidence.
	2.c – Quasi-experimental controlled prospective study.
	2.d – Pretest and post-test or group study with historical/retrospective control.
Level 3: Observational analytical studies	3.a – Systematic review of comparable cohort studies.
	3.b – Systematic review of comparable cohorts and other study designs with less evidence.
	3.c – Cohort study with control group.
	3.d – Case-control study.
	3.e – Observational studies without control group.
Level 4: Observational descriptive studies	4.a – Systematic review of descriptive studies.
	4.b – Cross-sectional study.
	4.c – Case series.
	4.d – Case study.
Level 5: Expert opinion and lab bench studies	5.a – Systematic review of expert opinions.
	5.b – Expert consensus.
	5.c – Lab bench study/expert opinion.

Box 2

Categorization of evaluation approaches in studies according to type of evaluation.

TYPES OF EVALUATION	
Evaluability	Systematic and preliminary analysis of a program's theory and practice to determine whether there is justification for an evaluation [23].
Sustainability	Probability of a program being capable of continuing its operational activities and maintaining its results over time [24].
Process (supply and coverage)	Aims to produce knowledge for local use on what is being offered to the population. The supply indicator aims to answer whether the program's actions or activities are available to the target population, accessible, and with quality. Coverage evaluates the proportion of the target population reached by the program [25].
Outcome (impact and satisfaction)	Includes the effects of care on the health of individuals or populations [26]. The user's or healthcare worker's satisfaction is another dimension of outcome, related to the quality and efficacy of care [26], and the impact indicator evaluates whether the program's objectives were met [25].
DEGREE OF INFERENCE *	
Adequacy	Assesses whether the expected changes occurred [25].
Plausibility	Extends beyond adequacy, since it verifies whether the observed effect was due to the program, and attempts to control for confounding factors, using control groups, but without randomization [25].
Probability	Estimates the statistical probability that the program really has an effect, requires randomization of groups, serves as the gold standard for efficacy studies [25].

* Refers to the type of inference needed (adequacy, plausibility, and probability) to state that the observed results (both for process and impact) were due to the intervention [25].

Characteristics of the publications

Of the 24 selected studies, most were articles (n = 20), followed by government documents (n = 2), a book chapter (n = 1), and a dissertation (n = 1). They were cross-sectional (n = 14), qualitative (n = 8), quasi-experimental (n = 1), and qualitative-quantitative (n = 1). They were conducted in Recife (n = 9), Belo Horizonte (n = 5), in Brazil (n = 4), in the set of Brazilian state capitals (n = 1), Aracaju (n = 1), Cariri (n = 1), Florianópolis (n = 1), Rio de Janeiro (n = 1), and Pernambuco (n = 1), published from 2009 to 2020. Levels of evidence were categorized as 4.b – Cross-sectional study (n = 15), 4.d – Case study (n = 8), and 2.c – Quasi-experimental controlled prospective study (n = 1) (Box 3).

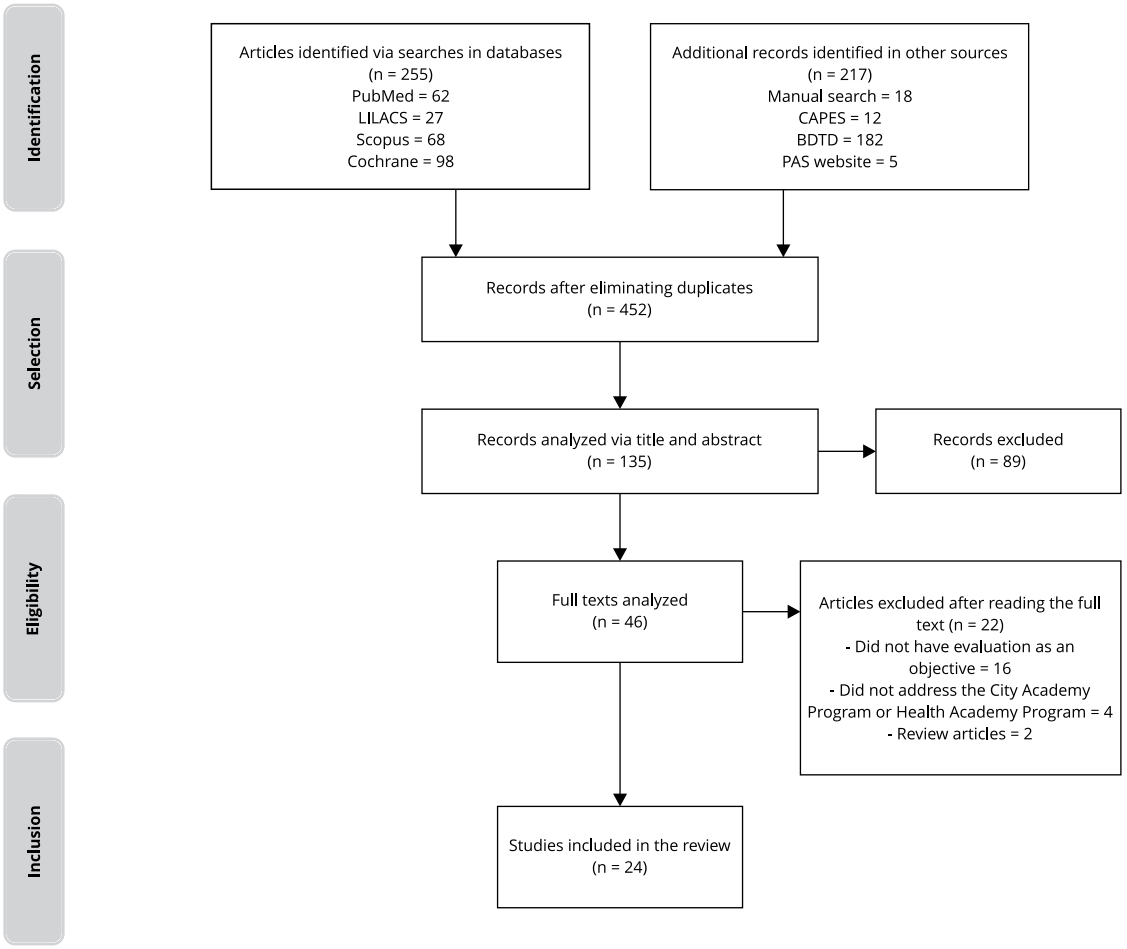
Description, context, and characteristics of the evaluations

The evaluations were performed in the PAC (n = 12), PAS (n = 11), and both programs (n = 1). Participation in the evaluations included users, former users, and non-users of programs, plus managers, coordinators, healthcare workers, and municipal program directors. Studies were performed on evaluability, evaluations of sustainability, process (supply and coverage), outcome (impact and satisfaction), and degree of inference (adequacy, plausibility, and probability) (Box 4).

The studies' main results were summarized according to the evaluation approaches: evaluability, sustainability, process (supply and structure), outcome (impact and satisfaction), and degree of inference (adequacy, plausibility, and probability).

Figure 1

PRISMA flowchart for selection of studies [60].



BDTD: Brazilian Digital Library of Theses and Dissertations; CAPES: Brazilian Graduate Studies Coordinating Board; PAS: Health Academy Program.

- **Evaluability**

Two studies found the program's evaluability: one on the PAC in Rio de Janeiro [27] and the other on the PAS in Recife [28].

The results of the evaluability of the Carioca Health Academy Program evidenced the adequacy of the program's design because it implements the guidelines of the PNPS [27]. Meanwhile, the evaluability of the PAS in Recife showed that the program's guidelines are extremely broad and tell little about the activities' planning, operationalization, and evaluation. Besides, some of the managers were unfamiliar with the program's objectives, principles, and guidelines [28].

A logical model or log frame was also developed in both studies, as an instrument to support the program's planning and evaluation by systematizing the existing resources, activities, context, and expected results [27,28]. The logical model allowed describing the program's dimensions and components, strategic activities, and expected effects from the implementation, besides identifying the resources, activities, and evaluation questions [27,28]. The results also showed the feasibility of conducting the programs' evaluations [27,28].

Box 3

Characterization of publications according to author, year, type, objectives, study design, site, and level of evidence.

AUTHORS (YEAR)	TYPE	OBJECTIVE	STUDY DESIGN	SITE	LEVEL OF EVIDENCE *
Hallal et al. [36] (2009)	Article	Identify and analyze instructors' views of the impact, relevance, difficulties, and community involvement	Qualitative-quantitative	Recife (Pernambuco State)	4.b
Simões et al. [37] (2009)	Article	Evaluate the effects of the PAC on the increase in leisure-time physical activity	Cross-sectional	Recife (Pernambuco State)	4.b
Hallal et al. [3] (2010)	Article	Describe the profile of users and non-users of PAC	Cross-sectional	Recife (Pernambuco State)	4.b
Mendonça et al. [38] (2010)	Article	Evaluate the association between various forms of exposure to PAC and leisure-time physical activity	Cross-sectional	Aracajú (Sergipe State)	4.b
Mazo et al. [31] (2013)	Article	Investigate the perception and the services provided, reasons for entry and stay and level of physical activity among participants of the Academies of Health	Cross-sectional	Florianópolis (Santa Catarina State)	4.b
Silva et al. [32] (2014)	Article	Analyze the PAC from the perspective of users and instructors	Qualitative	Belo Horizonte (Minas Gerais State)	4.d
Brazilian Ministry of Health [33] (2015)	Government document	Monitor PAS in Brazilian municipalities	Cross-sectional	Brazil	4.b
Fernandes et al. [39] (2015)	Article	Evaluate the effect of PAC on leisure-time physical activity among non-users in households at different distances from the gym	Cross-sectional	Belo Horizonte (Minas Gerais State)	4.b
Padilha et al. [27] (2015)	Article	Present the results of the evaluability study of the Carioca Health Academy Program	Qualitative	Rio de Janeiro	4.d
Paez et al. [29] (2015)	Article	Evaluate and report elements of external validity of PAC	Qualitative	Recife (Pernambuco State)	4.d
Feitosa et al. [40] (2016)	Article	Analyze the perception of the users of the PAC in Recife, regarding their satisfaction with the provision of services and perception of changes linked to quality of life after joining this program	Qualitative	Recife (Pernambuco State)	4.d
Florindo et al. [34] (2016)	Article	Evaluate promotion of physical activity and healthy diet in municipalities that received funds for the developed of the PAS	Cross-sectional	Brazil	4.b
Sá et al. [4] (2016)	Article	Describe the scenario with the implementation of PAS and functional characteristics	Cross-sectional	Brazil	4.b
Fernandes et al. [13] (2017)	Article	Describe the history and methodology for evaluation of the PAS	Cross-sectional	Belo Horizonte (Minas Gerais State)	4.b
Silva et al. [28] (2017)	Article	Perform a study of the evaluability of the PAS	Qualitative	Recife (Pernambuco State)	4.d
Simões et al. [41] (2017)	Article	Evaluate the impact of PAC on leisure-time physical activity	Quasi-experimental	Recife (Pernambuco State)	2.c

(continues)

Box 3 (continued)

AUTHORS (YEAR)	TYPE	OBJECTIVE	STUDY DESIGN	SITE	LEVEL OF EVIDENCE *
Andrade et al. [42] (2018)	Article	Evaluate the effect of the PAC on leisure-time physical activity among non-users residing close to the gyms	Cross-sectional	Belo Horizonte (Minas Gerais State)	4.b
Brazilian Ministry of Health [10] (2018)	Government document	Monitor PAS in Brazilian municipalities	Cross-sectional	Brazil	4.b
Cazarin et al. [30] (2019)	Article	Analyze sustainability of PAC	Qualitative	Recife (Pernambuco State)	4.d
Gonçalves et al. [43] (2019)	Article	Analyze perceptions on operationality, actions, and integration with the healthcare network	Qualitative	Cariri (Ceará State)	4.d
Maciel et al. [44] (2019)	Article	Adopt performance parameters for evaluation of a PAS gym	Qualitative	Belo Horizonte (Minas Gerais State)	4.d
Melo [45] (2019)	Dissertation	Evaluate PAC considering two evaluation criteria	Cross-sectional	Recife (Pernambuco State)	4.b
Faria et al. [46] (2020)	Book chapter	Analyze the impact of PAS on leisure-time physical activity and consumption of fruits, legumes, and vegetables	Cross-sectional	Brazilian state capitals	4.b
Silva et al. [35] (2020)	Article	Evaluate barriers and facilitators for participation in PAC and PAS	Cross-sectional	Pernambuco State	4.b

PAC: City Academy Program; PAS: Health Academy Program.

* See Box 1.

Box 4

Characteristics of evaluations according to program's name, population, types of evaluations, indicators, and degree of inference.

AUTHORS (YEAR)	NAME OF PROGRAM EVALUATED	POPULATIONS	TYPES OF EVALUATIONS (INDICATORS)	DEGREE OF INFERENCE
Hallal et al. [36] (2009)	PAC	Physical education professionals	Outcome (impact and satisfaction)	Adequacy
Simões et al. [37] (2009)	PAC	Users and non-users	Outcome (impact)	Plausibility
Hallal et al. [3] (2010)	PAC	Users and non-users	Process (supply) and outcome (impact and satisfaction)	Adequacy
Mendonça et al. [38] (2010)	PAC	Users	Outcome (impact)	Plausibility
Mazo et al. [31] (2013)	PAS	Users	Process (supply) and outcome (satisfaction)	Adequacy

(continues)

Box 4 (continued)

AUTHORS (YEAR)	NAME OF PROGRAM EVALUATED	POPULATIONS	TYPES OF EVALUATIONS (INDICATORS)	DEGREE OF INFERENCE
Silva et al. [32] (2014)	PAC	Physical education professionals and users	Process (supply) and outcome (impact and satisfaction)	Adequacy
Brazilian Ministry of Health [33] (2015)	PAS	Managers	Process (supply and coverage)	Adequacy
Fernandes et al. [39] (2015)	PAC	Non-users	Outcome (impact)	Plausibility
Padilha et al. [27] (2015)	PAS	Physical education professionals, managers, and other healthcare workers	Evaluability	-
Paez et al. [29] (2015)	PAC	Managers and physical education professionals	Process (supply and coverage) and sustainability	Adequacy
Feitosa et al. [40] (2016)	PAS	Users	Outcome (impact and satisfaction)	Adequacy
Florindo et al. [34] (2016)	PAS	Managers	Process (supply)	Adequacy
Sá et al. [4] (2016)	PAS	Program directors	Process (supply and coverage)	Adequacy
Fernandes et al. [13] (2017)	PAS	Users and non-users	Outcome (impact)	Plausibility
Silva et al. [28] (2017)	PAC	Program managers, coordinators, and instructors	Evaluability	-
Simões et al. [41] (2017)	PAC	Users and non-users	Outcome (impact)	Probability
Andrade et al. [42] (2018)	PAC	Non-users	Outcome (impact)	Plausibility
Brazilian Ministry of Health [10] (2018)	PAS	Managers	Process (supply and coverage)	Adequacy
Cazarin et al. [30] (2019)	PAC	Healthcare workers, users, and managers	Sustainability	-
Gonçalves et al. [43] (2019)	PAS	Healthcare workers, users, and managers	Outcome (impact and satisfaction)	Adequacy
Maciel et al. [44] (2019)	PAS	Physical education professionals, users, and former students	Outcome (impact)	Adequacy
Melo [45] (2019)	PAC	Users	Outcome (impact)	Adequacy
Faria et al. [46] (2020)	PAS	Users and non-users	Outcome (impact)	Plausibility
Silva et al. [35] (2020)	PAC and PAS	Users	Process (supply)	Adequacy

PAC: City Academy Program; PAS: Health Academy Program.

- **Evaluation of sustainability**

Two studies also evidenced the programs' sustainability [29,30], showing favorable factors and limits for sustainability.
(i) Favorable factors: the program as a space for multi-professional training; intra and inter-sector linkage; strengthening of social participation in the PAC's management; national and international recognition; state and federal co-financing [30]; public sector commitment; budget allocation; program management and structure; staff quality; and recognition of physical activity as a health priority by the Brazilian Ministry of Health [29].
(ii) Limits: lack of staffing and financing [29] and cutbacks in investments [30].

- **Process evaluation**

The process of the PAS and PAC was evaluated by nine studies. All of these used the supply indicator [3,4,10,29,31,32,33,34,35] and four also verified coverage [4,10,29,33].

There are no inclusion or exclusion criteria for participation in the programs [29]. Most people who participated in the programs' activities were adults, followed by elderly, adolescents, and children [4,10,33]. As for the population in situations of vulnerability, blacks and persons with disability were the groups that participated most in the activities at the gyms [10]. However, there was little participation by migrants, quilombolas (maroon community members), river-dwellers, indigenous people, homeless, and Roma people [4,10,33].

As of May 2017, there were 3,821 accredited gyms in the PAS in all states of Brazil, in different stages of implementation, besides 450 similar gyms [4,10,33]. The gyms offered activities in the morning, afternoon, and evening shifts [4,10,29,32,33], Monday through Friday [29,32], and some also on Saturdays [32]. The activities lasted from 50 to 70 minutes [3,32], averaging 30 persons per session [32].

The activities offered at the gyms were: physical exercise and activities (100%) [3,4,10,29,31,32,33,34,35]; health education (44.4%) [4,10,29,33,34]; integrative and complementary practices in health (44.4%) [4,10,33,35]; physical evaluation (22.2%) [29,32]; outings and excursions (11.1%) [29].

- **Evaluation of outcome**

Evaluations of outcome were addressed by 15 studies [3,13,31,32,36,37,38,39,40,41,42,43,44,45,46]. Two indicators were used to evaluate the interventions' outcome: impact indicator was used by 14 studies [3,13,32,36,37,38,39,40,41,42,43,44,45,46] and satisfaction by 6 [3,31,32,36,40,43]. Some authors used more than one indicator, so the sum was greater than the total number of studies.

As degree of inference, among studies that assessed impact (n = 14) [3,13,32,36,37,38,39,40,41,42,43,44,45,46], 50% (n = 7) used adequacy [3,32,36,40,43,44,45], 42.9% (n = 6) plausibility [13,37,38,39,42,46], and 7.1% (n = 1) probability [41].

Evaluations of adequacy showed that participation in the PAC or PAS had a positive impact on the users' health indicators [3,32,36,40,43,44,45], with reports of improved quality of life [32,40,43,45], physical fitness [32,44], increased social interaction [32,40], self-esteem [43], consumption of healthy foods [40], reduction of insomnia, stress, use of medications, weight, and body mass index (BMI) [32,44], and control of hypertension and diabetes [43]. The programs also reduced public health costs and improved the use of public spaces [36].

Plausibility and probability showed statistically significant results: individuals that participated in, knew of, or lived in neighborhoods with gyms had higher odds of practicing leisure-time physical activity (≥ 150 minutes/week) compared to non-users, those who had not heard of the program, or those living near a program's center. Prevalence of leisure-time physical activity was also higher among participants and those living closer to the program's gyms [13,37,38,39,42,46].

Users expressed satisfaction with the program [3], attention received [31], activities [40,43], instructors [40,43], ease of access (geographic and economic) [32,36,43], flexibility in the activities' hours [43], and infrastructure [31].

Discussion

Mapping the literature on the approaches and results of evaluations of the PAS and PAC identified 24 publications from 2009 to 2020, mostly articles with cross-sectional designs (n = 15) conducted mainly in Recife and Belo Horizonte. The evaluation approaches referred to evaluability, sustainability, process, and outcome. The PAS and PAC display strengths in sustainability, offer diverse activities, positively impact users' health and quality life, and help increase leisure-time physical activity and improve the use of public spaces.

The 24 studies included in this review evidenced the diverse evaluations conducted in the PAS and PAC, making it a comprehensive study encompassing relevant publications in the last 12 years. The review identified evaluation studies published before the creation of the PAS (2009-2010) [3,36,37,38], but most of the studies were published after 2011 [4,10,13,27,28,29,30,31,32,3334,35,40,41,42,43,44,45,46], reflecting the creation of the PAS and the induction of public policies in the field of health promotion and evaluation [7,11,12]. The historical and political-institutional milestones that justify this important growth in evaluation studies feature the publication of PNPS in 2006 and its update in 2014; the creation of the National Health Promotion Network since 2006; the Guidebook Project (Useful Guide for Interventions in Physical Activity in Latin America), from 2008 to 2011; the launch of the Strategic Action Plan for Confronting NCDs, in 2011; and the PAS itself [7,8,11]. The Brazilian Ministry of Health also developed a partnership with Brazilian universities and the U.S. Centers For Disease Control (CDC), which joined the Guidebook Project to assess programs and policies to promote physical activity in various states of Brazil [11,47]. The Brazilian Ministry of Health also provided strong induction and funding for studies to evaluate the two programs [12].

After this process of incentivizing the evaluation of the PAC and PAS, in 2011 the Brazilian Ministry of Health, through the Department of Science and Technology (DECIT) and the Brazilina National Research Council (CNPq), approved a project in partnership with 11 universities to assess the effectiveness, deployment, and implementation of these programs and the barriers and facilitators for health promotion, especially leisure-time physical activity [12]. Thus, most of the evaluations between 2013 and 2020 were financed or induced by this project, showing the importance of actions to foment improvement of public policies to support studies and encourage evaluations [11,12,48]. The Health Surveillance Secretariat (Brazilian Ministry of Health) also provided incentives for the creation of a monitoring system for the PAS, supporting the municipalities in the follow-up of the programs' implementation and functioning in the country [10]. Another important milestone that contributed to monitoring and evaluation was the inclusion of physical activity in Brazilian population-based surveys, such as the *Surveillance System for Risk and Protective Factors for Chronic Diseases via Telephone Survey* (Vigitel), the *Brazilian National School Health Survey* (PeNSE), and the *Brazilian National Health Survey* (PNS), allowing surveillance of physical activity in the Brazilian population [49].

The review identified the following evaluation approaches in the PAC and PAS: evaluability [27,28], sustainability [29,30], process [3,4,10,29,31,32,33,34,35], and outcome [3,13,31,32,36,37,38,39,40,41,42,43,44,45,46] and the degrees of inference of adequacy [3,4,10,29,31,32,33,34,35,36,40,43,44,45], plausibility [13,37,38,39,42,46], or probability [41], which varied according to the program and its nature, characteristics, and objectives. The evaluative approaches are consistent with what is predicted in the theoretical frameworks, as they must be selected according to the object to be evaluated and the objective of the evaluation, and the evaluator must have creativity and knowledge to properly choose the method to be used [50]. Thus, there are, first, the studies of evaluability, with the construction of the logical model, which correspond to the first step to evaluate a program, with the objective of determining if what was planned actually occurred. Later, it is necessary to evaluate the program's products and impact, verifying whether the results are in fact related to the activities, also present in the studies analyzed. The different evaluative approaches carried out in the PAC and the PAS show that the implementation of a program's evaluation requires designing a matrix that presents the approaches, criteria, indicators, and parameters to be used, as well as the respective information sources [51], like presented in the studies analyzed.

The evaluation process should be built on logical, coherent, and rational foundations, using research approaches and instruments that guarantee the results' consistency, validity, and reliability [52]. Moreover, the evaluation should be a permanent and systematic process linked to the activities and aimed at backing the definition of problems, reorienting strategies, furnishing elements for trans-

formation of the practices, and measuring the activities' impacts, thereby fostering an increase in the activities' efficiency, efficacy, and effectiveness [52]. Evaluation also favored individual and collective learning serving as a tool for transformation and innovation that allows the development of a democratic culture and critical vision of the established process [53]. However, it is also necessary to institutionalize evaluation at all levels of the health system and to create a true culture of evaluation [53], since the services, policies, and programs need to be measured, reoriented, and especially based on evidence [54].

As for the levels of evidence, most of the studies were level 4.b – Cross-sectional study [3,4,10,13,31,33,34,35,36,37,38,39,42,45,46], followed by 4.d – Case study [27,28,29,30,32,40,43,44], and 2.c – Quasi-experimental controlled prospective study [41]. In evaluation research in the health field, practically all types of epidemiological studies can be used [55]. The choice of study design also depends on the evaluation's objective and the availability of technical and financial resources for its execution [51,55]. From a quantitative methodological perspective, the experimental design is considered the gold standard for evaluation of efficacy, but it is rarely applied due mainly to ethical and operational issues [55]. Observational designs are the most widely used in health evaluations, given the ethical issues and the complexity of interventions in collective health and their relationship to the context [51] like is the case with the studies analyzed. Case studies and qualitative techniques are used to analyze the practices' relational dimension [51]. Thus, the evaluations carried out in PAC and PAS showed conceptual and terminological diversity, the use of different research designs and evaluative approaches.

The evaluations' results showed that participation in the PAC or PAS had a positive impact on users' health indicators and contributed to the increase in leisure-time physical activity [3,32,36,40,43,44,45]. The health benefits of physical activity are well-established, including the prevention of NCDs and their risk factors, improvement in mental health, social interaction, and increased cardiorespiratory and muscular resistance [1,56]. The PAC and PAS thus promoted and expanded opportunities for physical activity and strengthened health promotion activities in Brazil [18]. These programs are also aligned with the global goals and 2030 Agenda, since they promote health and provide knowledge for the population on the importance and value of physical activity and other healthy habits [56,57,58], besides creating and maintaining environments that favor the population's rights, by allowing equitable access to places and spaces for physical activity in cities and communities [56]. However, the PAS and PAC still pose challenges for the planning, organization, supply, and maintenance of activities, as well as for the construction of new gyms, costing, and upgrading of the services supply. Added to this are challenges for administration at all levels of government, since strategies are needed to avoid returning the budget funds and to guarantee that the cities have the program in their services network [4]. This scenario has become even more challenging in Brazil with the encroachment of fiscal austerity policies and the resulting freeze on budget funding in health, plus evidence of dismantlement of numerous public policies, which threatens the continuity and sustainability of community physical activity programs, besides exacerbating the increase in social inequalities and aggravating health indicators [14,59].

The study has some limitations: the selection criteria of the conceptual frameworks for the classification of evaluation approaches was based on classical authors from the evaluation field, but there are other theories and approaches that can be applied. However, this choice is also related to the evaluator's subjectivity and praxis. The selection only used four databases, but those four covered the most important scientific production in the health field. Reviews frequently lead to a broader and less defined search, the objective of which is to provide an overview of the available research evidence without producing a concise answer to a specific research question. Taking this limitation into consideration, we would need multiple structured questions to furnish more precise evidence on the criteria chosen for this study: type of evaluation, indicators, and degree of inference.

The review's strengths include the variety of studies published in the last 12 years on the evaluations done in the PAC and PAS, which allowed identifying diverse evaluation approaches, using quantitative, qualitative, and mixed methods, besides presenting outstanding experiences in Brazil.

Conclusion

This scoping review included 24 studies published from 2009 to 2020. The evaluation approaches referred to evaluability, sustainability, process, and outcome. The evaluations evidenced that the PAS and PAC serve as effective strategies in health promotion and incentivize physical activity in the context of the SUS, positively impacting users' health indicators and increasing leisure-time physical activity. The results allow expanding the understanding of the evaluations that were performed in the PAC and PAS, providing elements on the evaluation approaches that can be adapted to future evaluations, besides describing an overview of these programs and their impact on health promotion in Brazil. They also reinforce the importance of continuity and investments in community physical activity programs, especially in a scenario of political and financial instability that jeopardizes the sustainability of social and health programs and policies.

Studies are essential in the form of systematic reviews, meta-evaluations, and new evaluation studies, both local and national, that verify the continuity of the programs and the activities implemented, coverage, access, effectiveness, and impact, as well as evaluation of interference from the political and economic context on physical activity, and maintenance and investment in community physical activity programs, which have proven so beneficial for health promotion.

Contributors

A. G. Silva, E. J. S. Prates, and D. C. Malta contributed to the study project and conception, data analysis and interpretation, writing of the article and critical revision, and approval of the final version for publication; All authors are responsible for all aspects of the work in guaranteeing the accuracy and integrity of all its parts.

Additional informations

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Resumo

Os programas comunitários de atividade física foram criados para incentivar e aumentar esta atividade na população brasileira e promover hábitos de vida saudável. O Ministério da Saúde investiu na avaliação desses programas e consolidou parcerias que favoreceram a construção de importantes marcos sobre o tema. Este estudo objetivou identificar e sintetizar as evidências científicas sobre as abordagens e resultados das avaliações realizadas no Programa Academia da Saúde e Programa Academia da Cidade. Trata-se de uma revisão de escopo baseada na metodologia do Instituto Joanna Briggs. Utilizaram-se as bases MEDLINE via PubMed, LILACS, Scopus e Cochrane, o site do Programa Academia da Saúde, o Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior e a Biblioteca Digital Brasileira de Teses e Dissertações. Incluíram-se estudos primários quantitativos ou qualitativos, sem limite temporal. Selecionaram-se 24 publicações entre 2009 e 2020, que foram subdivididas de acordo com as abordagens da avaliação: avaliabilidade, sustentabilidade, processo (oferta e estrutura), resultado (impacto e satisfação) e grau de inferência (adequação, plausibilidade e probabilidade). Os resultados das avalições mostraram que os programas oferecem diversas atividades, impactam positivamente nos indicadores de saúde dos usuários e contribuem para o aumento de atividade física no lazer. A avaliação desses programas é fundamental para a gestão, serviços de saúde e profissionais, pois permite verificar a implementação das ações propostas, a cobertura, o acesso e o impacto, bem como a interferência do contexto político na sua continuidade.

Avaliação de Programas e Projetos de Saúde; Promoção da Saúde; Atividade Motora; Revisão

Resumen

Los programas comunitarios de actividad física fueron creados para incentivar y aumentar la práctica de actividad física en la población brasileña y promover hábitos de vida saludable. El Ministerio de Salud de Brasil invirtió en la evaluación de estos programas y consolidó colaboraciones que favorecieron la construcción de importantes evidencias sobre este asunto. Este estudio tuvo el objetivo de identificar y sintetizar las evidencias científicas sobre los abordajes y resultados de las evaluaciones realizadas en el Programa Academia de la Salud y Programa Academia de la Ciudad. Se trata de una revisión de alcance, basada en la metodología del Instituto Joanna Briggs. Se utilizaron las bases MEDLINE a través de PubMed, LILACS, Scopus y Cochrane, el sitio web *del Programa Academia de la Salud, el Catálogo de Tesis y Disertaciones de la Coordinación de Perfeccionamiento de Personal de Nivel Superior y en la Biblioteca Digital Brasileña de Tesis y Disertaciones. Se incluyeron estudios primarios cuantitativos o cualitativos, sin límite temporal. Se seleccionaron 24 publicaciones entre 2009 y 2020. Se subdividieron de acuerdo con los abordajes de evaluación: disponibilidad, sostenibilidad, proceso (oferta y estructura), resultado (impacto y satisfacción) y grado de inferencia (adecuación, plausibilidad y probabilidad). Los resultados de las evaluaciones mostraron que los programas ofrecen diversas actividades, impactan positivamente en los indicadores de salud de los usuarios y contribuyen al aumento de actividad física en el ocio. La evaluación de estos programas es fundamental para la gestión, servicios de salud y profesionales, puesto que permite verificar la implementación de las acciones propuestas, la cobertura, el acceso y el impacto, así como la interferencia del contexto político en su continuidad.*

Evaluación de Programas y Proyectos de Salud; Promoción de la Salud; Actividad Motora; Revisión

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