

Research Training Program: Duke University and Brazilian Society of Cardiology

Lucia Campos Pellanda^{1,2,4}, Claudia Ciceri Cesa^{1,2,6}, Karlyse Claudino Belli^{1,3,10}, Vinicius Frayze David^{1,11}, Clarissa Garcia Rodrigues^{1,6}, João Ricardo Nickenig Vissoci^{6,8,9}, Fernando Bacal^{1,5,7}, Renato A. K. Kalil^{1,2}, Ricardo Pietrobon⁶

Sociedade Brasileira de Cardiologia¹; Instituto de Cardiologia do Rio Grande do Sul / Fundação Universitária de Cardiologia²; Universidade Federal do Rio Grande do Sul³; Universidade Federal de Ciências da Saúde de Porto Alegre⁴; Universidade de São Paulo⁵; Duke University⁶; Instituto do Coração (InCor) – HCFMUSP⁷; Faculdade Ingá⁸; Pontifícia Universidade Católica de São Paulo⁹; Serviço de Cardiologia do Hospital São Francisco da Santa Casa de Misericórdia de Porto Alegre¹⁰; Instituto de Psicologia da Universidade de São Paulo¹¹

Abstract

Background: Research coaching program focuses on the development of abilities and scientific reasoning. For health professionals, it may be useful to increase both the number and quality of projects and manuscripts.

Objective: To evaluate the initial results and implementation methodology of the Research and Innovation Coaching Program of the Research on Research group of Duke University in the Brazilian Society of Cardiology.

Methods: The program works on two bases: training and coaching. Training is done online and addresses contents on research ideas, literature search, scientific writing and statistics. After training, coaching favors the establishment of a collaboration between researchers and centers by means of a network of contacts. The present study describes the implementation and initial results in reference to the years 2011-2012.

Results: In 2011, 24 centers received training, which consisted of online meetings, study and practice of the contents addressed. In January 2012, a new format was implemented with the objective of reaching more researchers. In six months, 52 researchers were allocated. In all, 20 manuscripts were published and 49 more were written and await submission and/or publication. Additionally, five research funding proposals have been elaborated.

Conclusion: The number of manuscripts and funding proposals achieved the objectives initially proposed. However, the main results of this type of initiative should be measured in the long term, because the consolidation of the national production of high-quality research is a virtuous cycle that feeds itself back and expands over time. (Arq Bras Cardiol 2012;99(6):1075-1081)

Keywords: Research Groups; Study Programs; Training.

Introduction

Research in the health area is constantly being updated and Brazil has a prominent position in the worldwide scenario. In 2011, Brazil published 16,024 manuscripts in the PubMed reference database¹. According to SCImago, whose database is Scopus, Brazil ranks 15th in publication worldwide².

The number of research groups has been growing exponentially in the country^{3,4}. In contrast, the number of researchers with clinical and statistical experience to support these groups increases at a slower pace⁵. A research coaching program targeted at the development of skills in research for health professionals may be useful to increase both the number and quality of research projects and manuscripts published. Based on this concept, the Brazilian Society of Cardiology (Sociedade Brasileira de Cardiologia – SBC)

entered into a partnership with the Duke University's Research on Research group to implement the Research and Innovation Coaching Program both for centers and/or institutions and for associate professionals related to cardiology⁶⁻⁸. The objective of the present manuscript is to describe the methodology and initial results of the implementation of this program in SBC.

Methods

The overall objective of the Duke University's Research on Research group is to study research processes in order to use the best possible practices and to disseminate knowledge by means of coaching programs^{6,7}. The Research and Innovation Coaching Program was created from this premise. In The Brazilian Society of Cardiology, the program was implemented as part of the SBC's policy of increasing research in our midst. The project took shape at the initiative of SBC's Research Board, which was created by Antônio Carlos Chagas in the 2008-2009 administration. It was further developed and adopted training and coaching programs to train human resources for clinical research in the next administrations (2010-2011 and 2012-2013

Mailing Address: Lucia Campos Pellanda •

Av. Princesa Isabel, 370, 3^o andar, Bairro Santana, Porto Alegre. Postal Code 99620-000, RS - Brazil

E-mail: lupellanda@gmail.com

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– with chairmen Jorge Ilha Guimarães and Jadelson Pinheiro de Andrade, respectively). In addition to the program reported in this manuscript, classroom courses on research coaching in several Brazilian cities, as well as the elaboration of an online course in SBC's Corporative University⁸⁻¹⁰ were included in the SBC's strategic planning as of 2010. In this context, the objective of the implementation of the Research Coaching program in SBC was to train researchers from the elaboration of an original, relevant and internally consistent research question to the writing of scientific manuscripts, focusing on international publications and funding proposals.

Implementation of the Research Coaching Program in the Brazilian Society of Cardiology

The program was implemented with a coordinating team, as shown in Figure 1. The team is composed of an international coordinator, a national coordinator, a national manager and three deputy managers⁹.

In September 2010, the program was announced during the 65th Brazilian Congress of Cardiology¹¹, when a series of meetings took place with the main purpose of prospecting researchers affiliated to cardiology centers in Brazil who were interested in implementing the program in their respective institutions.

In the period of 2010-2011, a managing model was adopted, in which the scientific coordinator affiliated to the Center would appoint an operational coordinator who would receive training from the coordinating team. In counterpart, this operational coordinator should be in contact with the Center scientific coordinator to pass on the information to the other fellow researchers. As from January 2012, the model adopted was started by being announced to SBC associates, with the purpose of recruiting professionals interested; after the groups were formed, the coaching program was implemented (Table 1).

Overall, in both formats, the Research Coaching program emphasized the process based on two pillars: training and coaching. Training refers to the capacity building program for researchers with different levels of background within the platforms of elaboration of research questions (question diagram); scientific writing (templates for introduction, materials and methods, results and discussion) with further production of scientific articles; research projects; and funding proposals. Coaching is the implementation of these training elements applied to the contact network for the elaboration of projects and/or manuscripts in partnership with different institutions and researchers. Figure 2 shows the flowchart/algorithm of the program operation.

2010-2011 Format

In this period, the following structure was used for the research centers: each of the research centers in cardiology related to the program had a scientific coordinator and an operational coordinator. The role of the scientific coordinator was to support the scientific activities of the Research Coaching in their home institution, and to watch the operational coordinator's activities. The operational coordinator should: [1] dedicate part of their time only to the Research Coaching; [2] be in constant contact with the members of the national program coordination; and [3] be in

charge of the operationalization of the Center activities, under the supervision and with the support of the national coordinating team and of the scientific coordinator.

By the time the research centers were included in the Research Coaching Program, the researchers were asked to include a research project whose data had already been collected, so that the research question could be rediscussed and the manuscript writing could be initiated based on the Research on Research platforms.

The training content in the first format (2010-2011) recommended:

- presentation of communication tools (gmail™, skype™, etc);
- identification of a relevant research question by the scientific coordinator;
- elaboration of the Question Diagram (QD) to verify research question's originality, relevance and internal consistency;
- elaboration of a search strategy for literature review;
- scientific manuscript writing with the help of the scientific writing templates for:
 - Introduction;
 - Methods;
 - Results;
 - Discussion;

Coaching was performed after training and its basic principle was to connect the researchers and cardiology centers being trained to researchers and research centers with similar interests, thus increasing the collaboration network between research centers inside and outside the country.

- 2012 Format – current format
 - In the second format adopted (2012 – current), the training became more encompassing in terms of content, and with a predetermined format. It includes nine weekly meetings (total duration of nine weeks), addressing the following contents:
- Meeting 1: Presentation meeting
 - Online meeting where the work group for the next eight meetings is defined and the work form is determined (working logistics, deadlines, weekly meetings schedule, etc).
- Meeting 2: module 1 - communication
 - Presentation of online communication tools that will be used throughout the training and that are also used by the Research on Research group.
- Meeting 3: module 2 – question diagram
 - Question diagram is a document used for formulation and verification of internal consistency and relevance of the research question proposed.
- Meeting 4: module 3 – literature search
 - Tutorial videos show how to build a literature search strategy, and how to apply it in indexed databases such as PubMed¹².
- Meeting 5: module 4 – scientific writing: introduction
 - With the use of a template, a writing structure for the introduction section of a scientific manuscript is presented to the researcher.

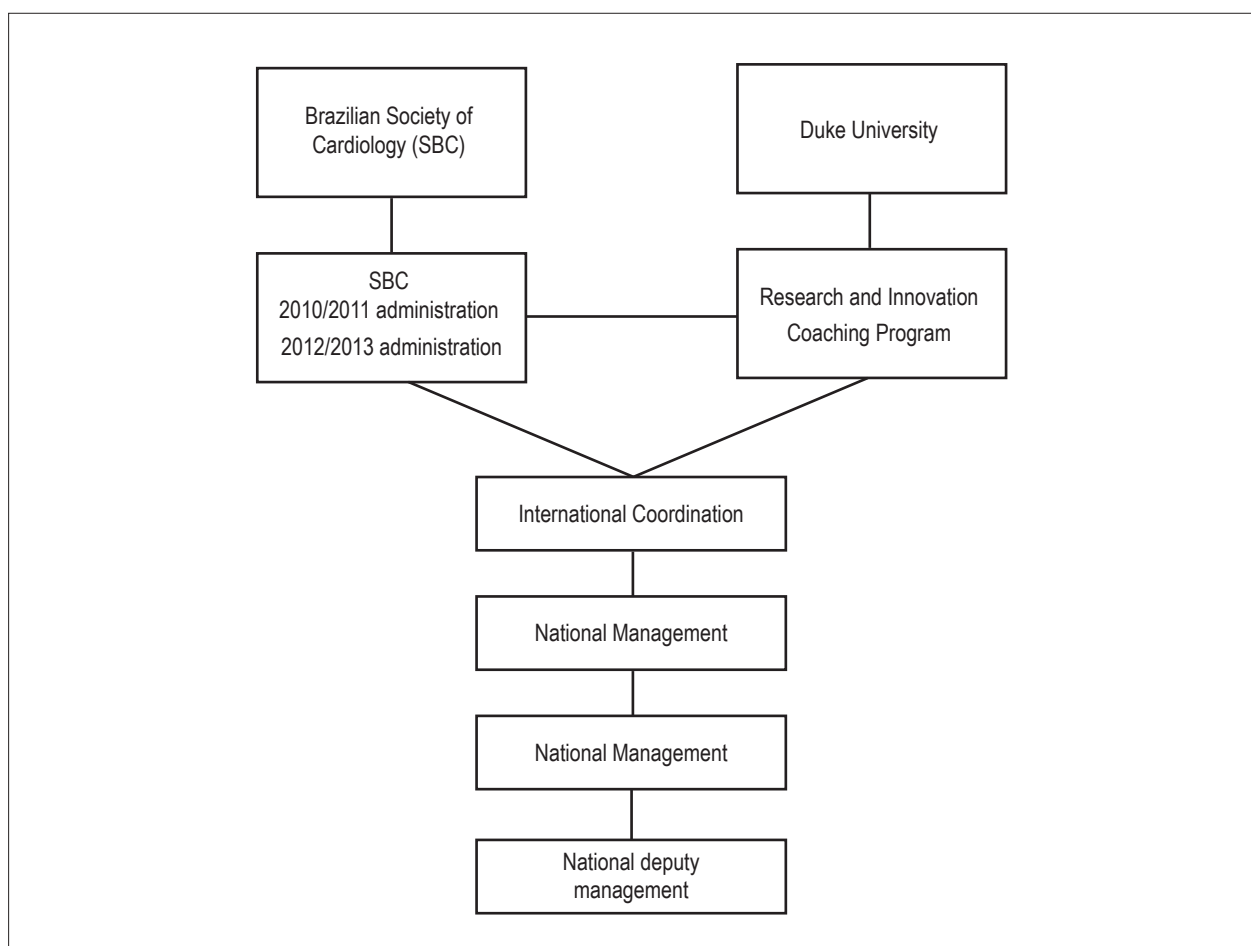


Figure 1 – Coordenação do Research Coaching Program na Sociedade Brasileira de Cardiologia.

Table 1 – Implementation format of the training

Period	Logistics
2010 – 2011 Format:	[a] recruitment of cardiology centers; [b] identification of the scientific coordinator and operational coordinator; [c] implementation of the training program.
2012 Format:	[a] program announcement and enrollment for SBC associates interested; [b] group formation for implementation of the training program.

- Meeting 6: module 5 – scientific writing: methods and results
 - With the use of templates based on different research designs, a writing structure for the methods and results sections is presented to the researcher.
- Meeting 7: module 6 – scientific writing: discussion
 - Same as in the two previous topics, a template of how to organize and write the discussion section of the manuscript is presented to the researcher.
- Meeting 8: module 7 – using the R program for statistical analyses part I:

- Introduction to the R program™ and language environment. The R program™ and language¹³ is a freeware or open-source software program that has been proven a robust statistical program.
- Meeting 9: module 8 – using the R program for statistical analyses part II:
 - Continuation of the approach to the R program and language environment.

In addition to the change in the training format, the focus is currently on the researcher and no longer on the research Center. This change was necessary because it was observed that, in the first format, the scientific coordinator frequently

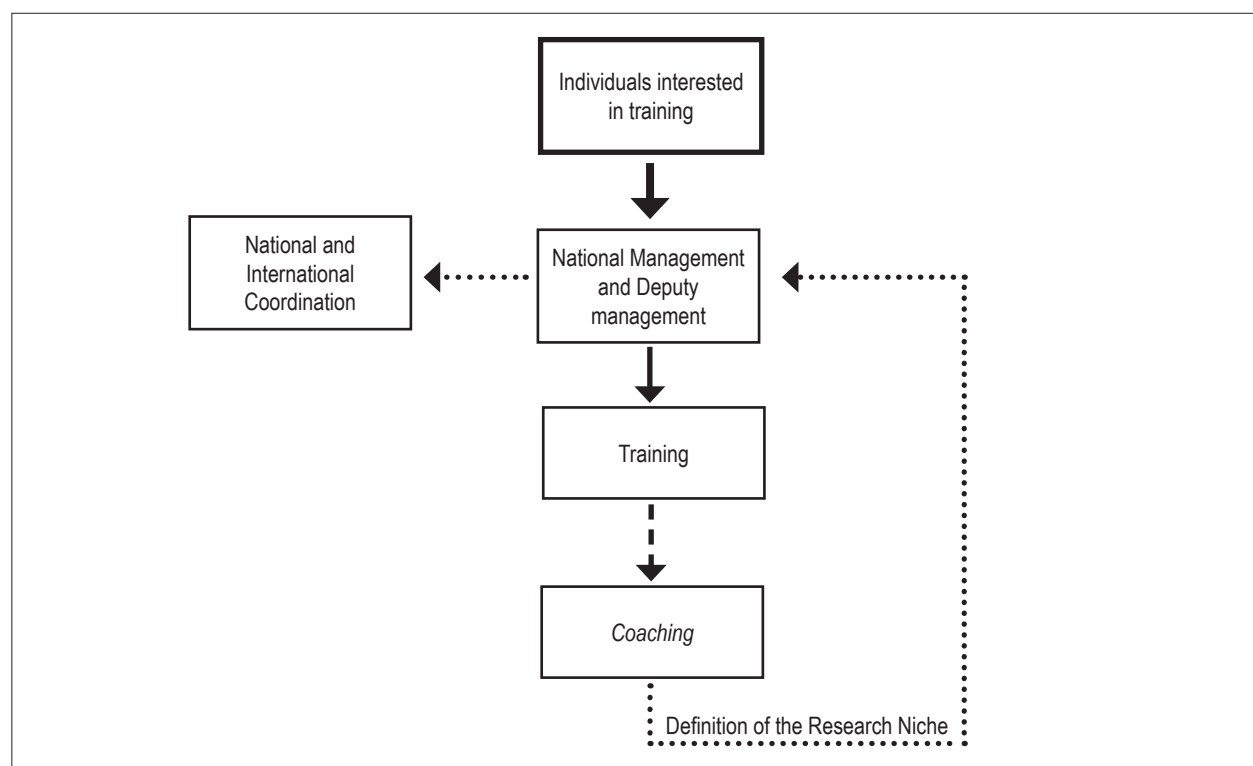


Figure 2 – Flowchart/algorithm of the program operation.

also assumed the duties of the operational coordinator. Therefore, all SBC associates now have the opportunity to participate in the Research and Innovation Coaching Program provided by SBC, regardless of their affiliation to established or new research centers. Thus, dissemination of research practice is possible anywhere in the country where there is a cardiologist supported by the central structure headquartered in SBC.

Scientific niche

After the training process, the group seeks to identify the research niches which researchers and centers may be linked to. Each niche was developed from the differentiation of a specific area found within a group. These areas will emerge from the expertise of the researchers previously involved in each Center and from the potential for the development of that area. The niche takes into consideration the differentiation that this group will reach in the scientific world, data accumulation, researchers experience to explore these data, and the associated network with political influence to open doors to new projects and ideas involving the niche.

Results

During the 65th. Brazilian Congress of Cardiology, the partnership between the Duke University's Research and Innovation Coaching Program and the Brazilian Society of Cardiology¹¹ was disclosed. After disclosure, calls were made for interested researchers and centers. In the 2010-2011

format, 24 centers were interviewed to verify the feasibility of the program in the institutions: 12 centers completed the training process (Table 2).

In the 2012 format, the program had seven groups for training in the first semester, in a total of 52 enrollments. Figure 3 shows data on the production of researchers and centers in the program up to the first two months of 2012. In addition to the projects and manuscripts dealt with during the specific training, the participating researchers also produced new research projects and research funding proposals.

Discussion

The Duke University's Research and Innovation Coaching Program developed training based on a series of models, standardized operational procedures, videos, and other materials to facilitate the research process of research groups focused on the health area. These platforms seek to streamline collaboration between researchers and to connect the different stages of the research processes. The results of the implementation of the SBC's Research and Innovation Coaching Program presented in this manuscript show that the training and coaching process may help researchers from the Cardiology area in Brazil to develop their research projects in an objective and straightforward manner, with speedy publication of results.

Researchers must be prepared to formulate clinically original, relevant, and methodologically solid research questions. They should also be able to find adequate sources for their data, plan and develop the statistical analysis, and generate a final

Table 2 – Participating centers of the Research Coaching Program – Brazilian Society of Cardiology

Research Center
Instituto do Coração (InCor)
Instituto de Cardiologia de Cruz Alta (ICCA)
Hospital Universitário de Santa Maria (HUSM)
Instituto de Cardiologia do RS (IC/FUC)
Universidade Federal do Rio Grande do Sul (UFRGS)
Instituto de Cardiologia Dante Pazzanese
Santa Casa de Porto Alegre (Setor Clínico)
Santa Casa de Porto Alegre (Setor Cirúrgico)
Hospital Cardiológico Constantini
Universidade Federal do Rio de Janeiro (UFRJ)
Hospital Lifecenter de Belo Horizonte
Instituto de Moléstias Cardiovasculares

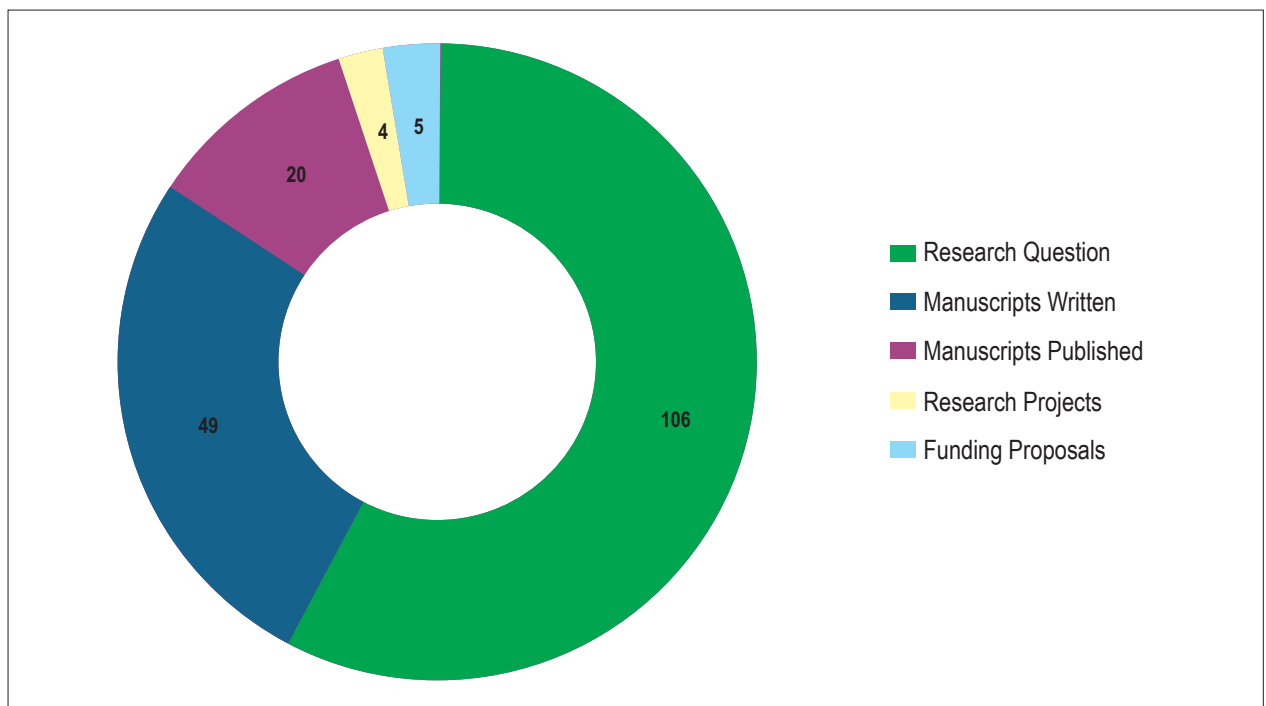


Figure 3 – Production of participating researchers and centers up to the first two months of 2012.

manuscript to be disseminated among the scientific community⁵. While the use of statistics is vital for the analysis of the projects' results, clinical thinking is fundamental to formulate hypotheses to be tested and to guide the statistical plan^{14,15}.

Interdisciplinary approach is key to integrate all steps that involve research projects¹⁶, because biomedical professionals are usually prepared to perform only some of these steps⁵. However,

the different levels of knowledge and academic background of health professionals may sometimes impair communication between researchers^{14,15}. As a consequence, collaboration between researchers may be difficult or scarce⁵. Thus, the training structure has been improved to currently include eight modules encompassing from tools to improve communication between researchers to robust open-source statistical programs (freewares).

There are mechanisms used for researcher selection that provide insights that may be used in research training programs, thus optimizing the process to produce high-impact results for the scientific community¹⁷. The online training model may bring better results regarding the learning of scientific writing in comparison to classroom training¹⁸.

In a complementary fashion, different types of benefits are expected for cardiologists and/or health professionals working in the Cardiology area who are attending the training program. Training will enable these professionals to understand their clinical practice and the reality of the population served in each site, with their own epidemiological characteristics, thus qualifying the process of production of specific evidence for these patients. Additionally, the project concept itself involves the dissemination and multiplication of knowledge to other colleagues, regions and contexts, with the formation of collaboration groups and intensification of this production of evidence. Ultimately, this process may result in improvement of the data available for SBC and the Brazilian Cardiology in general, thus giving support to health policies.

Conclusion

The results of the Research and Innovation Coaching Program at SBC show that the training and coaching process may help researchers of the Cardiology area in Brazil to develop their research projects in an objective and straightforward manner, with speedy publication

of results. However, the most important results of this type of initiative should be measured in the long term, because the consolidation of high-quality national research production is a virtuous cycle that feeds itself back and expands over time.

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Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

This study is not associated with any post-graduation program.

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