

DATA STRATEGIES FOR ARTIFICIAL INTELLIGENCE, MANAGEMENT AND RESEARCH IN PHYSICAL EDUCATION, SPORTS AND LEISURE

eME
eMuseum of Sports





PRESENTATION

The unifying motto for the Olympic and Paralympic Games in Paris 2024, “Games Wide Open,” serves as a global call for Olympic scholars to convene in Paris for an exhibition of innovation and novel experiences. The 2024 iteration of the Olympics is posited as an embodiment of the “Games of the Future,” a concept central to the 11th International Sport Business Symposium’s thematic directions. Overall, the Symposium supports the IOC Agenda 2020+5 and the newly promulgated Olympic AI Agenda—both documents delineate mega trends and strategies to ensure that the Games and Olympic Movement remain innovative amidst the challenges of the Digital Era. Concerning these propositions, the Symposium’s 11th edition was distinguished by hosting the inaugural presentation of booklet titled “Data Strategies for AI, Management, and Research in PE, Sports, and Leisure”.



This non commercial publication, authored by a team of scholars including Bianca Pena and Lamartine DaCosta—who also contributed to this symposium—aligns with both the Symposium’s themes and the progressive strides of the Olympic Movement and Paris Olympics. Originating from the State University of Rio de Janeiro—a longstanding collaborator with previous Symposium editions—the booklets’ themes resonate with the enduring Olympic pursuit of excellence. We trust that this forthcoming edition will be met with acclaim and will embody the Olympic ethos of ‘faster, higher, stronger,’ which inspires us all.

Prof Dr Holger Preuss

11th International Sport Business Symposium
Paris, August 8th, 2024

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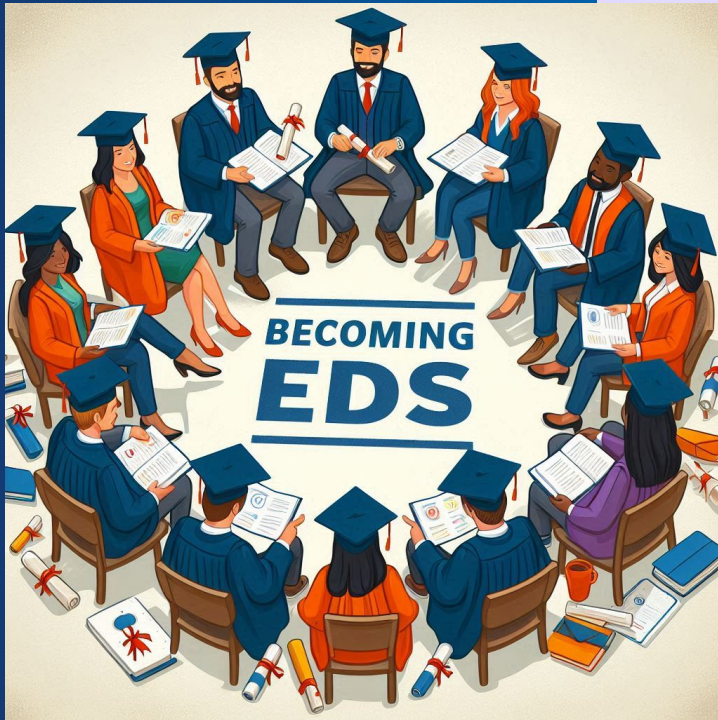
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Eliane de Freitas Leite - Bibliotecária - CRB 8/8415

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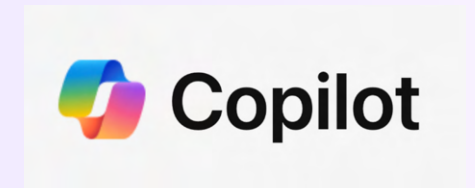
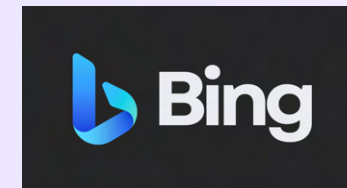


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BACKGROUND OF THE STUDY AND PROACTIVE APPROACHES TO AI



INTRODUCTION

Lamartine DaCosta

Author - Organizer

This publication is a proactive and collaborative achievement between Generative AI and human expertise, designed with an interface that prioritizes ease of use, offering brief, clear texts alongside visual aids. It introduces readers to a condensed version of the contents, guiding them through the organized knowledge and providing internet links for access to in-depth information. This digital library is customized to fit the unique interests and choices of each reader, featuring a curated collection of Position Papers, articles, and books that contribute to the structured knowledge base. Thus, the publication specifically addresses data collection and management within Brazil's Physical Education and sports sectors, presenting five case studies that illustrate the use of traditional analog archives and a sixth accomplishment that introduces a digital and updated Database model for ongoing developments.



The role of AI is examined in this context, highlighting its operational dependence on data to provide meaningful insights and functionality. Additionally, the study investigates the application of Data Intelligence and the Small Data model within organizations. These approaches are gaining traction as they offer more human-centric digital interactions or allow organizations to engage with AI on a smaller scale while maintaining autonomy. The focus is on educating organizational members about data management and creating smaller, more relevant data sets that align with specific organizational goals.

The editorial team, comprising eight Editors and one Organizer, was assembled to reflect gender equity. 'they are responsible for crafting the booklet's format and content, ensuring a balance between collective editorial guidance and individual authorial input through Position Papers or references to their scholarly works.



In short, the booklet's experimental nature is underscored by its noncommercial distribution strategy, aimed primarily at the academic community with a strong emphasis on research and university-level education and post-graduate studies. This proactive approach prioritizes scientific knowledge as the cornerstone in addressing AI's hybrid applications. Overall, these choices entail more guarantees in terms of intellectual property and incentives for international collaboration.

Considering the connections of this study with Physical Education and sports, it has also adopted as a general guideline the approaches of Olympic Studies and the recent Olympic Agendas geared towards digital technology and AI.



Position paper - Background, DaCosta 2024:

https://www.sportsinbrazil.com.br/paris_2024/paper_interview.pdf



BASIC REFERENCE POINTS FOR THIS PUBLICATION

Bianca Gama Pena

Rio de Janeiro State University eMuseum of Sport



AGENDA 2020+5

The tradition of Rio de Janeiro State University {UERJ} in Physical Education, sports and the Olympic Movement in particular, is linked to innovation and the publication of advanced knowledge. This leads us to the present work, based on the International Olympic Committee's Olympic Agenda 2020+5. With this general guidance, we selected digital technologies as the base

of the development to be promoted by the descriptive and analytical contents in this booklet. Thus, we assume the role of Olympic Movement stakeholders and entrepreneurs of the Digital Era.



Olympic Agenda 2020+5:15 recommendations
(Lausanne: IOC, 2021)



OLYMPIC AI AGENDA

The Olympic Agenda for Artificial Intelligence (AI) is a more recent advance made by the International Olympic Committee that was also incorporated by this publication as a point of reference. After all, AI represents the front line of digital technology. Thus, as digital innovation and Olympism entrepreneurs, the authors of the studies ahead created answers following the AI Agenda but respecting their own autonomy. Ahead, we present experimental responses to the doubts brought on by the progress of AI.



Olympic AI Agenda (olympics.com)



**CARTILHA DE
PROPRIEDADE INTELECTUAL
E DE DIREITOS DA
PERSONALIDADE
eMUSEU DO ESPORTE
THE EMUSEUM OF SPORT
INTELLECTUAL PROPERTY AND
PERSONALITY RIGHTS
BOOKLET**

Orgs.
**BIANCA GAMA PENA
LAMARTINE DACOSTA**

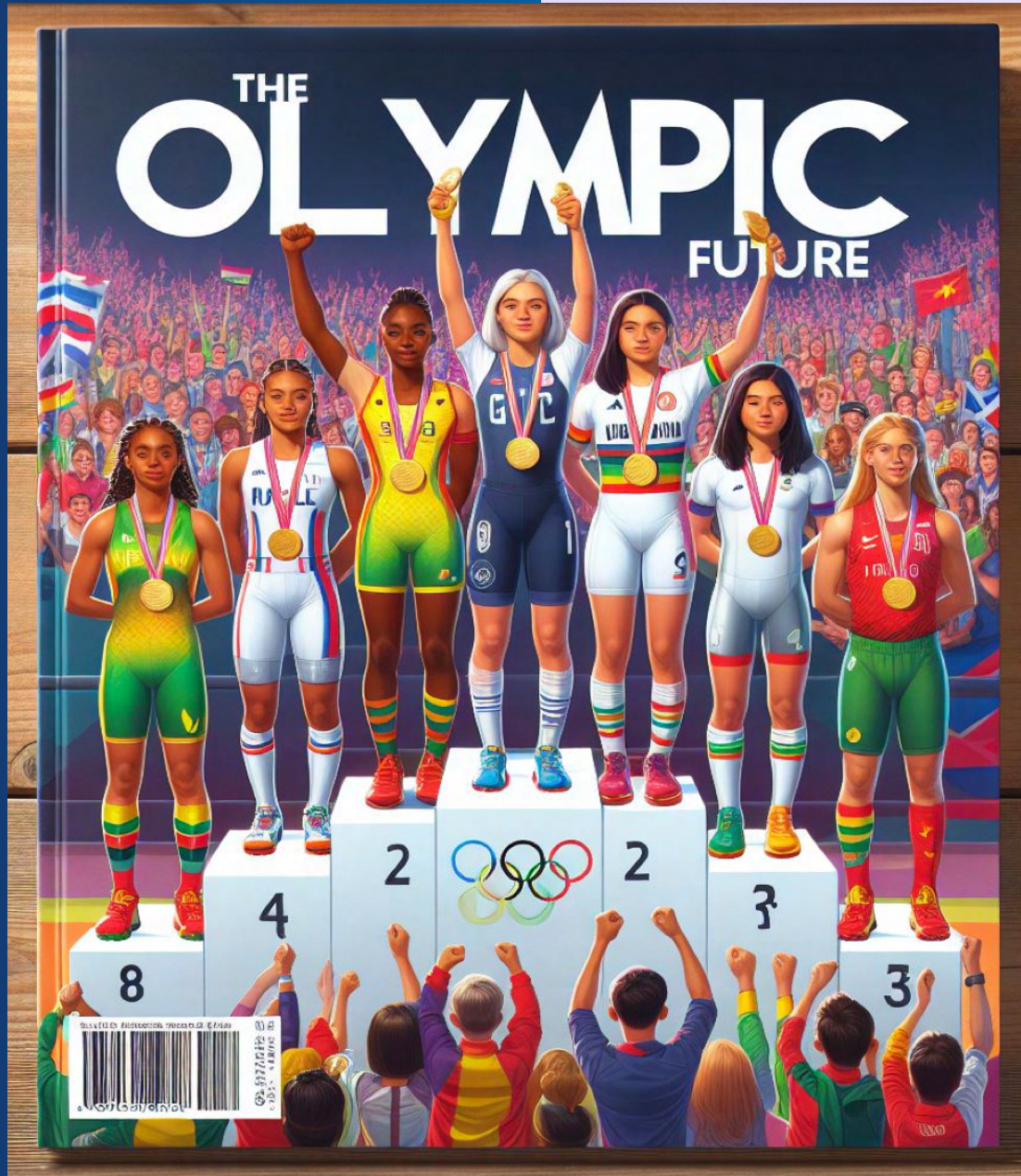


INTELLECTUAL PROPERTY

The digital transition and the insecurity generated by AI due to the demands made by its users has strengthened the requirement of guarantees of originality from authors of academic works. In this context, we strive to obtain recognition from international entities by developing innovative projects. Through the eMuseum of Sport, we received an award from the World Intellectual Property Organization -WIPO as a project that uses IP as a strategy and a means of developing innovation. Moreover, in the context of problems generated by AI in various fields of intellectual production, WIPO joined forces with UERJ's initiatives in Physical Education, sports and Olympic themes, promoting a booklet with guidelines about copyright law. The publication will circulate alongside the present study and can be accessed through the link below.



<https://expo3d.emuseudoesporte.com.br/downloads/Cartilha%20Propriedade%20Intelectual%20impressao.pdf>



INTERNATIONAL COOPERATION

The example of the WIPO collaboration calls attention to the recognition that an innovative project such as this publication gains as the result of international cooperation. The idea to internationalize this study is based on previous experiences. An agreement with Tsukuba University (Japan) during the Tokyo Olympics led to joint scientific publications, while another agreement, with Patras University (Greece), brought about an Erasmus+ agreement for student and faculty mobility (2016-2022). There is also the influence of recent cooperation initiatives with the University of Mainz (Germany) and the sports museums of Athens and Barcelona, involving the licensing of the eMuseum of Sport's software, with the possibility of extension to other museums in the future.



Another international cooperation initiative was the submission of a project to a Canadian business accelerator, aiming to internationalize an extension project from UERJ. Summaries of various international experiences linked to UERJ's Olympic field can be found at the links below.



International Cooperation – eMuseum Sport 2020:

<https://expo3d.emuseudoesporte.com.br/downloads/eBook%20-%20TecnologiaInovacaoStartups%202020.pdf>

Video Cooperation Summit 2024 – Portuguese and English: <https://youtu.be/oE9lG03rN20?si=HmeUQ02PI2dWQyQM>

Olympic Studies - International Cooperation: <https://youtu.be/mXnRRI-rePQ?si=yuRTBs9TDNKADkTe>



SCOPE OF WORK IN EXPERIENCE

SUMMARY OF PROPOSALS AND PRELIMINARY DIRECTIONS



Elizabeth Harris

Review Editor

(1) Define Data Intelligence as the main focus of publication in terms of conducted by institutions or individuals when identifying demands, collecting, and structuring data of local interest or transactions resulting from entrepreneurial activities. Consequently, an internal or group know-how is created for data analysis and use of AI tools, seeking user independence as well as better results.



(2) Describe, through summarized syntheses, past and present examples of data strategy considering approaches to public transparency, management, research, and AI use.

(3) Establish an experimental awareness for both the contents and format of the book.

(4) Create and analyze innovative and hybrid relationships – i.e., with human sharing – for the use of generative AI in light of the data strategies reported and analyzed in the new publication.

(5) Follow current Olympic Agendas regarding Digital Technologies and Artificial Intelligence in view of ethical recommendations from Olympism.



(6) Preserve the practical and didactic meaning of book approaches so as to meet greater demands from Physical Education professionals aimed at technical and scientific knowledge, mainly those from autonomous activities on a smaller scale.

(7) Produce summarized syntheses and images based on a human-machine hybrid composition including in each approach of major importance a link with text from an identified author or formally referenced work.

(8) Prioritize intellectual property and national/international collaboration in definitions and actions recommended for Data Intelligence-related activities.



Lamartine DaCosta

Author - Organizer

“Data” refers to quantitative expressions, such as numbers, degrees, and volumes. They can be presented in various ways, including tables, graphs, textual descriptions, images, or sounds. When analyzed, these data acquire practical meaning and become operational information.

The present study focuses on data as a tool for generating knowledge, managing organizations, and conducting research. Six cases were selected to exemplify strategies for handling data in Brazil and abroad, spanning the period from 1971 to 2024. Four cases (1971, 1999, 2002, and 2005) constitute analog repositories originally published as research in books and are now retrievable as static PDF files.



These cases form accessible collections via the Internet, especially through the Virtual Sports Center (Centro Esportivo Virtual - cev.org.br). Two of these cases (2002 and 2005) are reinterpreted here from the perspective of Data Banks.

Due to their analog nature, these collections have not been updated, although they remain as sources of reference and are suitable for participating in archives accessible to generative AI. The fifth case under examination (2015) emerged as a project involving data modeled from studies and research conducted by various academic entities in Brazil and abroad. These data are retrievable as works published in digital media.



- **Repertories:**

- Analog: 1, 2, 3, and 4
- Mixed file: 5
- Digital file: 6

- **Data bank:**

- 3 and 4

- **Database:**

- 6

- **Static:**

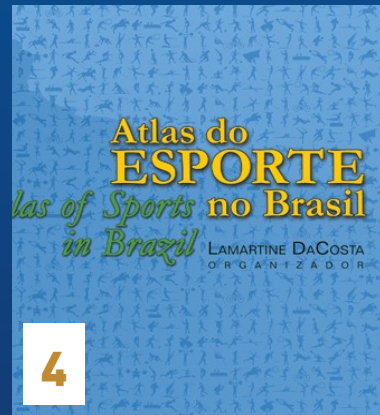
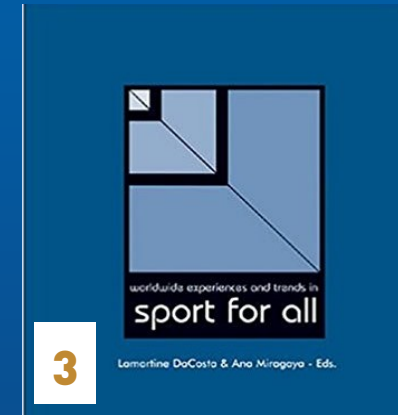
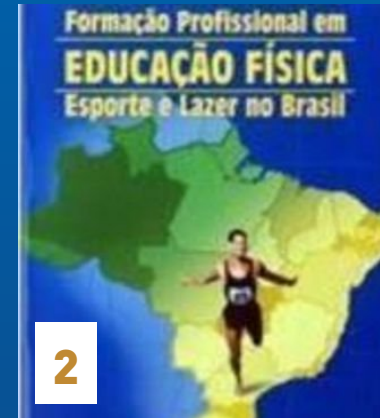
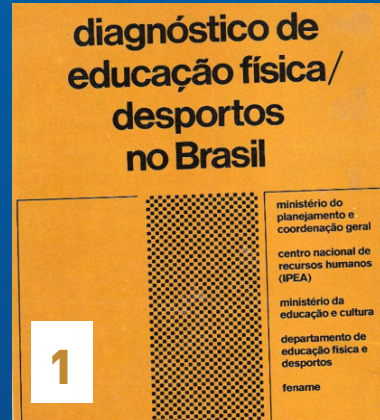
- 1, 2, 3, and 4

- **Dynamic:**

- 6

- **International:**

- 3 and 5.





In turn, the sixth case under examination is the Confef Data Platform, launched in 2024 as a digital technology project. It consists of multiple dynamic files and functions as a database with programmed operational procedures. Unlike the generic and openly queryable Data Bank model, the Confef Platform is more structured and updatable, capable of operating with various connected repositories.

In summary, data strategy involves actions such as identification (demand, nature, availability, quality, quantity, and cost), collection, aggregation, structuring (accessible via references), organization (v.g. Data Bank and Database), and usage management. It's important to note that unstructured data is unable to circulate in digital media.



<https://www.linkedin.com/pulse/understanding-data-definition-importance-its-four-key-manas-jain>

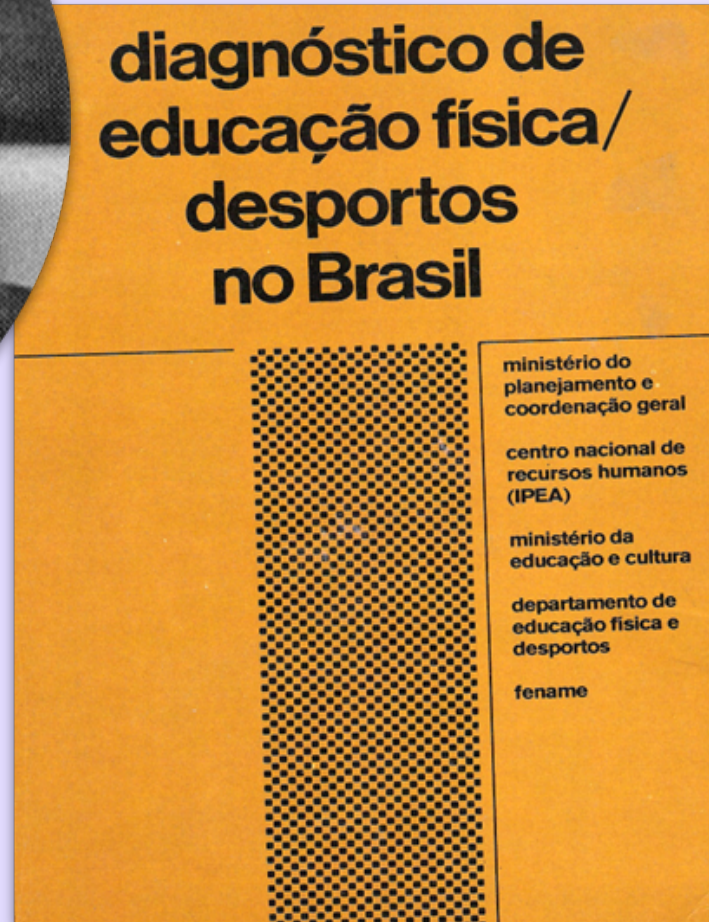
[Journal of Medical Internet Research - Data Work: Meaning-Making in the Era of Data-Rich Medicine \(jmir.org\)](http://jmir.org)



Lamartine DaCosta

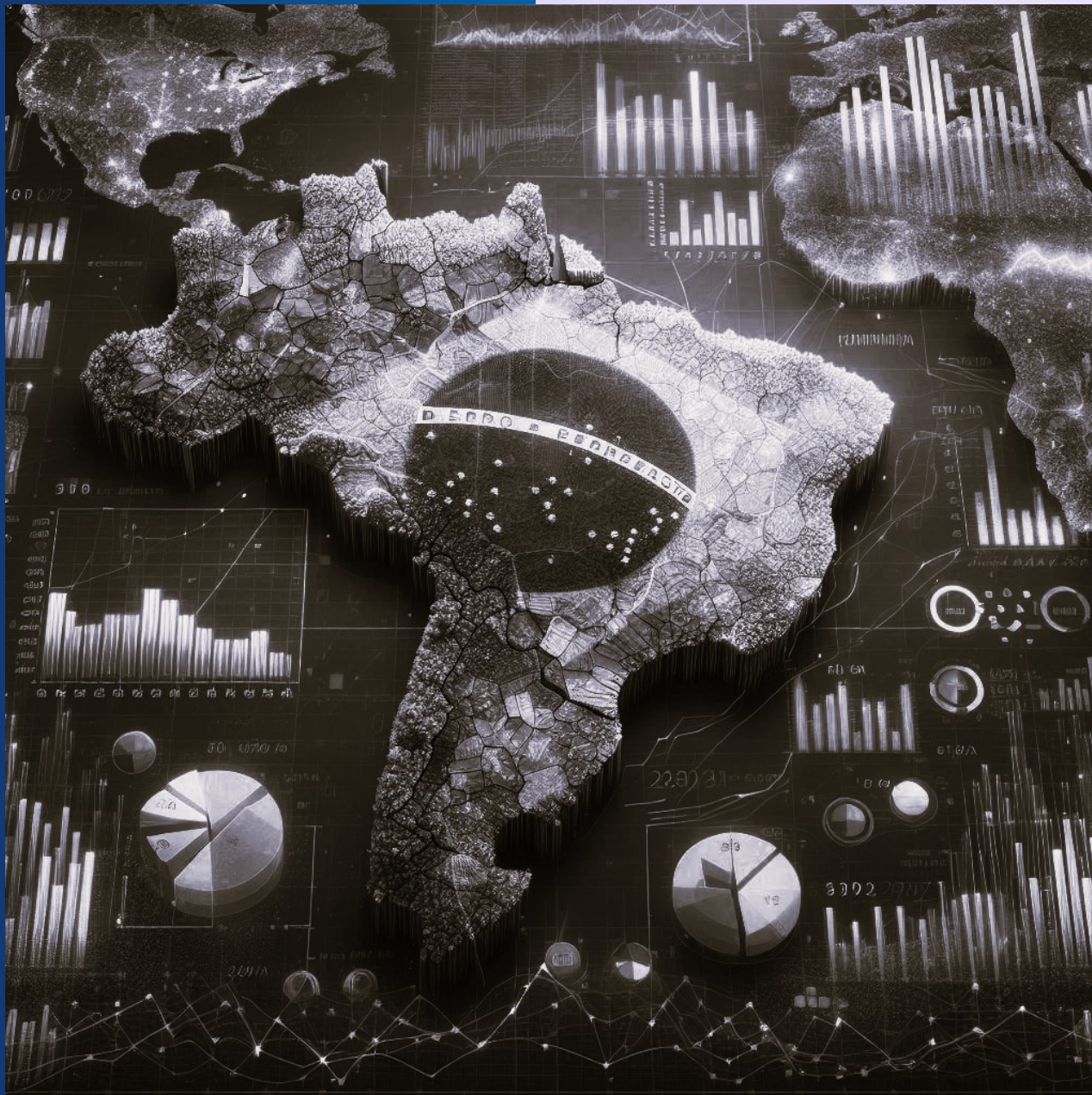
Federal University of Rio de Janeiro 1971

CASE STUDY NATIONAL PE AND SPORT DIAGNOSIS 1971



DEMAND IDENTIFICATION AND DATA COLLECTION

Between 1969 and 1971, the Institute of Applied Economic Research (IPEA), a federal government agency, led the development of the DIAGNÓSTICO as the first data survey about physical activities in Brazil. The project was detailed and coordinated in its execution by Lamartine DaCosta. The team assembled to collect the data consisted of 80 individuals who identified, mapped, and visited 426 respondent institutions across the country.

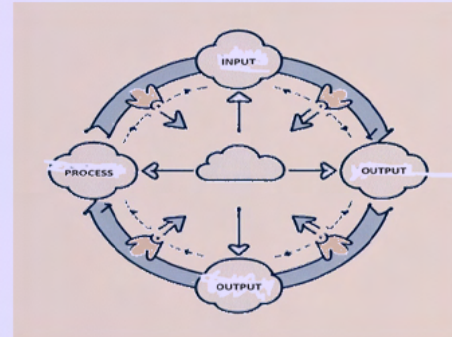
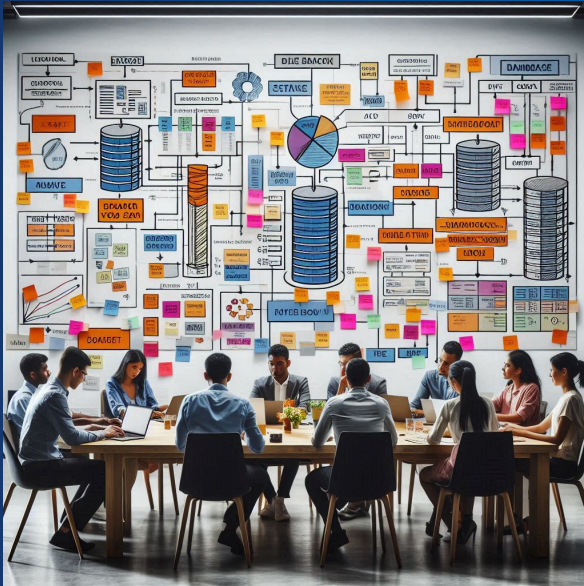


Data structuring and access

The collected information resulted in a 392-page book, including 112 tables with quantitative data and analytical texts. [The publication was made available for free to facilitate public consultations](#)

PE and Sport National Diagnosis 1971 (Portuguese):

<https://cev.org.br/biblioteca/diagnostico-educacao-fisica-desportos-brasil>



SEGMENTATION TRENDS PATTERNS FEEDBACK LOOPS



49 PE Faculties



**17 National Sport
Federations**



**224 State Sport
Federations**



23 PE Regional Councils



**75 Industries, Construction and
Equipments**



26 Govt Institutions



12 Media Institutions



The methodology used in the 1971 Diagnosis for data collection, organization, and interpretation was based on Data Science, which was taking its initial steps at the time. From this theoretical choice, practical methodological paths were derived from the emerging field of System Dynamics for data management, research, and governance. This approach was adopted because there were no statistics available on physical activities in Brazil, and System Dynamics emerged naturally as a solution. In summation, this procedure operated with selected data aggregations, identifying trends and patterns and defining points of process changes (feedback loops). These aggregations allowed for data description and analysis. Today, variations of this methodology are still used within the field of Data Science, which has become predominant in the digital era.



System Dynamics updated (2019):

<https://www.sciencedirect.com/topics/engineering/systems-dynamics>

System Dynamics, J. Forrester in McKinsey Quartely, 1995:

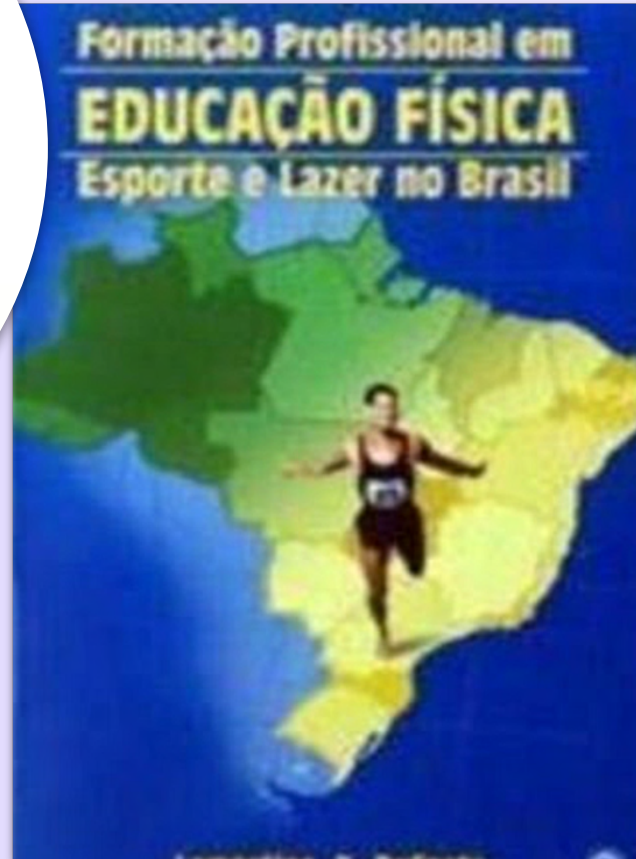
[The beginning of system dynamics | McKinsey](#)



Leandro Nogueira

Federal University of Rio de Janeiro 1999

CASE STUDY OF PROFESSIONAL QUALIFICATION IN PE 1999



DEMAND IDENTIFICATION AND DATA COLLECTION

The survey on professional education in Physical Education in Brazil was carried out in 1999 with the segment of Physical Education colleges due to its increasing prominence in expansion, originally captured in the 1971 Diagnosis. Data collection was conducted by master's and doctoral students in Physical Education who participated in a research project now redefined as an update of the 1971 data.

The field collection phase involved on-site visits to the responding institutions. The researcher responsible for the study and the main author of the book was Lamartine DaCosta.



STRUCTURING AND ACCESS

The data structure was organized similarly to 1971, creating quantitative tables with additional text, but with more refined analyses and historical comparisons with other countries. Aggregation and access were facilitated through a commercially available book with national circulation. Currently, this data repository is freely accessible in the Virtual Sports Center (Centro Esportivo Virtual – CEV), Brazil.



TABELA 8
IES EM EDUCAÇÃO FÍSICA BRASIL 1988/1997
DISCIPLINAS APROFUNDAMENTO/APERFEIÇOAMENTO
PERFIL CURRICULAR ESTADOS GO, DF, MT, MS, PE, MA, PI,
PA, BA e AM (n=14)

DENOMINAÇÃO	ÁREA CURRICULAR	NÚMERO DISCIPLINAS	CARGA HORÁRIA DA ÁREA
UnB – Brasília	20% total créditos	N/d	N/d
U. CATÓLICA BRASÍLIA	7º e 8º períodos	6	360 h/a
UFMT – Cuiabá	Aprofundamento	1	60 h/a
U.F. GOIÁS	Aprofundamento	3	960 h/a
ESFPEGO – Goiânia	6º e 7º períodos	11	660 h/a
U. CATÓLICA D.BOSCO – MS	7º e 8º períodos	9	516 h/a
UFPE – Recife	7º período	6	360 h/a
UFMA – São Luiz	Aprofundamento	6	360 h/a
UFPI – Teresina	Aprofundamento	12	495 h/a
UEPA – Belém	Aprofundamento	16	960 h/a
UFBA – Salvador	Complementar	20	1200 h/a
U. CATÓLICA SALVADOR	Aprofundamento	24	1440 h/a
MONTENEGRO – BA	7º e 8º períodos	7	480 h/a
U. DO AMAZONAS – Manaus	Aprofundamento	7	420 h/a

TABELA 2
IES EM EDUCAÇÃO FÍSICA – BRASIL – 1998/1998
ALTERAÇÕES APÓS A IMPLANTAÇÃO RES. 03/1987
(N=80)

Intervenções no Currículo (1)	IES Públicas (n=39)	%	IES Privadas (n=41)	%
Ocorrências de Alteração	21	53.8%	15	36.5%
Discussões sobre Mudanças	14	35.8%	12	29.2%
Avaliação Organizada	20	51.2%	15	36.5%
Produção Estudos e Pesquisas	19	48.7%	10	24.3%
Inclusão Disciplinas	16	41.0%	16	39.0%
Fusão Disciplinas	6	15.3%	9	21.9%
Exclusão Disciplinas	8	20.5%	21	51.2%

(1) Soma de percentuais 100% significa ausência de respostas

The final organization of the data published in 1999 followed the tradition of scientific research, structuring tables based on quantitative values, similarly to what occurred in the 1971 Diagnosis. From this analog format, analyses and interpretations were generated, completing the data utilization cycle. This procedure continues today in digital archives, offering greater possibilities for management and updates, as will be evident in the subsequent approaches. Notably, in terms of advancements from 1999 compared to 1971, more detailed analyses of the most recent case are highlighted.



Survey on Professional qualification 1999 (Portuguese):

<https://cev.org.br/media/biblioteca/4064697.pdf>



DATA BANK SURVEY SPORT FOR ALL 2002

Ana Miragaya
Estácio University
Petrópolis

DEMAND IDENTIFICATION AND DATA COLLECTION

Between 1998 and 2002, Lamartine DaCosta and Ana Miragaya led a survey on the situation of Sport for All (SfA) in 36 countries, promoted by UNESCO and TAFISA, bringing together 87 informants, 50% of whom worked in universities. The data demand in this case was to diagnose non-formal practices of Physical Activities according to target groups interventions, practice locations, promotion among the population, social changes, marketing and sponsorship strategy, and financial resources. For data collection, a booklet was printed in English for the training of the respondent authors and the corresponding aggregation by country.

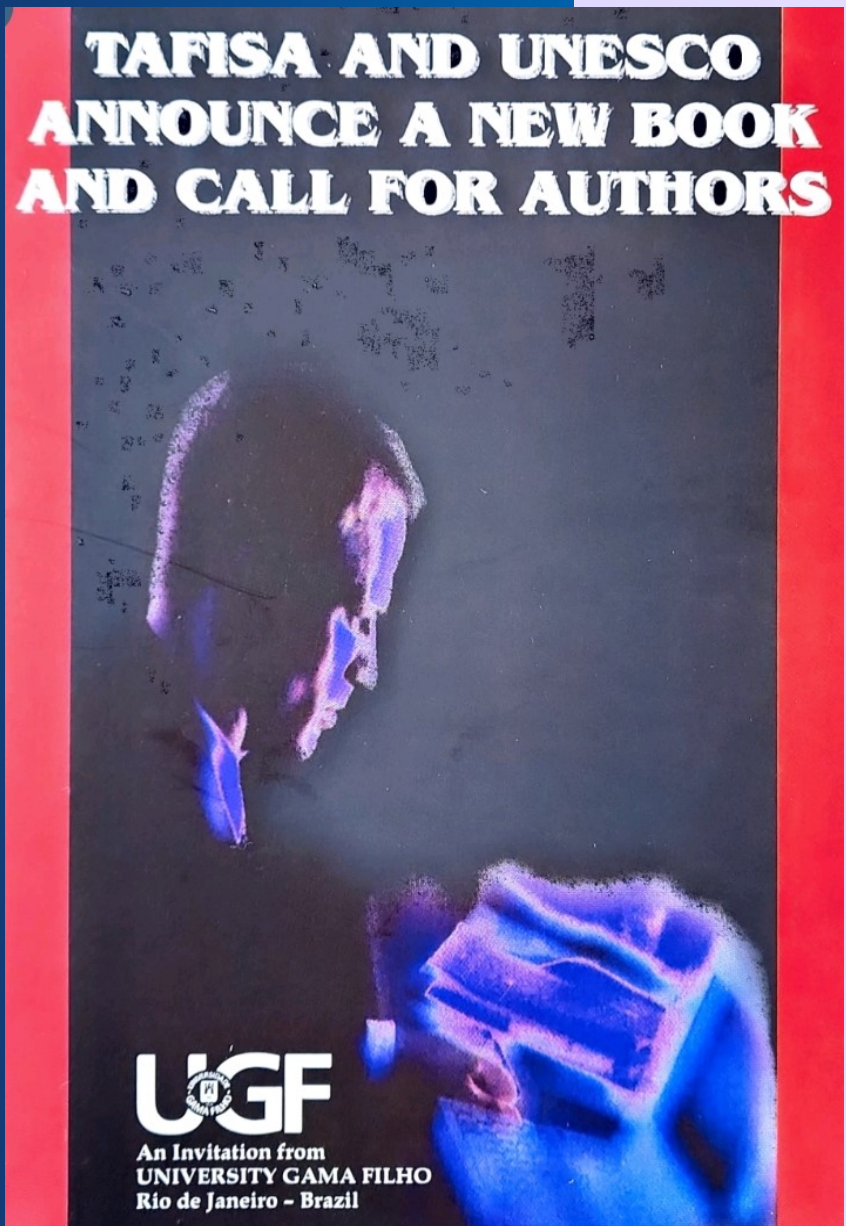


Lemertine DoCosta & Ana Mirogaya - Eds.

The organization of the data followed the criteria of tables with numbers to allow analysis according to trends or patterns. Under these conditions, the study was explicitly presented as a Data Bank, thus constituting an advance in relation to the 1971 and 1999 surveys.

STRUCTURING AND ACCESS

The data were structured using a 792-page book, marketed by an international publisher, providing relevant access to the content of the work. It is essential to mention that this research sought to examine the SfA for its meanings of inclusion and social change, and that it was a pioneer in international cooperation as it set up a Data Bank in the area of sports.



The difference between the repertoire organized in 2002 and the other cases examined here is that the complete cycle of data collection, organization and analysis was carried out in the SfA book. There was then a successful case of setting up a Data bank with data analysis as a fidelity test of collection and structuring of data. Another pioneering aspect of the 2002 project consisted in the preliminary training of the 87 authors in the sense of organizing the data collected and structured in their respective chapters. A standard framework had been developed for the chapters with data management instructions and respective descriptions and interpretations. The support for this orientation consisted of a "call for authors" style booklet delivered to the contributors of the international survey. It can also be said that the Sport for All initiative consisted of a preliminary action in terms of Data Intelligence in its recent proposals. A similar procedure was used in the 2005 Atlas of Sports in Brazil, which trained its 410 authors with didactic texts delivered via Internet.



Access to the book Sport for All - 792 pp (2002):

https://books.google.com.br/books?id=EZrVLXazCnEC&printsec=frontcover&hl=pt-BR&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Booklet Tafisa & Unesco for authors Sport for All:

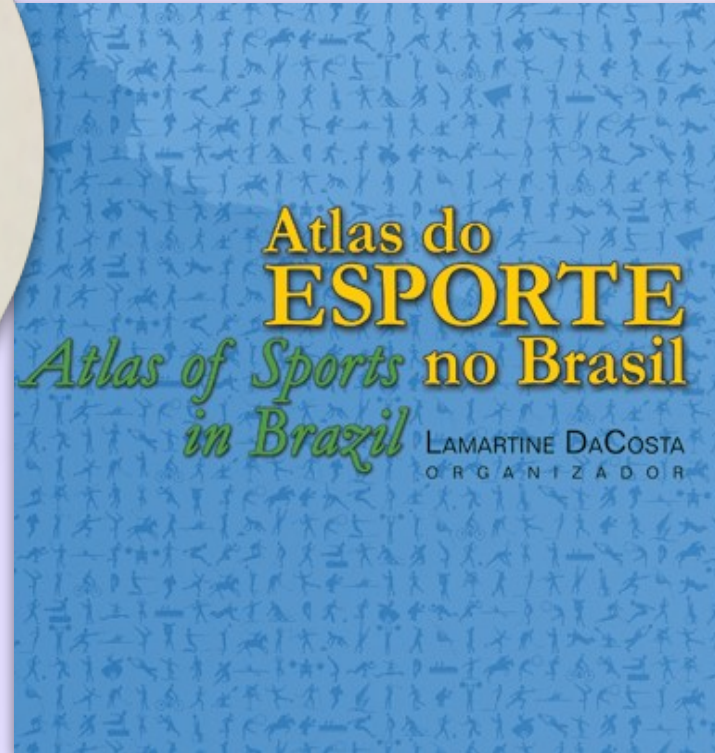
https://www.sportsinbrazil.eom.br/paris_2024/book_tafisa_and_unesco.pdf

Sport for All Data bank analytics:

https://www.sportsinbrazil.com.br/paris_2024/sfa_article.pdf



DEMAND IDENTIFICATION AND DATA COLLECTION



Lamartine DaCosta

Gama Filho University Rio de Janeiro 2005

The 2005 Atlas of Sports in Brazil project had a larger-scale Data bank development than its predecessors between 1971 and 2002 because it was organized into 300 segments. These data focuses corresponded to Physical Activity (PA) events, institutions,

and knowledge production in Physical Education, sports, and leisure. With Lamartine DaCosta as the organizer, this survey was the result of a team of 17 editors and 410 volunteer authors supported by the Federal Council of Physical Education.

CASE STUDY ATLAS OF SPORT 2005



The data in this case consisted of descriptive texts and quantitative expressions in historical and geographical order for each segment. The collection strategy involved connecting each focus – later transformed into a chapter in the published Atlas – with authors specialized in the adopted approach. The progress of this work was monitored by the editors through a standard set of written instructions and Internet-based communication with each individual author. In summary, the Atlas survey represented an improvement over previous data strategies, with greater authorial involvement from volunteer contributors.

Structuring and Access

The collected data was structured in an editorial arrangement within a 950-page double-sized book, comprising 300 chapters with texts in Portuguese and abstracts in English. As an additional feature, the Atlas included a collection of photos and scenarios related to quantitative data across the entire country. The chosen format also had a digital PDF version, accessible online as a non-commercial work up to the present date. _



Rationalities of data structuring in the 2005 Atlas

(a) Mapping: Memory and current conditions of physical activities in Brazil, constituting a set of spatial data (maps and figures) and quantitative data (tables, charts, and graphs) as well as qualitative data (descriptive and analytical texts), with regional and national interpretations.

(b) Database: A collection of expressions focused on trends, patterns, proportions, and samples related to development, expansion, stability, insufficiency, or regression.

(c) Support for National Statistics: Qualitative and quantitative data representing trends and patterns in geographical, institutional, or population segments that can complement or provide context for surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE) on the topic of physical activities with economic and socio-cultural importance.



(d) Continuous Improvement: Organizing collected information to enable its replacement with increasingly reliable or statistically valid data.

(e) Texts and Figures: Formatting presentations to complement quantitative data with written information and images, creating meaningful blocks while adhering to minimum database standards.

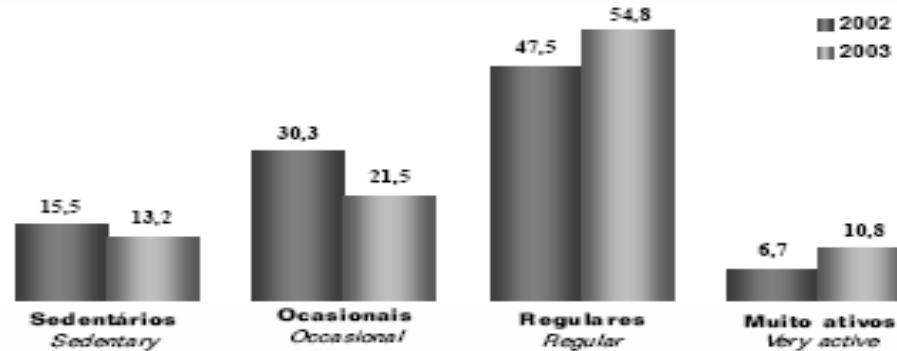


Atlas methodology (DaCosta, 2005):

[Centro Esportivo Virtual | CEV | Metodologia do Atlas e Apresentação dos Capítulos](#)

Organization of data in scenarios - Atlas of Sport 2005

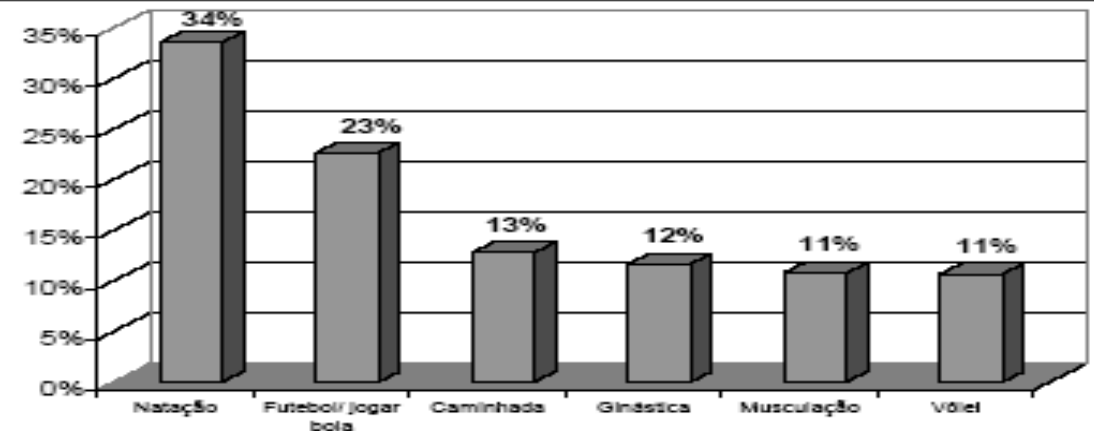
Mudanças na participação em atividades físicas
- Região Metropolitana de SP, 2002 - 2003
Changes in the participation of SP population in physical activities
- SP Metropolitan Area, 2002 - 2003



Fonte / source: Agita SP e IMES, 2003

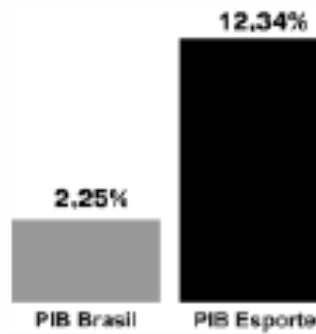
Preferências de práticas esportivas da população ativa do estado de SP, 2003
Preferred sports practices of São Paulo state active population, 2003

Pesquisas / Research: SESC - SP e Datafolha, 2003



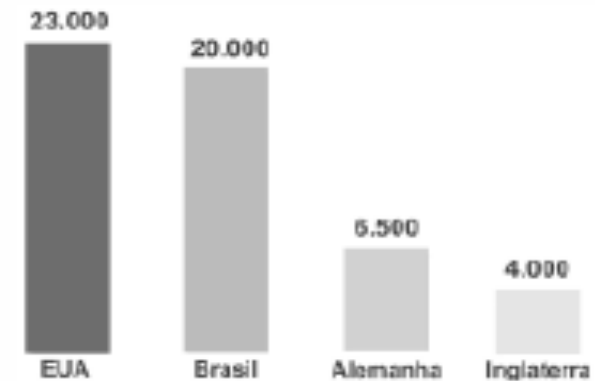
Fonte / source: SESC-SP / Datafolha, 2003

Expansão do PIB do Brasil x PIB do esporte, 1996 - 2000
Increase of Brazil's GNP x sport's GNP, 1996 - 2000
Taxas de crescimento anual / Annual growth rates



Fonte / source: FGV / Kaszlar, 2000

Numero de Academias por países líderes, 2003
Number of Health clubs per leading countries, 2003



Fontes / sources: Atlas (2004) / IHRSA



The Atlas of Sport 2005 included, in addition to data organized by collection and analysis segments, a dataset representing states, municipalities, or the entire nation under the denomination of “scenarios” (as seen in the image with graphs). By covering these extensive areas, the limitations of Data Science methodology based on segment-trends-patterns were overcome, making it more suitable for localized observations. By adopting this scenario-based approach, the Atlas incorporated data from other existing sources in Brazil related to Physical Education, sports, and leisure.



<https://cev.org.br/biblioteca/cenario-industria-esporte-do-marketing-eventos/>

Ailton Oliveira

Federal University of Sergipe

Identification of demand and data collection



CASE STUDY OF NATIONAL DIAGNOSIS 2015



A project by the Federal Government of Brazil aimed at mapping sports practice in the country through surveys and research conducted by six Federal Higher Education Institutions. This purpose was implemented in a decentralized manner, collecting data related to practitioners, infrastructure, legislation, and investments.



STRUCTURING AND ACCESS

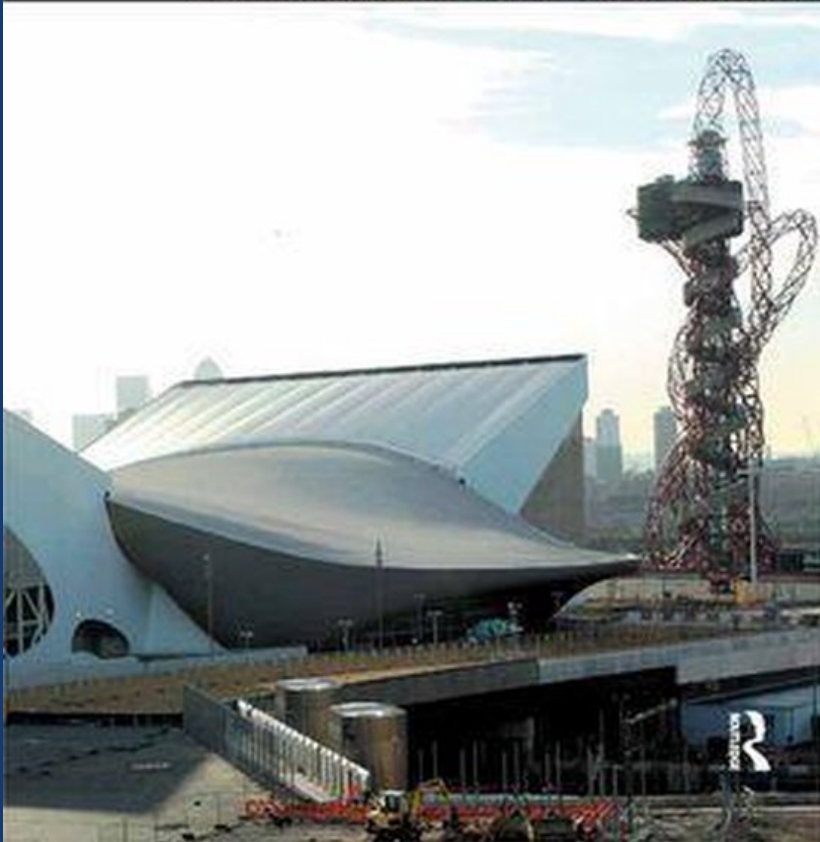
Publication of the survey results by institutions linked to the project with data direction for entities promoting Physical Activities for the population. [The organization, execution, and publication of the research involved collaboration from universities in Italy and the United Kingdom.](#)

The National Sports Diagnosis, also known as Diesporte, aimed to promote research using collected data, in addition to providing various consultations and allowing for updates. However, due to changes in the Federal Government, the dynamic intentions of Diesporte were not fully realized. As a result, today there are published works without proper organization, similarly to the other cases mentioned. [The book published in the United Kingdom and the articles published in Italy about Diesporte's functioning or using data from this project now represent the results of the previously promoted international cooperation.](#)



Edited by Valerie Viehoff and Gavin Poynter

**Mega-event Cities:
Urban Legacies of Global Sports Events**



'Knowledge as Legacy' in Poyter 2015 – Diesporte:

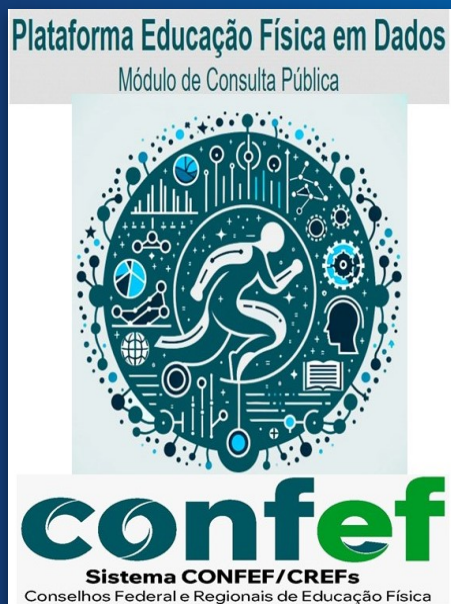
https://library.olympics.com/Default/doc/SYRACUSE/62386/mega-event-cities-urban-legacies-of-global-sports-events-ed-by-valerie-viehoff-et-al?_lg=en-GB

Diesporte in Spliss 2022 pp. 66 – 67:

https://www.researchgate.net/publication/259466482_ORGANIZATIONAL_STRUCTURE_OF_BRAZILIAN_PAR_OLYMPIC_SPORTS

Diesporte in Mussino – 2022 pp. 199 – 207:

https://www.researchgate.net/publication/360046656_Physical_and_Sports_Activities_Diagnosis_in_Brazil_Methodology_to_Support_Policies_to_Improve_the_Population's_Quality_of_Life



CASE STUDY OF DATA PLATFORM IN PHYSICAL EDUCATION 2024



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Lucas Guesse
Federal Institute
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Plataforma Educação Física em Dados

Módulo de Consulta Pública



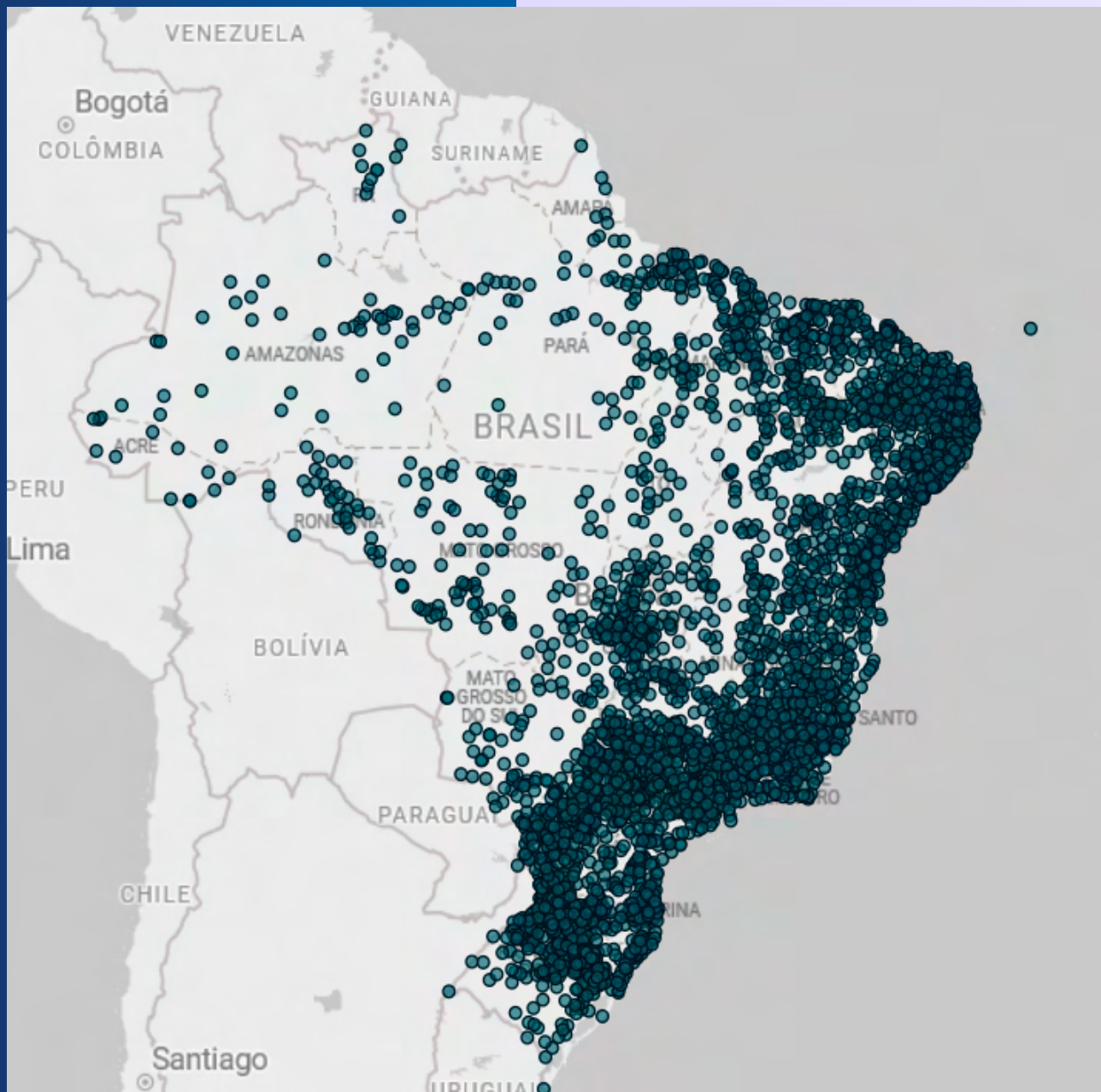
confef

Sistema CONFEF/CREFs

Conselhos Federal e Regionais de Educação Física

IDENTIFICATION OF DEMAND AND DATA COLLECTION

In a partnership between the Federal Council of Physical Education (CONFEF) and the Federal Institute of Espírito Santo, data management tools were developed and organized through two digital platforms. The objective of this project was to integrate the Confef System with the 22 regional councils (referred to as 'Cref') and connect them with associated professionals and local societies throughout the country. Under these conditions, the first platform serves the purpose of providing public information about physical education professionals in various functional roles during their activities. The second platform, in turn, utilizes collected data to guide internal operations, both platforms relying on updated information and various indicators of identified trends and patterns. This comprehensive operation follows the Data Intelligence model, aiming to empower all individuals associated with the Confef-Cref System in generating and managing data.



Another dimension of the adopted data strategy is to create a specific repertoire of information following the Small Data model, facilitating integration between the databases of the two platforms and other databases related to Physical Activities and the health sector. These decisions were made in response to the growing demands of the 650,000 members of the Confef-Cref System and the 1,200 colleges or higher education programs in Physical Education currently existing in Brazil. [These numbers have international relevance and give meaning to the spatial distribution of professionals associated with Cref in a continental country like Brazil \(see image\).](#)



Access to the Confef – Cref Platform:
[Plataforma Educação Física em Dados](#)



STRUCTURING AND ACCESS

Presents data from various sources related to Physical Education to provide the public with information about the presence, personal characteristics, roles, and geographical distribution of physical education professionals across the entire national territory.

Management tool that organizes Physical Education data to allow cross-referencing of information from different sources, supporting the Confef-Cref System in its administrative functions.

CASE
INTERFACES
BETWEEN THE
USERS OF THE
PLATFORMS
AND ACCESS TO
THE DATA





THE LIKELY FUTURES OF THE CONFEE PLATFORMS

Observing the meanings of the Confef-Cref Platforms in light of current advances in digital technology and AI language models allows us to anticipate possible future developments of these tools. A review of updated knowledge establishes the following expectations:

1. Consolidation of Data Intelligence and Adoption of the Small Data Model: Within the scope of Confef-Cref, the consolidation of Data Intelligence and the adoption of the Small Data model are expected to occur naturally as the Platforms undergo enhancements and expansion.
2. Progressive Incorporation of AI: The broadening scope of the Platforms will result in the gradual incorporation of AI as part of the efficiency achieved by these tools. This trend is driven by the increasing involvement of AI in managing companies and institutions overall.



3. Growing Integration of Databases: Influenced by the expansion of the Small Data solution, there is a rising trend of integrating databases. This leads to associations between diverse organizations, including companies, universities, government entities, etc. AI also plays a role in generating mutual operational benefits.
4. Integration with New Databases: Stimulating or implementing integration between the database represented by the Confef-Cref Platforms and new databases related to Physical Education and Sports (such as CEV, Atlas, Universities, etc.) is essential due to the expansion of Small Data solutions and the demands of AI.



Small Data:

<https://www.weforum.org/agenda/2016/01/how-small-data-will-transform-companies/>

Small data and scientific research:

<https://www.sciencedirect.com/science/article/pii/S1877050923012711>

Data Intelligence:

[Explainable AI in big data intelligence of community detection for digitalization e-healthcare services - ScienceDirect](#)

Interface between users and platform:

[Usability Evaluation of an Open Data Platform | Proceedings of the 18th Annual International Conference on Digital Government Research \(acm.org\)](#)

CLOSING PROPOSAL – HYBRID AI PUBLICATIONS

Analog photo



AI list



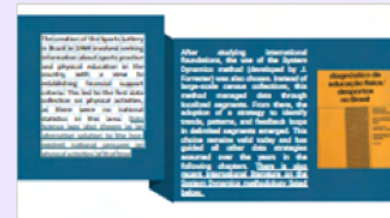
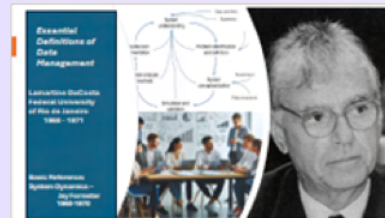
AI images



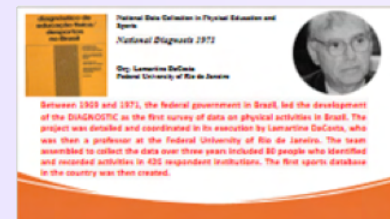
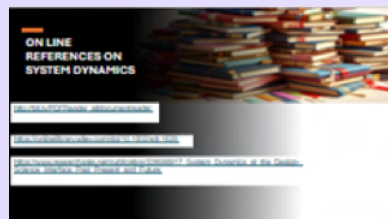
Position
paper link



Blocks of descriptive and analytical texts – AI + HUMAN



Traditional charts + comments



Links to library

Traditional infographics

Human conclusive remarks



CONCLUDING REMARKS

DATA INTELLIGENCE

The experience from the six case studies suggests that participants in the data collection-organization-utilization cycle, when well-informed or equipped with knowledge about their tasks, constitute a sensitivity focus in data management. Specifically, the cases from 2002, 2005, and the implementation of the Confef Platforms in 2024 indicated the feasibility of Data Intelligence development. The viability of this enhancement in other projects, such as Small Data and AI implementation, also became predictable.



DATA STRATEGIES

The account of data strategies experimented in the six projects examined in this study yielded effective results, either partially or entirely, across their different implementation stages. In other words, creativity and awareness of contexts were present in each routine environment. To summarize, the various strategies resulted from pioneers and innovators. Specifically, the conclusive focus on the 'strategy' factor in the examples mentioned earlier refers to an entrepreneurial approach to handling data. It's also essential to anticipate specific actions for entity management and research. Above all, the intention is to specify these strategies as necessary for future combinations involving Artificial Intelligence demands.



DATA BANK AND DATABASE

From the set of experiences mentioned earlier, three (1971, 2002, and 2005) were established as Data banks, although not always explicitly acknowledged as such. On the other hand, the most recent implementation (2024) represents a typical product of the digital era, organizing itself as a Database—capable of unfolding and integrating with various repertoires and other external databases, which was not possible in previous cases. The foreseeable direction based on the analyzed experiences is to maintain the availability of the three Data banks—for instance, at the Virtual Sports Center—as repositories for queries. Additionally, the intention is for the 2024 experience to continue standing out as a Database, leveraging its technological advancements, and integrating with similar-scoped projects for mutual development.



HYBRID MODEL

The term “hybrid model” refers to a combination of interventions involving both technological processes and human actions. These interventions aim to achieve a balance between the two, with active participation from both parties. In the context of data strategies, human interventions have historically been more prevalent. However, as AI continues to expand, a new environment of relationships is emerging, still in the early stages of understanding and definition. This publication aims to explore hybrid solutions, as demonstrated in the current work, with the expectation of generating future developments



INTERNATIONAL COOPERATION

In retrospect, the Sport for All and Diesporte initiatives played a significant role in international cooperation between 2002 and 2015. In the initial experiment, Sport for All established a Data bank with the participation of two international agencies and 36 countries. These endeavors, driven by academic purposes, offer insights into potential new relationships with foreign entities. Furthermore, they emphasize the importance of knowledge exchange, aligning with the International Olympic Committee's Agenda 2020+5. Notably, international cooperation trends may intersect with the integration of databases, particularly in the context of sharing information with artificial intelligence systems.



RESEARCH AND MANAGEMENT

Research endeavors are inherently reliant on data, a principle that also applies to technology-driven management initiatives. However, the lessons from this study primarily centered around data strategies, which exhibited a generic nature. The focus was on the entire data organization cycle, rather than solely its end use—a topic of greater interest to both management and research. Consequently, the conclusive direction for various data demands pertains to their non-specificity, with the exception of the end user.



SMALL DATA

Small data is a Data Management model generally understood as a small volume of data, with minimal structured organization, subject to digital processing, and accessible and comprehensible for queries, whether by computer, cell phone, or tablet. In summary, it is a solution for greater independence and lower costs for organizations or groups facing large technological and AI enterprises. For the expected effects of data organization in universities, clubs, gyms, etc., this management model and research support are associated with Data Intelligence initiatives (enhancing participants' capabilities). In terms of directional forecasting, the Small Data solution has expanded and should guide current trends in integrating databases among organizations transitioning digitally or expanding their activities. In summary, conclusive directions in this topic are based on studies and published research on AI in current stages, considering future predictions.



CALL TO ACTION

The ongoing experience in the Confef 2024 case reinforced the idea that data platforms would expand and operate efficiently with the support of Data Intelligence. Connecting this expectation with previous findings, it is pertinent to create a general direction for this publication, named 'Data Intelligence-Small Data-Database Integration.' This synthesis of actions to be undertaken ultimately assumes a composition with Olympic Agendas and propositions related to Intellectual Property and International Cooperation.



The big role of Small Data in AI:

<https://hbr.org/2020/02/small-data-can-play-a-big-role-in-ai>

Small Data impact in AI:

<https://www.afcea.org/signal-media/cyber-edge/small-data-may-have-big-impact-artificial-intelligence-edge>

Integration between Databases:

https://www.researchgate.net/publication/374474809_THE_INTEGRATION_OF_ARTIFICIAL_INTELLIGENCE_INTO_DATABASE_SYSTEMS_AI-DB_INTEGRATION_REVIEW

Integration of AI with Databases:

<https://www.devteam.space/blog/how-to-integrate-ai-to-a-database/>

**Texts and images
updated on July
17th, 2024.**



**eMuseum of Sport,
Rio de Janeiro,
Brazil.**

