

PATENT GRANTED IN THE FIELD OF PHYSICAL ACTIVITY PRESCRIPTION: A TECHNOLOGY ANALYSIS OF THE BODY ACTIVITY ASSESSMENT SYSTEM

Tiago de Melo Ramos, Jaldemir Santana Batista Bezerra, Flávio Valdir Kirst, Wendel Fren Costa dos Anjos, Antenor de Oliveira Silva Neto, Robélius De Bortoli

Universidade Federal de Sergipe
Brazil

Summary

The prescription of physical activity in Brazil is widespread as an action of the Physical Education professional. In this process, it is up to him to plan, elaborate, systematize, plan, monitor and evaluate the practitioner. Therefore, with evolution, technologies capable of performing the same functions have emerged. In this regard, are technologies that have physical activity prescription functions protectable? Is there technology for this purpose and capability? These are the questions that structure this research. It aimed to analyze patents that will present a profile of physical activity prescription in other areas and in other countries. In the field of investigation, basic research characterized in the principles of documentary research was applied, with a sample of 198 patents using data analysis in the interpretive phase of the data. It was concluded that there is a technology protected by a patent that has a role and competence in the field of prescription, monitoring and evaluation of practice in the health sphere. There is still a need for further studies to deepen and increase knowledge in the axis of intellectual property, physical activity, professional Physical Education and health.

Keywords: Physical Education, Intellectual property, Exercise.

Movement is the object of study by Physical Education professionals. In its epistemology, there is a need to understand the relationship of body movement, its effects and impacts on human health. For this, physical activities were called physical activities that require energy expenditure that cause or not changes in their functional status. In the same sphere, the concept of physical exercise was created whose bodily action causes progression as a result of the practice of variants such as energy, strength, resistance, among others, these also happen through programs, sections, training and periodization of the motor gesture, having specific purposes and the practitioner's interests as an objective (Guedes & Guedes, 1995).

The relationship between physical activity and the changes caused in the practitioner's health status brought the Physical Education professional to the field of health. In this area of knowledge, the objective is to encourage discussion about the practice of physical activity and its effects on the practitioner, an agenda that is in force in Physical Education (Wachs, et al, 2020).

When it comes to Physical Education, there is immediately an association with health, sports, games and bodily practices of the most varied motor and cultural actions. In this area, the object of study is 'moving' the body, physical activity and its reactions are a source of constant research and debate (Furtado, 2020). Therefore, the objective is to investigate what is produced through intellectual capital, which products are being developed and protected through physical activity and their different contexts.

In the health sphere, Physical Education is part of the field of prophylactic and therapeutic activities, mainly linked to disease prevention and health promotion (Antunes, Knuth & Damico, 2020). In this context, the Physical Education professional responsible for planning and building the training sections develops products that, in turn, stimulate the evolution and technical-scientific growth of the Morais profession (2020). Thus, identifying these products is essential to understand what is produced and protected in the area of Physical Education and health.

With the integration of physical activity into the organic law of health (Brasil, 1990), the Physical Education professional begins to occupy the space in the health sector and is now seen as the intervener of the body with the role of prescribing physical activity in the concept of 'medication', in the treatment of diseases, mainly related to and caused by sedentary and inactive habits (Lotti & Nakamura, 2020). Therefore, by assuming physical inactivity and sedentary lifestyle as problems that need to be tackled, there is a need to develop and create mechanisms against this behavior. In this context, the Physical Education professional elaborates and develops means to contribute to public health and scientific development.

In another area of activity, sport, the Physical Education professional develops a role mainly directed to performance, related to the evolution and improvement of performance, elaborating and creating sections, periodizations and training models for a specific purpose. In this follow-up, the stimulus for technological production also follows impactful scripts. In sport, three segments stand out when related to the industrial market and technological production: adventure sports, ball sports and fitness, which are responsible for 93,438 patents in the last 20 years (Ruiz, et al, 2017). It is evident that, in the sports field, there is a stimulus for intellectual development and copyright protection, mainly through patents. From this perspective, mapping the products that are protected is essential to understand how Physical Education fits in this context and, thus, expands the possibilities of professional performance as well as its valuation.

Scientific Problem

The prescription of physical activity is widespread in Brazil as an exclusive practice of Physical Education professionals. It is legally assisted by CONFEF and Brazilian justice. Historically, this professional has the competence to plan, plan, prescribe and monitor practitioners during training sessions. However, with the emergence of technologies, numerous programs, applications and platforms have in their functions the ability to perform the duties that, by law, are aimed at Physical Education professionals. Thus, this study seeks to find technologies that are capable of performing and performing physical activity prescription. It is still interesting to find protection from these technologies and how they are used. To this end, the following question is asked: Are there technologies protected by patents that prescribe physical activity?

Objective

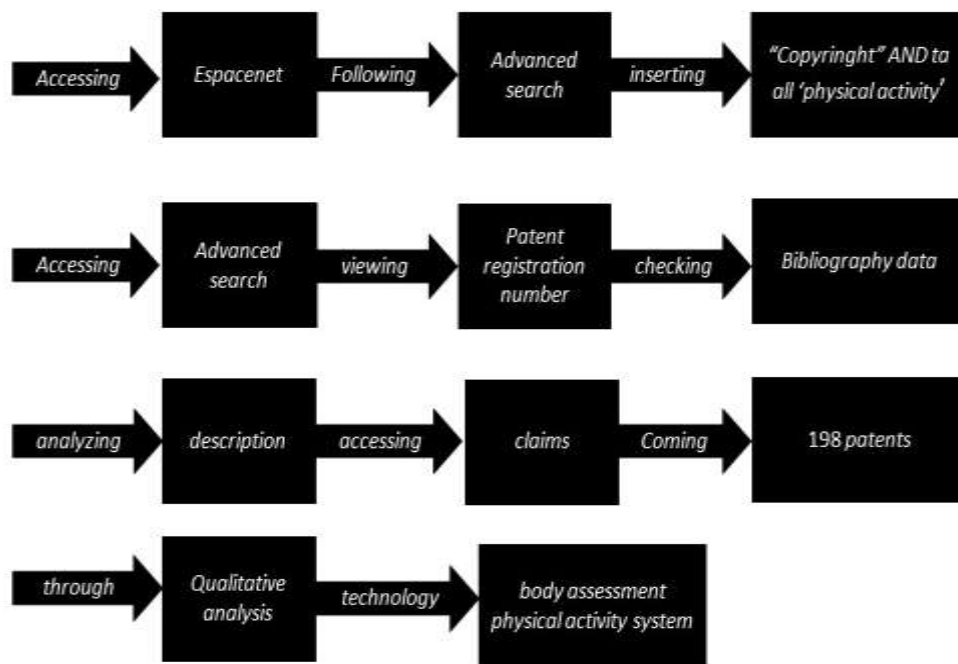
Identify patents granted on espacenet that perform prescription, monitoring and evaluation functions in practitioners of physical activity.

Methodology

This study started from a documental analysis carried out with a systematic action on patents granted in the physical activity and health axis. The documental method is constituted by the analytical task of patents and documents that were preliminarily grouped and selected, following basic research principles in order to categorize, organize, interpret and discuss the data found (Sá-Silva, Almeida & Guindani, 2009) .

Sample

198 patents were analyzed. To arrive at this quantity, it was necessary to follow the following steps: access was primarily made on the espacenet platform at the homepage address: <https://worldwide.espacenet.com/patent/search/family/034206445/publication/JP2005031941A?q=pn %3DJP2005031941A>, Right after, the advanced search tab was clicked and the descriptor 'copyright' AND to all 'physical activity' was inserted. Then, the following steps were performed: Click on advanced Search, insert the patent registration number, access the bibliographic data, analyze the problem to be solved and the method to solve the problem. Then click on the description tab and identify the characteristics of the inventions and finally access the Claims tab and analyze the requested claims. The process has been replicated across all 198 patents.



The patents observed were directly related to copyright, physical activity and health. Patents were grouped in an electronic spreadsheet and distributed according to the study criteria. Later, they were categorized into open source tables in open office. In the analysis, the following criteria were chosen: theme, abstract, patent description and claims, aiming to identify patents that present characteristics of physical activity prescription. After the applicability of a qualitative filter, the patent body activity assessment system was found, which addressed elements that met the established criteria.

Results and discussion

Figure 1 shows patent number JP 2005031941 entitled as body activity assessment system. In it, it is possible to observe the problem to be solved and the solution presented by the authors. In its essence, a system that, through a questionnaire, processes the practitioner's data and directs commands according to the applicant's characteristics and objectives.

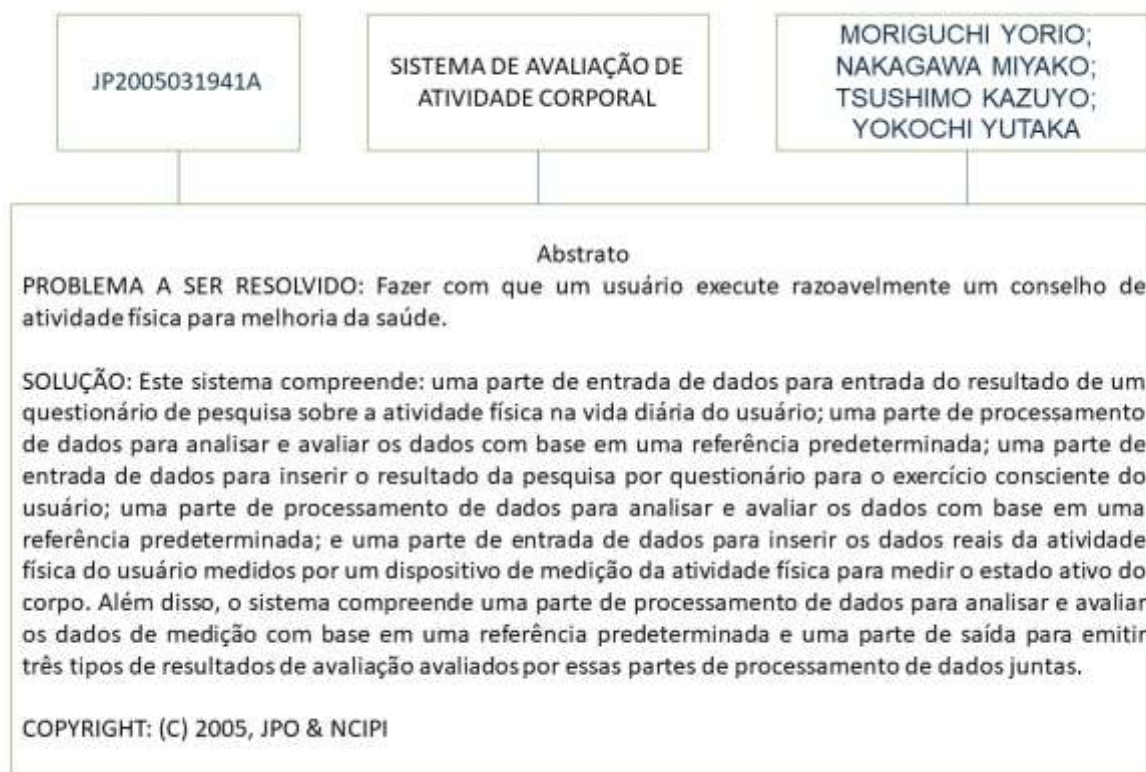


Figure 1: Patent body activity assessment system

It is also noted that the information presented in the first figure bears a certain similarity with the actions carried out by Physical Education professionals regarding their attributions. In the training periodization, some principles and steps are taken into account, such as biological individuality, which is related to the individual's physiological characteristics such as phenotype and genotype. The adaptation that corresponds to the subject's stimulus and response to training. Overload, which requires monitoring of functional changes and adapting to new loads. The continuity/reversibility that accompanies the gradual

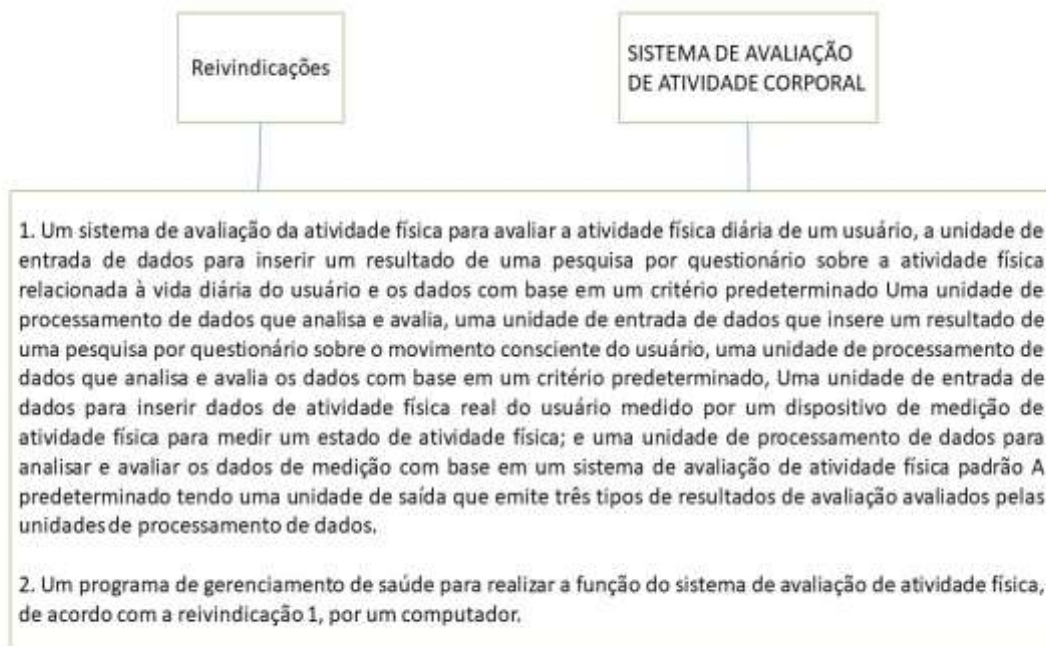
and relative progress of performance on stimuli. Also, the principle of volume and intensity which matches the interval and load during the actions performed (Lima, et al, 2020).

The aforementioned principles bring data that are collected in the questionnaire that the body assessment system uses to carry out the planning and direct the commands. Therefore, there is evidence of protection of a system that performs action to assess, monitor and prescribe physical activity, which, in turn, are attributions and competences of the Physical Education professional.

Can training be prescribed by a system? Can it still monitor, assess and change stimuli? It is clear that the body assessment system is already an answer to these questions. Technological advances and the digital age have been modifying the performance of several professionals and it seems that in Physical Education we will have impacts on the way of working, since the popularization of the internet enables communicative and interactive actions in different contexts and spaces. Today, we have online personal, online consulting and online training. As a study by (Roversi & Junior, 2020) points out. It is also noteworthy that what is relevant is the periodization and detailed monitoring of training.

In the next figure, a 2 , elements intrinsically related to the attributions of Physical Education professionals were also identified and there are claims by the authors about their product, the body activity system. In this patent, rights are requested over a processing unit that, through a questionnaire, plans, elaborates, evaluates and commands conscious motor actions of its user, also capable of measuring the state of physical activity and through a predetermined pattern. It also asks for the protection of a computer program that manages physical activity for the benefit of health through an assessment in accordance with the user's claims.

Figure 2: Claims in the patent Body Activity Assessment System



In the field of sport science and technology, the advances presented are extraordinary, from the identification of injuries to monitoring of motor manager and athlete performance. The possibilities are

countless for the professionals involved, actions that were previously evaluated in laboratories and with observational and temporal monitoring, today are diagnosed almost immediately, and the advances caused by technologies in sports in general are practically indisputable, especially in the phase of athletes' preparation (De Mesquita et al, 2020).

Another field of evolution is presented in the axis of physical activity and health. The internet of things through a global and dynamic network infrastructure provides interaction between technology and human at all times. Through sensors and artificial intelligence, it is possible to monitor and monitor the health status of physical activity practitioners, with the transmission of updated and constant information from the user to the advisor and the user himself monitor his health status and performance through immediate responses extracted from your technology. Another element presented is the IoT technology, which through wearable sensors and m-Health has been improving the quality of life of users, through individualized physiological monitoring, raising fundamental information in the process of physical activity and health (Verzani & Serapião, 2020) .

The data presented in this figure confirm and enhance the idea presented in this study, as they can be interpreted as a description of the functions and objectives of a technology capable of monitoring, monitoring and prescribing physical activity, which through a questionnaire can assess, plan and establish physical activity within a health-oriented bias, as presented in the studies by (Mesquita et al, 2020) and by (Verzani & Serapião, 2020). That is, the use of technologies in the process of planning, prescribing and monitoring the performance and health status of practitioners, with the addition of being a patented technology.

In the last figure, entitled operationalization of a physical activity and health assessment system, it is possible to observe the systematization of technology, in its procedural action. Initially, the system applies a questionnaire, identifies and maps the practitioners' goals and needs, analyzes the motor gesture and performance, directs commands and, finally, establishes parameters previously established in the field of physical activity, sport and health.

Figure 3: Operationalization of a physical activity and health assessment system



At this point, it is possible to have a punctual and factual analysis of the assessment system technology and, through its functions, compare with the attributions of the Physical Education professional with the regulations in the context of prescription and monitoring of users during the practice of physical activity, either for prophylactic or therapeutic purposes (Da Silva, et al, 2020). It is not of interest to discuss the legality of the prescription of physical activity through a technology, but rather to reflect on the possibility of protecting the products and constructions that result from Physical Education professionals through copyright and, as there is a patent granted to a technology who perform functions and actions similar to the Physical Education professional, it is essential to deepen this discussion.

In this same perspective, a study by (Guimarães; et al, 2020) identified that, during the COVID-19 pandemic, numerous spaces and establishments were closed, making the practice of physical activity inaccessible for the majority of the population. In response to these impacts, Physical Education professionals sought spaces and possibilities for the field of prescription and monitoring of physical activity in technologies. Therefore, it is visible that technologies are mechanisms that help and present themselves as possibilities in the performance of the Physical Education professional.

Another study, called technology and innovation at the service of exercise and health, brings a series of technologies that point, guide and help physical education professionals. As a result of the research developed, it was possible to identify technologies such as: Project VirtuALL is a symbiosis between Innovation, GRANDPAD®, JEFIT, ANGELESS INOVATION, POLARFLOW & MOVESCOUNT, MOVE TO FORGET, SMART HEALTH WATCH SAMSUNG ACTIVE 2, MYFITNESSPAL, WHATSAPP, INSTAGRAM, Houseparty, Private Group “Isolamento Blue Ativo”, KOMP, PEOOPL Application, ZOOM, Virtual Social Network – Instagram, siosLIFE, Cardio App, Ring Fit Adventure – Nintendo Switch, Application: MyFitnessPal, Nike Training Club – Workouts & Fitness Guidance, MyFitnessPal and Heart Center – of the Red Cross. All technologies, programs, platforms and innovations used in the service of physical activity and health (Marlene, et al, 2020).

A research carried out by Oliveira & Fraga, (2020), entitled as prescription of physical activity by artificial intelligence: will Physical Education end?, points out the scenario of disruptive technologies, presenting produced technologies capable of assuming the role of personal trainer, through artificial intelligence it elaborates training sessions in addition to establishing monitoring. The authors also highlight the impacts of the 5.0 industry, and talk about the need to update Physical Education professionals. In general, these studies presented bring elements similar to the assessment system technology shown in Figure 3, which, in essence, has technical competence to prescribe physical activity. The element under discussion is how to protect the plans, how to give credit and authorship to the planned sections because prescribing physical activity seems to be an action no longer as the sole responsibility of the Physical Education professional, but perhaps thinking of this professional as the subject who thinks and establishes programs and sections valuing its intellectual capital, is an interesting alternative.

Final Considerations

Regular physical activity is essential for maintaining health and preventing disease. Professionals qualified to prescribe these activities, in essence, require time and scientific knowledge to systematize plans,

sections and training schedules. These professionals are famously recognized for their guidance and monitoring, often having their primary function not recognized or valued, which is their product, plan or training section.

Technological advances present a series of alternatives in the field of prescription and monitoring of practitioners, artificial intelligence, intelligent programs, software, applications, platforms, among other technologies. Their functions include the ability to guide and prescribe physical activity. This action brings out threat tones for some professionals and support for others. However, having its function performed by a technology is at least worrisome, thus, the intention of this study was to address the valuation of the intellectual capital of Physical Education professionals and propose the copyright protection of their product through the evaluation system technology, which has been patented.

The assessment system technology presents competence, capacity and ability to administer a questionnaire, monitor training, prescribe physical activity and assess the practitioner within the health field. There are elements and competences attributed to Physical Education professionals in it, thus allowing for reflection on technologies in the field of physical activity and health.

It was also possible to identify studies that present information and communication technologies, intelligent technology (AI), programs and platforms that perform physical activity prescription functions. Studies that strengthen the thesis defended here that there are technologies capable of prescribing physical activity, monitoring and evaluating.

This study presents feasible data on a technology capable of exercising the act of prescribing physical activity. This fact arouses the need for new, more in-depth and structured discussions on the axis of technologies, physical activity and Physical Education professionals. It is also noteworthy that it presents an innovative and triggering theme for the dissemination of events, research and actions that allow the Physical Education class to deepen their knowledge in the field of intellectual property in the performance of Physical Education professionals. Finally, it points out, in a factual, reasoned and structured way, that there is the possibility of copyright protection on the elements produced by the Physical Education professional.

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