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Metodología para el rescate funcional del adulto mayor con secuelas motrices por enfermedades cerebrovasculares
Methodology for the functional rescue of the senior adults with Motor Sequels by Cerebrovascular Diseases

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RESUMEN: El presente artículo se deriva de las insuficiencias presentadas por los profesores de Cultura Física Terapéutica para el rescate funcional del adulto mayor con secuelas motrices por enfermedades cerebrovasculares. De ahí que se propone una metodología contentiva de los componentes esenciales que deben tener en cuenta estos profesionales en su labor diaria. El método analítico-sintético permitió proponer constructos con carácter dialéctico como base para su introducción en el proceso de Cultura Física Terapéutica en la comunidad. El resultado obtenido enriquece el referido proceso, en el bienestar integral de estos beneficiarios, en lo físico, lo psíquico y lo social.
Palabras clave: Enseñanza; Educación; Rescate funcional; Enfermedad cerebrovascular; Prescripción del ejercicio físico; Metodología

ABSTRACT: The present article stems from the deficiencies exhibited by Therapeutic Physical Education teachers in the functional rehabilitation of elderly individuals with motor sequelae resulting from cerebrovascular diseases. Consequently, a methodology is proposed that encompasses the essential components these professionals should consider in their daily practice. The analytical-synthetic method facilitated the proposal of constructs with a dialectical nature as a foundation for their integration into the Therapeutic Physical Education process within the community. The results obtained enrich this process, contributing to the overall well-being of these beneficiaries in physical, psychological, and social dimensions.
Keywords: Teaching; Education; Functional Rehabilitation; Cerebrovascular Disease; Exercise Prescription; Methodology

Introduction

Nowadays, universities are required to offer a training of creative, dynamic and empathetic professionals. The Faculty of Physical Culture is no exception to this demand. Therefore, the future professional of Physical Culture (FC) needs an adequate preparation that allows him/her to obtain better results in the field of Therapeutic Physical Culture (TPC), to perform objectively as a health

promoter; with emphasis on improving the general functional autonomy of older adults with motor sequelae due to cerebrovascular diseases (CVD) and their quality of life.

Considering this perspective, the curricula in the Physical Culture career should be aligned with the current demands of society. This implies that each of the contents should be taught with a high level of quality, allowing this professional to offer comprehensive, personalized and contextualized care to this population group, taking into account their needs, possibilities and potentials.

Therefore, the FC professional should be able to provide comprehensive and personalized care to these beneficiaries, since their weak physical condition and motor sequelae due to CVD have a negative impact on their functional autonomy and their reintegration into activities of daily living (ADL). These, in turn, present limitations with the service offered by the FC teacher in the community, due to the lack of a methodology contextualized to their functional recovery. However, the pedagogy used in the CFT process hinders comprehensive and personalized attention in this context.

In general terms, in the undergraduate training in FC, considerable attention is given to the CFT. However, regarding motor sequelae due to CVD, they do not receive adequate assessment of the rehabilitative practice according to the context, which is essential to offer compensation to those affected by the high economic and social cost that this service represents.

For the above, a factual diagnosis was made of the CFT process in the community, for physical-therapeutic care in this population group, where a main insufficiency has been revealed: limitations in the application of methodological proposals as a therapeutic approach, to provide comprehensive, personalized and developmental care to older adults with motor sequelae due to CVD.

Regarding the pedagogy used in the referred therapeutic process, the methodological ways used in the adaptation and forms of execution of physical activity and the prescription of health-oriented physical condition (HOPF) in these beneficiaries are insufficient, which limits their general functional recovery through the maintenance of the same.

Therefore, the quality of care for this non-communicable disease (NCD) should be closely related to the level of competence and professional performance of the human resources trained in universities. Hence, needs are identified in undergraduate teaching, especially with regard to the

use of methods and procedures that allow transmitting the therapeutic content in a more objective manner.

Similarly, at present, the functional autonomy of the older adult with motor sequelae due to CVD reaches great relevance; this is reflected from the CFT in studies by Coll (2017), Rodríguez *et al.* (2021) and Romero (2023), among others, who propose different therapeutic methods aimed at improving the physical and psychosocial impact of the disease, including: psychological, preventive, physiotherapeutic.

However, for the interests of this research, its theoretical and methodological treatment is insufficient, as an integrative and personalized process, according to its diagnosis from the community itself, as a scientific expression, given between knowledge and know-how, for the achievement of the general functional recovery of this population group, through the approach of health-oriented physical condition and its prescription.

From this point of view, it is necessary to achieve greater concreteness in the performance of the physical fitness professional, covering the different spheres of action and specifically the TFC. Hence, the present research proposes as a fundamental line, how to contribute to the improvement of the general functional autonomy of the older adult with motor sequelae due to CVD in the community context, through the prescription of the components of the CFOS.

As part of the need to enrich the CFT process for this population group, through its teaching from the undergraduate level, the present research aims to explain the elaboration of a CFT methodology with an integral physical instructional and therapeutic approach, contextualized to the improvement of the general functional autonomy of the older adult with motor sequelae due to CVD in the community, through the approach of the CFOS, by means of the prescription of its components; in addition, to provide a quality service, through a dynamic, developmental and sustainable process.

The research also justifies the use of theoretical research methods, such as the analytical-synthetic method, to determine the problem through the study and critical reflection of the specialized bibliography, which allowed synthesizing the theoretical-methodological foundations on which the CFT process is based, for the comprehensive and personalized care of the elderly with motor sequelae due to CVD.

Development

With the inclusion of TFC content in the training of the FC professional, students should not only address NCDs, but also the weak physical condition of this population group, which has a negative impact on their functional autonomy and their reintegration into ADLs.

The Dictionary of the Royal Spanish Academy states that: "autonomy is understood as the condition, which depends on no one in certain concepts", and "functional, which fulfills its functions". However, this minute definition allows us to approach a first idea of what will later be understood as general functional autonomy of the older adult with motor sequelae due to CVD.

Similarly, Figule (2013), states that "Motor autonomy is understood as the condition of a person to accomplish a task, task or action; solve a problem or take advantage of free time based on his or her interests, expectations and possibilities" (p. 2). However, the authors of this article agree that: motor autonomy involves other complex aspects based on a multisectorial and multidisciplinary intention, which, in turn, dynamize its expression in a critical aspect that requires individualized attention of the one who possesses it.

Likewise, Carrillo (2017), alleges that motor autonomy is the capacity, aptitude, ability and awareness to make understanding of the body in a given time and space; in addition, it is the free, spontaneous, independent, creative and emancipated way of responding to society through the body, under criteria that express the very personality of the subject in an authentic and genuine sense. (p. 41)

From the point of view of the authors of the article, the value of the scientific criteria issued by them in the historical context of action in which they are framed is recognized. However, the idea of general functional autonomy implies that a person can manage his or her daily life without being completely dependent on others. This does not mean that he or she cannot receive support; it is a matter of balancing the necessary assistance with respect for the individual's disability, in order to make decisions about his or her own life.

In the same way, the approach to the CFOS of this population group is a healthy way to regain control of motor activity in them. Hence, Diaz, Alonso & Garcia (2020), propose numerous definitions of OSFC in older adults. The most relevant for this study are:

> (...) the physical capacity of a person, which is constituted in a state of the organism originated by the systematic training of programmed exercises, and the healthy physical condition as the dynamic state of energy and vitality, which allows people to carry out the activities of daily life, and to face unforeseen emergencies without excessive fatigue. (p. 39)

In accordance with the above, the CFOS in this population group should be interpreted as a therapeutic process that allows conceiving the activation of all organic systems, which, in the short, medium and long term, will allow healthy benefits at physiological, psychological and social levels.

Thus, the authors of this research agree in defining the CFOS in these beneficiaries as: **the set of motor particularities, which allow vitality in people, with the purpose of carrying out activities of daily life; as well as, the integral well-being, in the physical, psychological and social. It also involves the combination of different aspects in varying degrees also associated with functional capacity.**

For this reason, emphasis is placed on the training of individuals capable of facing a knowledge society, with the necessary tools and capabilities to address the functional self-validism of the elderly, by means of the recovery of the CFOS through the prescription of its components. Hence, the authors of this article define the motor sequelae due to CVD as: **the motor disorder of the nervous system that causes sustained contraction in various muscle groups, due to stiffness and shortening of the same and interferes in the various functional movements.**

Therefore, from the methodological point of view, the integral physical-educational approach of López (2020) is assumed, to contextualize this principle to the integral physical-instructive-therapeutic approach; which contributes to the rescue of the functional autonomy of this population group through the prescription of the CFOS and is contextualized as an essential pedagogical tool, for the integral and personalized care of these beneficiaries and is defined by the authors of this study as:

Therapeutic actions that allow integrating the attention of the physical, cognitive, emotional and social needs of older adults with motor sequelae due to CVD, focusing on the improvement of their functional independence through the improvement of the components of health-oriented physical condition.

Thus, in order to achieve a transformation through the elements that make up the therapeutic process, the methodological component is required; the same is argued from a theoretical-

methodological vision that provides the ways and tools for adaptations to the therapeutic process in the community, based on the results of the diagnosis of this research, which reveals the lack of methodologies for these purposes; in addition, the inclusion of cooperative and reactive methods, which aims to allow immediate adaptations to the therapeutic needs of these beneficiaries through active practice and immediate feedback.

Diagnosis of the CFOS: the CF teacher, together with the basic health team, should perform a biopsychosocial evaluation of the older adult, considering not only the physical capabilities, but also the emotional and social state of the same. This includes tests, cognitive, functional and the test battery used by Escalante *et al.* (2019), to assess physical capacity in the older adult.

Adaptations to the CFT process in the community: the CF teacher conducts the process, based on the knowledge acquired by each therapeutic facilitator, taking into account the individual characteristics of the beneficiary, the family environment and the community context. He identifies and adapts in an accessible and motivating way, the activities and physical exercises to the needs and possibilities of each one.

Dynamization of therapeutic methods and procedures: the CF teacher implements, dynamizes and applies different therapeutic methods, ensuring that they are effective. This includes choosing the appropriate techniques for each situation and facilitating participants to feel comfortable, motivated and confident. It also responds to a developmental approach in the attention to the individualities of each beneficiary through the following methods:

Cooperative method: the CF teacher provides the necessary help to form a dynamic behavior in the beneficiary, encourages positive interdependence, where participants work together, to achieve common goals, which enhances their motivation, emotional development and social skills.

Reactive method: the FC teacher assumes the role of watchman during the execution of physical activities when the beneficiary faces the architectural and natural barriers of the environment. In addition, it allows immediate adaptations to their needs, facilitating quick responses to the challenges they face and focuses on the response to stimuli through active practice and immediate feedback.

In addition, the repetition and practice method and the interval training method will be used for the effort maintained during aerobic work, strength and joint mobility, according to their particularities as means to work the aerobic threshold, which are shown below.

Adaptability of the community means and resources for therapeutic and personalized care that are based on: the teacher evaluates the resources available in the community (spaces, means and materials) from the participatory diagnosis and adapts them, to create a conducive environment for therapeutic physical activity.

Organization and prescription of the therapeutic physical activities (TPA) by stages with the participation of the therapeutic facilitators (TF): the TC teacher organizes and evaluates each beneficiary individually; methodically prescribes the exercises according to the specific needs, functional possibilities, objectives and physical capacities of the beneficiary when he/she progressively responds to the activities at each stage.

Prescription of the proposed therapeutic physical activities: they are based on scientific grounds and their stages are related to each other through the approach of functional autonomy through health-related physical condition; the same should have an adequate progression pace, depending on their biopsychosocial needs.

Conception of the control and evaluation of the CFOS restoration: the CF teacher establishes clear criteria to evaluate the physical and functional progress of the beneficiaries, ensuring that the proposed objectives are achieved according to the motor progress, in order to adjust the exercise programs as needed.

Functional rescue of the elderly with motor sequelae due to CVD: rehabilitation and support process provided to people who have suffered a cerebrovascular event and who, as a consequence, present limitations in their motor skills.

Therapeutic facilitators (sport-health binomial, beneficiary's relatives and community factors): the FC teacher should work together with other health professionals (physiatrists, physiotherapists, physicians, nurses) to obtain an interdisciplinary and multifactorial collaboration, with a more complete vision of the beneficiary's condition.

Adapted physical exercise: The FC teacher bases the implementation of exercises that are adapted to the specific needs and possibilities of each beneficiary.

Evaluation of the physical condition: Before designing the therapeutic activities, the FC teacher must evaluate the individual's physical capabilities and limitations. Based on this evaluation, the teacher plans and prescribes the adapted exercises, according to the particularities of each practitioner.

Adapted Physical Activity: The CF teacher ensures that activities are inclusive and accessible to all beneficiaries, regardless of their physical limitations. This may include modification of the environment or the use of specialized means; in addition, he or she regularly evaluates their progress and adjusts activities to ensure continuous development.

Personalized physical exercise: The CF teacher should work with the beneficiary to identify personal goals or simply to maintain an active and healthy lifestyle. In addition, he/she must keep track of the progress towards the established objectives.

Methodological systematization of physical exercise: expresses the logical continuity of the exercises, execution and development of the therapeutic skill from a methodological perspective. The progression should be gradual to avoid overloads and injuries.

Components of the CFOS: aerobic endurance, muscular endurance, joint mobility, coordination capacity and balance.

Components of physical exercise prescription:

Type of exercise or mode of activity: specific exercise modality being prescribed. It is recommended to include a combination of aerobic endurance, strength endurance, joint mobility and stretching exercises.

Frequency: Days of the week when the therapeutic exercise plan is carried out (3-5 days per week (5 recommended).

Intensity: refers to the percentage of the maximum capacity of the exercise to be practiced, based on physical tests and designed with the objective of optimizing physical functions. It represents the physiological pressure under which the beneficiary is subjected and is recommended to be moderate (40-60% of the maximum heart rate in all stages). It is suggested to use the Borg (effort perception scale) to control the intensity of the exercise.

Duration: Number of minutes per week dedicated to training (no less than 150). Each exercise session should have a continuous duration of 10-20 minutes and discontinuous of 10-30 minutes, depending on the physical capacity of the beneficiary, then the time should be progressively increased up to 45-60 minutes, according to the adaptation of the organism to the physical load.

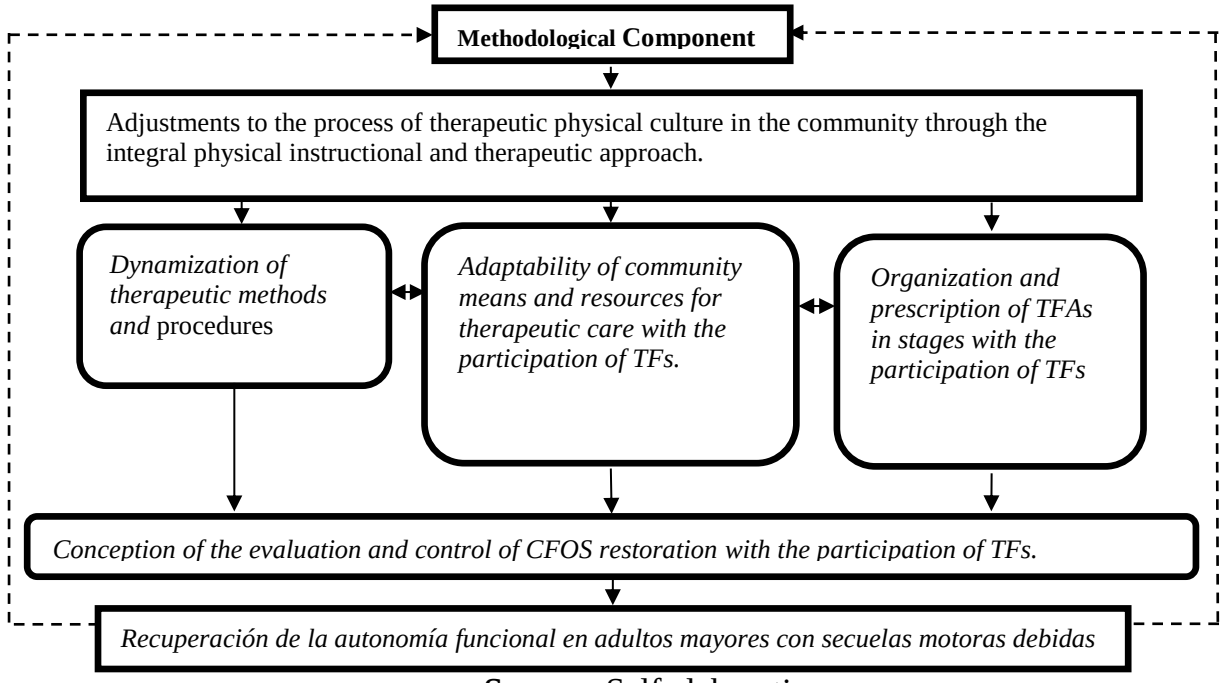
Progression: adjustment of the total work per session, progressively increasing the intensity and duration to achieve new adaptations. Once a moderate intensity (60%) is reached in 20-minute

exercise duration, the recovery intervals will be progressively reduced until the exercise is performed continuously.

Evaluation and control: each action performed must be recorded, which implies a direct and systematic evaluation of the beneficiary's progress, in order to readjust the adaptation and programming. Systematic evaluation is carried out in classes and during the process. Partial and methodology-specific evaluations are carried out at the end of each stage. It is suggested to use tools such as the Karvonen formula, the Barthel Index and the battery of physical abilities tests to monitor the beneficiary's progress. Perform periodic evaluations (every 20 classes) to adjust the exercise plan according to the beneficiary's progress.

Figure 1.

Graphic representation of the methodological component for the CFT methodology in the rescue of the functional autonomy of the older adult with motor sequelae CVD in the community.



Source: Self elaboration

Stages that the methodology consists of the following components.

First stage. Diagnosis, planning and familiarization for the therapeutic action: (one month). It is seen as a set of knowledge, it is previous to the application of the methodology, and its purpose is to prepare the intervention and adjustments to the therapeutic process. It is conceived with the

objective of: characterizing the cognitive state of the CFT teachers and therapeutic facilitators, to face the CFT process in the community, through a biopsychosocial diagnosis of this population group in order to achieve the recovery of their functional autonomy. The different tests and actions to be carried out are organized, structured and chosen with those responsible for them, during the whole therapeutic process, where the actions of the TF group are reflected.

Second stage: Preparation and adaptation of the organism: its duration is in correspondence of the progress of the beneficiary's physical and functional capacity and the fulfillment of the objectives proposed during the same, this should be estimated between 6 and 10 weeks of adaptation. This stage is designed to initiate the process of adaptation of the organism and the general physical preparation of the beneficiary, with the purpose of continuing with the following stages. Work should be done on various physical training stimuli and joint amplitude, as well as on the development of motor qualities, which will be of great help for the fulfillment of the same.

Third stage. Integral physical-therapeutic work (first 12 uninterrupted weeks) and maintenance of the CFOS (for life). It is based on the results achieved in the previous stages, after the first 12 uninterrupted weeks, the other prescribed activities are for life and aims to: increase functional autonomy and physical fitness levels obtained in each of the previous stages, as well as the social incorporation of this population group.

To achieve the integration between all the prescribed stages, the teacher must take into account the following logical steps:

1. Determine the therapeutic content and dosage.
    - Educational talks for health. In all sessions.
    - Joint conditioning exercises. In all sessions.
    - Respiratory re-education exercises. Daily. Twice a day (with the help of the family member).
    - Aerobic resistance exercises. Three times a week.
    - Joint mobility exercises. Three times a week.
    - Muscle strengthening exercises. Twice a week.
    - Exercises to improve balance. Three times a week.
    - Stretching exercises. Every session.
    - Relaxation exercises and techniques. In all sessions.
    - Complementary activities. According to tastes and preferences.

- Preparation of the family as therapeutic facilitators. In all sessions.

2. Selection and dynamization of didactic methods for the physical-therapeutic exercises.

The verbal method will be used for dialogue and exchange; the educational method focuses on educating the beneficiary about his or her health condition, the objectives and importance of the physical-therapeutic exercises; the standard method (intervals to perform short stretches and repetitions at an intensity of 40-50%) and combined) and the repetition and practice method, which helps to strengthen muscles, improve coordination and consolidate correct technique.

Determination and dynamization of organizational procedures.

It is recommended to work individually or as a duo (beneficiary-family and beneficiary-teacher), in order to adapt and dynamize the exercise program specifically to the needs, capacities and objectives of the beneficiary.

3. Selection of means for the practice and adaptability of the therapeutic exercises.

The means to be used in the classes will be the following: 1 ½ meter long canes, small knobs with sand of 2.5 - 3 Kg, pulleys, adapted static bicycle, elastic bands, chairs, 75 - 100 centimeters long bench, measuring tape, whistle, stopwatch and floating means adapted for the aquatic environment and others, according to the therapeutic creativity of the teacher.

4. Evaluation and control by stages. In order to develop this step for each beneficiary, the following vital signs will be monitored:

Temperature: should be monitored to ensure that the beneficiary does not have a body temperature higher than (36.8 0C), which may increase the risk of complications.

Heart Rate: provides valuable information on the beneficiary's cardiovascular capacity, fitness level, response to exertion and recovery capacity. In addition, it allows adjusting the exercise intensity according to the physiological response, thus ensuring safe and effective training.

Blood pressure: fundamental to control, adjust and continue the physical-therapeutic process in these beneficiaries and to know their compensation status.

Step # 6: Analysis of the results obtained.

Here the results obtained in each of the evaluations performed are tabulated, recorded in a database, processed and interpreted and the necessary adjustments are made to the exercise plan.

General evaluation of the stages that make up the methodology in the CFT process in the community for the comprehensive care of older adults with motor sequelae due to CVD.

Meetings of the group of therapeutic facilitators will be held to establish a permanent feedback process. Monitoring, supervision and evaluation of the dimensions and indicators, as established in the methodology used, which will allow action to be taken during the CFT process in the community.

Results: they are immediate (if the process and its actions during the methodology reached the proposed objectives) and the evolution of each beneficiary is evaluated according to their progress through the stages.

Impact: what happened will be verified once each stage is finished in order to make the pertinent adjustments in the prescription, adaptation and dosage of the exercise plan to improve it, its components and its impact, mainly using feedback. Quantitative techniques will be used (sampling and graphs of the different variables) as well as qualitative ones (observation, interviews, manuals, standards, reports) prior selection of the different contents and therapeutic procedures.

Conclusions

The strengthening of local cultural identity constitutes a priority need in the light of the new times, so it is of vital importance to organize it in a way that takes into account essential components of cultural identity and establishes the relationship with its modalities in the socio-cultural management processes. In this sense, the diagnosis identified the absence of any contribution on how identity has been approached methodologically, despite the existence of works. This means a knowledge gap ranging from the conceptual and theoretical to the methodological, so the purpose of this proposal is to contribute in this regard.

In this sense, the teacher plays a leading role, capable of deepening, perfecting, updating and complementing the knowledge in order to be in a position to train his students to strengthen their cultural identity and sense of belonging through sociocultural management, assuming different ways, both curricular and extracurricular, and always taking advantage of the potentialities of ECD.

The methodological recommendations allow taking into account cultural identity as a transversal axis within sociocultural management. This proposal was designed to meet particular objectives within the formative process in the Sociocultural Management career, which contributes to the strengthening of the local cultural identity, as can be seen in the results achieved.

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