



Ciencia y Deporte

Volume 8 issue 2; 2023





An Approximation to the Preparedness of Strength Training Instructors

[Aproximación al proceso de superación de los instructores de musculación]

[Abordagem do processo de superação dos desafios enfrentados pelos instrutores de musculação]

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Received: 10/01/2023.

Approved: 20/02/2023.

ABSTRACT

Introduction: Strength training and fitness activities that pursue aesthetics or rehabilitation demand the implementation of novel training methods based on the practical application of science and technology. The study of the population attending gyms in the municipality of Holguin permitted the identification of weaknesses in terms of methodological preparedness, reflecting the need for further development and readiness for managing and guiding this activity.



Aim: To design a methodological strategy supported by a theoretical conception that contributes to further preparedness and training of instructors at strength training gyms.

Materials and methods: Theoretical and empirical methods and techniques, such as surveys, interviews, observation, and the review of guidelines to get information about the main topic of this study. The feasibility of this proposal was checked through expert judgment and user opinion.

Results: The scientific assessment of the contribution demonstrated its pertinence and feasibility through favorable impacts measured by user opinion and the Likert scale in relation to the theoretical and methodological preparedness of the instructor.

Conclusions: The qualitative and quantitative changes of the main topic of research showed the practical functionality of the methodological strategy suggested through a pre-experiment.

Keywords: Physical and therapeutical activity; strength training; methodological strategy.

RESUMEN

Introducción: La práctica del ejercicio físico y la musculación con fines estéticos o rehabilitadores, exige la implementación de métodos novedosos de entrenamiento, surgidos a partir de la introducción en la práctica de la ciencia y la tecnología; el estudio en la población de instructores de gimnasios en el municipio Holguín permitió identificar limitaciones en la preparación metodológica de estos, lo cual reflejó la necesidad de potenciar su desarrollo y preparación para la dirección y orientación de dicha actividad.

Objetivo: Elaborar una estrategia metodológica, sustentada en una concepción teórica que contribuya a la preparación y superación de los instructores que laboran en los gimnasios de musculación.

Materiales y métodos: Para el diagnóstico se aplicaron métodos y técnicas del nivel teórico y empírico como la encuesta, entrevista, observaciones a sesiones de musculación y la revisión a documentos normativos para obtener información sobre el proceso objeto de estudio. La factibilidad de la propuesta, se realizó a través de la aplicación de los métodos criterio de especialistas y criterio de usuarios.



Resultados: La valoración científica de las contribuciones demostró su pertinencia y factibilidad, al constatar impactos favorables a través del criterio de usuario y la escala de Likert en la preparación teórica y metodológica del instructor.

Conclusiones: Las transformaciones en lo cualitativo y cuantitativo del objeto de estudio, evidenciaron a través del pre experimento la funcionalidad práctica de la estrategia metodológica propuesta.

Palabras clave: Actividad física y terapéutica; Musculación; Estrategia metodológica.

RESUMO

Introdução: A prática de exercício físico e musculação para fins estéticos ou de reabilitação requer a implementação de novos métodos de treinamento, decorrentes da introdução da ciência e da tecnologia; o estudo da população de instrutores de ginástica no município de Holguín identificou limitações em sua preparação metodológica, o que refletiu a necessidade de aprimorar seu desenvolvimento e preparação para a gestão e orientação desta atividade.

Objetivo: Elaborar uma estratégia metodológica, baseada em uma concepção teórica que contribua para a preparação e aperfeiçoamento dos instrutores que trabalham em ginásios de musculação.

Materiais e métodos: Para o diagnóstico, foram aplicados métodos e técnicas teóricas e empíricas, tais como pesquisas, entrevistas, observações de sessões de musculação e revisão de documentos normativos para obter informações sobre o processo em estudo. A viabilidade da proposta foi realizada através da aplicação dos métodos de critérios de especialista e de usuário.

Resultados: A avaliação científica das contribuições demonstrou sua relevância e viabilidade, confirmando impactos favoráveis através dos critérios de usuário e da escala Likert na preparação teórica e metodológica do instrutor.

Conclusões: As transformações qualitativas e quantitativas do objeto de estudo, evidenciadas através da pré-experimentação da funcionalidade prática da estratégia metodológica proposta.



Palavras-chave: Atividade física e terapêutica; Musculação; Estratégia metodológica.

INTRODUCTION

Regular physical activity impacts the development of cardiovascular and musculoskeletal systems, including the reduction of risk factors associated with cardiovascular disease, type 2 diabetes, hypertension, and hypercholesteremia (Hernández, 2010); (González and Rivas 2018); (Fonseca, 2018); (Rodríguez, *et al.*, 2020). Strength training stands out as one of the most common forms of exercise, with effects on physical appearance, the cardiovascular system, and muscular hypertrophy caused by anaerobic exercise.

Strength training is derived from traditional training methods of sports practice. According to Villafuerte (2018), there is a higher level of intensity that causes the release of the human growth hormone, associated with the development of musculoskeletal tissue, and an increase in muscle strength. These physiological relations suggest that strength training has the potential to be an effective form of training, provided that it is practiced and planned correctly.

The organization and orientation of fitness activities in private gyms in Cuba included the strength training instructor (GOC, 2019, O85). Their job requires understanding the essential aspects of strength training and its planning, supported by the study of the main areas of science that intervene in this process, based on a scientific and methodological approach, along with a system of knowledge that contributes to personal growth, and permits proper performance.

All of it demands a systemic readiness process of strength training instructors through instructive and educational activities. this process was acknowledged by Iglesias *et al.* (2017), whose theoretical and methodological contributions in this area were substantial.

The practical and methodological preparedness of this instructor constitutes an important part of their professional development; a well-planned and distributed



physical activity leads to the full and harmonious development of the trainees' physical qualities and capacities.

Accordingly, a group of strength training instructors in private gyms in the municipality of Holguin was diagnosed. The test relied on documentary reviews, observations, and interviews conducted with the instructors and specialists.

The results of the initial diagnostic about the state of the art of the object of research evidenced a need to analyze the structural elements that intervene in the formation and training of the strength training coach. Besides, the methodological guidelines designed so far showed weaknesses in the planning and guidance of physical and therapeutical activity, regardless of non-communicable diseases, and their prevention.

The existing shortcomings linked to the knowledge of instructors were found to be related to the poor systematization of training actions, with the ensuing occurrence of injuries and unequal development of muscle planes of habitual users.

Upon the identification of the problems associated with instructor training, this paper aimed to design a methodological strategy based on the objectives and needs of instructors and users to improve their theoretical and methodological preparedness in favor of physical activity and strength training in private gyms.

MATERIALS AND METHODS

The experiment relied on a sample of 36 subjects, using a simple randomized method. Of them, 16 were strength training instructors at gyms, and 20 were habitual users associated with different gyms based in the municipality of Holguin. Sixteen out of the 20 users were healthy, whereas four suffered from communicable diseases, namely



hypertension, exogenous obesity, and diabetes mellitus. The individuals were asked to sign a written consent form accepting to take part in the study. Upon completion, the participants were surveyed to learn about the state of the art, which produced relevant information to design and define the objectives of the methodological strategy.

It comprised four stages: Stage one, a diagnostic of the knowledge of instructors before the proposal. Stage two was the design of the conception for guidance and management of the physical activity and musculation in gyms, and the creation and presentation of actions to be taken. Stage three was the implementation and development of training actions; and Stage four was the evaluation of action effectiveness through the knowledge acquired by the instructors. The strategy was implemented in lectures, workshops, seminars, and classwork.

A SWOT analysis was conducted, and a workshop was held using the brainstorming technique. Proper identification of such factors permits the construction of anticipated scenarios to correct deviations from the goals of the process. The main strengths, weaknesses, opportunities, and threats were identified. Overall, 12 specialists engaged in brainstorming to tackle the main strengths, weaknesses, opportunities, and threats regarding the current situation associated with the musculation gym instructor. Later, some rationalization was done to integrate the outcome of brainstorming, and choose the ideas with the highest significance in the process.

Table 1.- Examples of training ways performed

Training ways	Objective	Content	Implementation time	Run by
Workshop	To identify the main physiological, biochemical, and morphological changes	The main physiological, biochemical, and morphological changes caused by strength training in the short, mid, and long terms will be introduced. Energy systems and healthy foods. Adjustment	90 minutes	Dr. Darwin Manuel Ramírez, Ph.D.



	occurring through of exercise by subjects with non-strength training.	communicable diseases.		
Lecture	To set the main aspects of strength involved in strength training.	Essential strength factors, training- depending factors, methods, procedures, strength types, and exercises to develop strength will be dealt with. Particularities of the strength training for healthy subjects, and subjects with non-communicable diseases.	90 minutes	Dr. Francisco Freyre, Ph.D. Vázquez

RESULTS

The implementation of the methodological strategy was conducted through workshops, talks, practical demonstrations, and lectures, which considered the knowledge from different sciences, such as morphology, biochemistry, biomechanics, sports training methodology and theory, and physical education methodology and theory. Moreover, the contents related to the specific objectives of the habitual users were planned, as the main actors of the process of strength training, being a physical and therapeutic activity.

Special attention was lent to the implementation of methodological strategies that enable dialogue and the search for knowledge. It comprised two moments, a theoretical one when the users and instructors were guided into the workshop dynamics, thus creating a pleasant atmosphere that led to discussions. The second moment was a meeting in which all the knowledge acquired was put into practice. The means used included computers, boards, posters, and printed material.

Some of the novel elements included specific knowledge to be considered for physical activity in strength training gyms. then, the knowledge indicators were determined and presented to the specialists, who provided greater reliability and accuracy of the information.

Knowledge indicators:



1. Training planning

- To define the objectives to be accomplished.
- To know the methodological guidelines for the particular type of exercise to be performed.
- To define the training time, load indicators, weekly frequency, and work-rest ratio.

2. Aspects for training organization:

- To make up groups based on the sex and the training levels of every user.
- To know the necessary equipment by muscle group, as well as the objectives to be accomplished.
- To define the methods and procedures to be used for workouts with weights and equipment.

3. Knowledge about physical capacities:

- To know the physiological bases of physical exercise.
- To have full control of the physiological order for the development of physical capacities and their weekly working frequency.
- To know the resting time depending on the exercise and the physical capacity.

4. Equipment and functions:

- To know and have full control of each piece of equipment's functions, and the type of muscles they are intended for.
- To master the basic positions, grips, and movement of all equipment and implements.

5. Exercising:

- To select exercise groups or systems by muscle group.
- To regulate the volume and intensity of every implement.



6. Warm-ups:

- Warm-up order and duration
- Methodological guidelines for their execution and physiological influence.
- Warm-up types.

7. Recovery:

- Relevance of recovery.
- Stretching exercises and methodological guidelines.
- Respiratory exercises.

8. Knowledge of the different sciences involved:

- Knowledge about the physiological, biochemical, morphological, and sociological aspects of musculation.
- To know the particularities of their pathologies (when present).

9. Other skills:

- To transmit confidence that generates a positive psychological atmosphere.
- To single out strength training.
- To comply with the ethical and moral code.
- To watch out for personal health and physical integrity, and that of the rest.

The results of the partial application of the strategy were analyzed using the Likert scale (Azócar, 2013). Consequently, a diagnostic test was performed at the onset of the study, which included 12 questions associated with the main topics and contents to be assessed in the 16 instructors included in the sample. Upon processing, values were given (5, 4, 3, 2, and 1) by questions, from the most favorable to the least favorable. Then the values obtained in each question were added and placed in the scale. The next graphic shows the results observed following the first measurement (Figure 1).

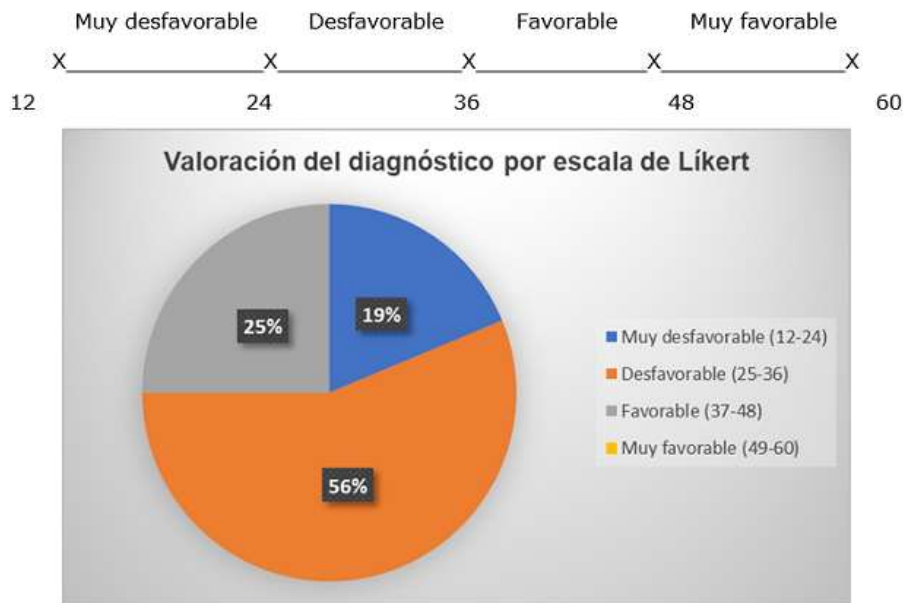


Fig. 1 - First results of the diagnostic (Likert scale)

The results achieved in the first round to evaluate the knowledge of each instructor (Figure 1) showed that none of them were within the Very Favorable range, four were Favorable, nine Unfavorable, and three Very Unfavorable. As can be observed, most instructors (56 %) qualified in the Unfavorable category, so it can be inferred that there is a cognitive limitation to performing quality physical and therapeutic strength training activity properly in private gyms.

Figure 2 shows that 44 % of the individuals were within the Very Favorable category, which means that in this regard there are no instructors with an unfavorable or very unfavorable performance, as to the knowledge about the essential aspects of physical and therapeutic activity and strength training. Hence, there is greater qualitative growth associated with the knowledge type.



Fig. 2 - Results of the second diagnostic test (Likert scale)

The Iadov technique was applied as well (Table 2), as an instrument to assess the practical implementation of the training strategy, which permitted knowing the level of user satisfaction of the most significant aspects.

Table 2. - Iadov Logic Table

3.	Do you think the way in which this strategy was implemented was appropriate?	1.	Do you think that the contents dealt with in the methodological strategy meet the theoretical-practical knowledge needs?						
			Yes	I don't know			No		
5.		5.	Do you think that the training methodological strategy favors your performance as a strength training coach?						
			Yes	I don't know	No	Yes	I don't know	No	Yes



I like it very much	1	2	6	2	2	6	6	6	6
I like it more than I dislike it	2	2	3	2	3	3	6	3	6
I don't mind	3	3	3	3	3	3	3	3	3
I dislike it more than I like it	6	3	6	3	4	4	3	4	4
I don't like it	6	6	6	6	4	4	6	4	5
I can't tell	2	3	6	3	3	3	6	3	4

The criteria used relied on the relationships established between closed questions introduced in the questionnaire, which the individual did not know. These three questions are related through Iadov Logic Table (Table 2). The resulting number from the interrelation of these three questions indicated the position of each subject on the satisfaction scale. The response to the closed questions was interrelated, and therefore, the number obtained indicated each subject's position, depending on the satisfaction scale (individual satisfaction index). The responses to the other two questions helped understand, and have a broader knowledge of the causes of dissatisfaction levels.

The individual results showed that out of the 36 surveyed subjects, 32 showed clear satisfaction with the professional training received, which accounted for 88.9%. Of the total, three (8.3%) showed greater satisfaction than dissatisfaction, while one (2.8%), said he has not sure. Later, the group satisfaction index (GSI) was obtained through this formula: $GSI = \frac{A(1) + B(0.5) + C(0) + D(-0.5) + E(-1)}{N}$, in which A, B, C, D, and E represent the number of subjects with individual indexes 1, 2, (3 or 6); 4; 5, and N represents the total number of group subjects. The calculation of the group index showed values between +1 and -1. The ones between -1 and 0.5 indicated dissatisfaction, between -0.49 and + 0.49 were contradictory, and between -0.5 and 1 showed satisfaction. The result was 0.91, between 0.5 and 1 on the scale (satisfaction), thus having a positive assessment by the instructors about the methodological strategy.

The analysis of the results showed the feasibility of implementing the methodological strategy for professional education to strength training gym coaches and it complies with the set goal, which affects instructor service improvements. The open questions helped confirm the favorable trend of strength training instructors toward the professional training provided, which was corroborated by the results observed in the individual satisfaction index. The other aspects were related to proper time use,



professionalism, and theoretical and practical preparedness of instructors and the specialists who developed the strategy. The variety of activities and their novel and integrative character were remarkable. Overall, 77% of the participants coincided with the importance of the systematization of training actions for future activities.

DISCUSSION

This strategy constitutes a practical element with a new scientific and multidisciplinary perspective, which stems from the existing dialectic contradiction between the traditional forms of training of strength training instructors and the need for changes in terms of preparedness.

This new strategy conceives the constant changes taking place in this context, and the current demands of the training process; it is determined by the need to respond to sociocultural particularities of the community that engages in physical activity in fitness gyms.

Its main arguments emphasize the planning, guided, and conscious character, as well as staged structuring with the purpose of transforming a specific problem.

In this area, several authors have focused on the functionality of the strategy in terms of readiness. Simultaneously, new concepts have been implemented, such as the pedagogic strategy to enhance professional school psychotherapists (Alfonso, 2015); the professional training program for Physical Culture teachers employed by gyms (Fáez, 2018); the strategy for the formation of physical-sports habits that contribute to healthy lifestyles of secondary school students in Chihuahua, Mexico (Almanza, 2018); training of Physical Education teachers looking to provide elder rehabilitation with a science, technology, and society perspective (González, 2019); the training of physical education teachers to confer academic management competency in secondary schools, with an STS perspective (Valencia, 2019); a training strategy for scientific-methodological



preparedness of provincial methodologists in technical schools (Ondarza, 2020); a strategy for pedagogic training of AVD role in the community. (Suárez, 2022).

The methodological training strategy relies on the contribution of the theory of advanced education and the research on participatory action. In this paper, all the elements common to the concepts dealt with were assumed, thus producing the following:

- It was conceived through the search, synthesis, and documentation of the new training forms associated with the professional profile of social actors.
- It was developed according to a participatory and inclusive manner that engages every social entity in the area of education and training of the fitness gym instructor.
- It was precise, flexible, dynamic, and capable of adjusting to the existing circumstances and conditions.
- It rests on the problems of physical culture and the current state of knowledge, science, technology, and their interrelations with participatory action as a method of research, to pursue reality and manage to change it. In practice, the strategy demonstrated the context of study and organization.

CONCLUSIONS

The factors that rule physical and therapeutical activity, as well as the structural elements of the fitness gym instructor training, helped determine the existing flaws in planning and distributing physical and therapeutic activity, as a preventive action against non-communicable diseases.

The structure, content, and methodology of the strategy were determined by its theoretical and methodological fundamentals. It is given by the specific contents of physical and therapeutic activity in the area of fitness gyms, by integrating aspects from different sciences and the most significant features of non-communicable diseases observed in the practitioners.



The practical evaluation of the proposal through the second phase of the survey helped check the feasibility of the strategy, determined by the acquisition of the contents, as well as more effective methods for strength training.

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Conflict of interests:

Los autores declaran no tener conflictos de intereses.

Authors' contribution:

The authors have participated in the writing of the work and analysis of the documents.



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