

Individual Adaptation of Exercises According To The Functional Capabilities of A Person In Physical Rehabilitation

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ABSTRACT

Individualization of physical exercises is one of the key principles of modern rehabilitation, especially in working with people with inclusion. The traditional approach to prescribing exercises is often based mainly on the diagnosis, type of injury or a certain phase of rehabilitation. However, the same structural diagnosis does not mean the same functional capabilities, tolerance to stress or readiness of a person to perform a specific motor task. The purpose of this article is to substantiate the need for individual adaptation of physical exercises in accordance with the actual functional capabilities of a person and to determine the main principles of such an approach in inclusive rehabilitation.

Special attention is paid to the use of exercises as a tool for the gradual formation of the necessary functional capacity, and not only as a means of restoring a separate anatomical structure of damaged tissues or joints. The author shows that an effective rehabilitation program should be dynamic: its parameters should change in accordance with the body's reaction to the previous load and the current level of functionality of the client.

Individual adaptation of exercises involves changing not only the intensity or number of repetitions, but also the position of the body, the amplitude of movement, speed, the nature of muscle contraction, the area of support, external load, the complexity of coordination and the specificity of movement. After an extensive injury, especially if the result of the injury is disability, these parameters should gradually approach the desired level of further activity. This approach allows us to consider rehabilitation as a process of developing functional capacity, and not as a linear passage of standard stages of recovery.

Presents the author's methodology, which describes five important stages in the process of developing the most effective recovery system.

Keywords: individualized exercise adaptation, physical rehabilitation, people with disabilities, functional capacity, individualized rehabilitation.

INTRODUCTION

Modern physical rehabilitation is increasingly moving away from the universal assignment of the same exercises for people with a similar diagnosis. The presence of a disability in itself does not determine a person's functional capabilities: even with the same nosology, joint mobility, muscle strength, coordination, muscle tone, the ability to control body position, load tolerance, and the level of independence can differ significantly [1].

Individualization becomes especially important in working with athletes and people with disabilities or significant functional limitations. In this case, the rehabilitation task is not only to maintain or improve the functional state, but also to take into account the specific requirements of a particular sports activity, technical means, and methods of performing movements [2, 3].

Therefore, it is advisable to consider an exercise not as a fixed unit of the program, but as a tool whose parameters can change in accordance with the current capabilities of the person and the set functional goal [4].

MATERIALS AND METHODS

The work uses a theoretical and analytical approach with a generalization of modern scientific data on the individual purpose of physical exercises, physical rehabilitation of people with disabilities, adaptive sports, the development of flexibility and the use of stretching.

Based on the analysis of the literature and practical experience, the author systematized the main parameters of exercise adaptation and proposed a five-stage model of individual construction of rehabilitation load.

RESULTS

Individual functional capabilities as a basis for exercise prescription

At the initial stage of interaction with a patient, the primary basis for developing a rehabilitation program should be not the diagnosis itself, but the person's actual ability to perform specific motor actions and exercises. Current recommendations on physical activity for people with disabilities or significant mobility limitations also emphasize the importance of considering individual physiological characteristics, functional limitations, environmental accessibility, and personal goals [6].

During the initial assessment, it is appropriate to determine the parameters that directly influence exercise performance: available range of motion, strength, muscle tone, movement control, balance, pain, fatigue, the need for external support, and the ability to independently maintain the required body position.

Accordingly, the same exercise may be performed by different people in a lying or sitting position, with additional support, through a reduced range of motion, or with external assistance. This is not a simplification of the exercise but rather its adaptation to a specific functional level. In each individual case, the need for specialized adaptive equipment may also be considered, as such equipment can increase access to physical activity for people with different types of functional limitations [4]. At the same time, equipment should not be selected separately from the rehabilitation program. It must be according to the specific functional goal.

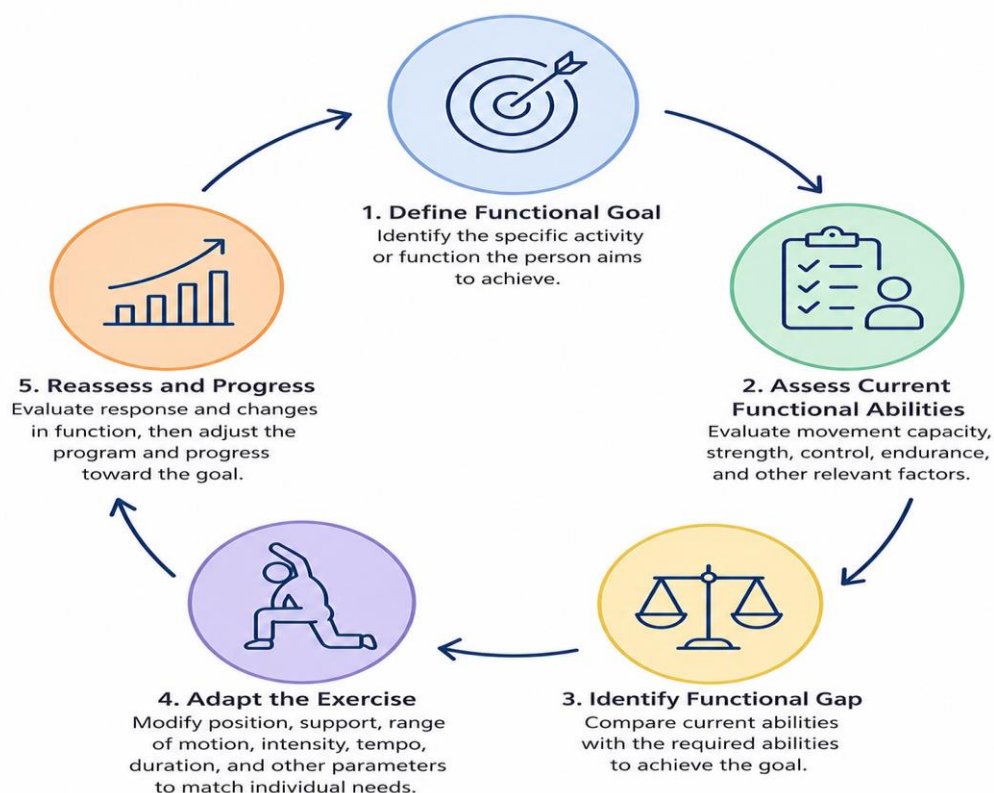


Figure 1. Cyclical Individualized Exercise Adaptation Process

Stretching as a tool for individualized rehabilitation

Stretching is one of the most accessible tools for addressing mobility and flexibility. Systematic reviews confirm that static stretching can increase flexibility and available range of motion [3]. However, the outcome depends not only on the type of stretching but also on the person's initial functional status and the way the intervention is dosed.

In rehabilitation practice, body position, range of motion, intensity, duration of the hold, number of repetitions, and the need for external support can all be adapted. When significant mobility limitations are present, it is important to work within a controlled available range of motion and gradually modify the load according to the individual's response.

In cases of contractures, different mechanical stretching approaches may have different effects on increasing range of motion, which further supports the need for individualized selection of intervention parameters [2].

At the same time, stretching should not be regarded as a universal solution for all people with mobility limitations or disabilities. For example, in rehabilitation following spinal cord injury, stretching is widely used to address range of motion, contractures, and spasticity. However, the evidence regarding some of its long-term effects remains limited [9]. Therefore, the critical consideration is not simply whether stretching is used, but whether its intensity is justified and whether the individual response is appropriately monitored.

The “from capability to requirement” principle

The author's approach is based on comparing two states:

what a person can perform at present and what the person needs to perform in order to achieve a specific functional goal.

The difference between these two states constitutes a functional gap. It is this gap, rather than the formal type of an exercise, that determines the direction of further rehabilitation.

For example, if a required function demands a greater range of motion than is currently available, the primary focus may be placed on mobility exercises and stretching. If the required movement is possible with sufficient range of motion but the person cannot maintain stable control of the position, priority should be given to movement control and selection of appropriate support.

Thus, progression does not occur according to the principle of simply “performing a more difficult exercise,” but rather through the gradual alignment of the person's current capabilities with the functional requirements.

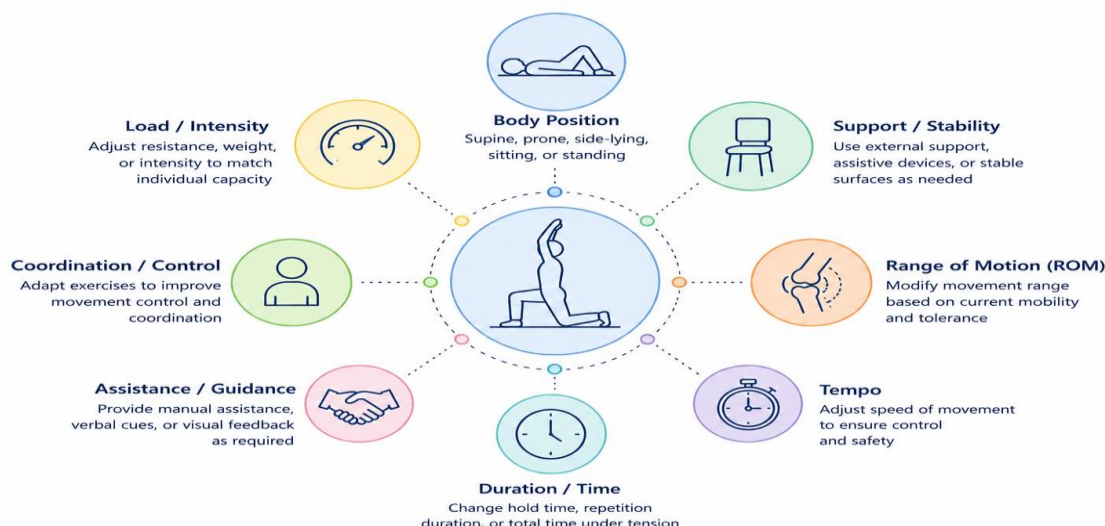


Figure 2. Parameters of Individualized Exercise Adaptation

From a simple exercise to a functional task: adaptability throughout rehabilitation

An isolated exercise has practical value when its outcome transfers to a specific activity performed by the person. Therefore, after improving a particular component, such as range of motion or control of a specific body segment, the acquired capacity should be integrated into a functional task.

For one person, the ultimate goal may be to facilitate self-care or independently maintain a particular body position. For another, it may involve improving the ability to perform a specific daily activity or increasing independence in the home and community environment.

Thus, the same improvement in range of motion may have different functional significance for different people.

It is particularly important to note that the selected direction of movement in rehabilitation should not remain unchanged throughout the entire process. The program should remain flexible and take into account symptoms that may arise during exercise. Pain, excessive muscle tension, fatigue, changes in muscle tone, decreased quality of movement control, or, conversely, the exercise becoming easier to perform all provide information for further modification.

Thus, the response to exercise is part of the assessment process. Even an exercise that was appropriately selected at the initial stage should be modified as the patient's functional capabilities change.

A coaching approach to individualization

Individualized adaptation involves the active participation of the patient in the rehabilitation process. The specialist determines safe and evidence-based boundaries for the exercise load, but information regarding the person's sensations, difficulties, comfort, fear, and personal goals should influence the selection and modification of exercises.

Contemporary approaches to rehabilitation emphasize the importance of shared decision-making between the rehabilitation coach and the patient and, when necessary, other individuals involved in providing support [5]. Similarly, exercise prescription requires a combination of scientific evidence and standardized protocols, the professional experience of the coach, and the individual characteristics of the client [7, 8].

This coaching approach contributes not only to adherence to the rehabilitation program but also to the development of the person's ability to understand their own body, assess responses to physical load, and gradually become an active participant in the rehabilitation process.

The author's five-step model for individualized exercise adaptation during rehabilitation

Based on many years of practical experience, detailed analysis of scientific literature and medical protocols, the author proposes a five-step model.

1. Definition of the functional goal. First, it is determined why a particular physical quality or movement is needed: daily activity, self-care, maintaining a specific body position, or another functional task.
2. Assessment of current functional capabilities. Available range of motion, strength, movement control, muscle tone, exercise tolerance, need for support, and other parameters relevant to the individual are assessed.
3. Identification of the functional gap. The person's current capability is compared with the capability required to achieve the established functional goal.
4. Individualized exercise adaptation. Body position, support, range of motion, intensity, tempo, stretching duration, resistance, and other parameters are modified. The person does not receive a "different" program but rather an accessible version of the same motor task at the current stage of rehabilitation.

5. Reassessment and progression. The individual's response to exercise and changes in functional capabilities are analyzed. Exercise parameters are then modified accordingly, and the functional gap is gradually reduced.

Thus, the model is cyclical:

functional goal → assessment of capabilities → functional gap → exercise adaptation → response assessment and further adaptation.

Individualization does not mean abandoning protocols

An individualized approach does not contradict evidence-based medicine or standardized recommendations. A protocol defines the general direction and boundaries of rehabilitation, whereas individualized adaptation determines how a particular person can implement that direction at a specific stage of rehabilitation.

The most appropriate approach is to combine evidence-based recommendations, professional clinical judgment, and continuous consideration of the person's actual capabilities and goals [6, 8].

DISCUSSION

A review of the current literature shows that individualized exercise therapy is an important component of modern rehabilitation. This principle is particularly important in working with people with disabilities, as the same diagnosis does not necessarily mean the same functional status. Studies of exercise programs in people with lower limb amputations also demonstrate the potential for improving fitness, mobility, and functional capacity, depending on the type and dosage of intervention [1].

Stretching may be an important component of such programs, particularly when addressing limitations in range of motion and flexibility [2, 3]. However, its parameters should be determined individually, and outcomes should be regularly assessed. For certain neurological conditions, evidence supporting some traditional goals of stretching remains insufficient [9], further emphasizing the need to avoid standardized, one-size-fits-all prescriptions.

The proposed author's model provides a structured framework for this process and can be applied in general physical rehabilitation for people with disabilities and significant mobility limitations.

CONCLUSION

Individualized adaptation of physical exercises is an important principle of contemporary physical rehabilitation for people with disabilities, as functional capabilities cannot be determined solely by diagnosis or the nature of an existing impairment. Even among individuals with similar clinical conditions, substantial differences may exist in strength, joint mobility, movement control, muscle tone, endurance, exercise tolerance, and the need for external support.

The effectiveness of rehabilitation interventions largely depends on the correspondence between the exercise and the person's current capabilities and functional goal. Modification of body position, support, range of motion, intensity, tempo, duration, and other parameters makes physical exercise accessible and appropriate for a particular individual.

Stretching may be an important component of an individualized rehabilitation program, particularly when limitations in mobility or insufficient flexibility interfere with the performance of a required function. At the same time, its application should be based on an assessment of functional status, individual tolerance, and monitoring of the response to exercise, as the effectiveness of different stretching methods may vary depending on the nature of the functional impairment.

The proposed five-step model of individualized exercise adaptation makes it possible to systematize the process of designing rehabilitation loads. A fundamental feature of the proposed model is the cyclical and flexible nature of the process: at each stage of rehabilitation, the specialist carefully assesses the development of the client's

physical condition and the presence of new symptoms or sensations. Based on this information, the activity program can be reviewed and modified.

It should be emphasized that individualization within the author's methodology does not mean abandoning evidence-based recommendations or standardized protocols. Rather, it involves adapting them to the actual capabilities, needs, goals, and responses of a particular patient. This approach makes it possible to move from the formal performance of prescribed exercises toward the purposeful development and restoration of functions necessary for the person to achieve the greatest possible level of independence, activity, and participation in everyday life.

ETHICAL APPROVAL

This article is based on theoretical analysis, scientific literature review, and the author's professional rehabilitation methodology. The study did not involve experimental interventions, identifiable human participants, animals, or the collection of personal data. Therefore, according to institutional and international ethical standards, formal ethical approval was not required.

CONFLICT OF INTEREST

Conflict of Interest: The author declares that there are no financial, commercial, or personal conflicts of interest that could have influenced the preparation or publication of this manuscript.

REFERENCES

1. Dupuis, F., Martin Ginis, K. A., MacKay, C., Best, K. L., Blanchette, V., Cherif, A., Robert, M. T., Miller, W. C., Gee, C., Habra, N., Brousseau-Foley, M., & Zidarov, D. (2024). Do exercise programs improve fitness, mobility, and functional capacity in adults with lower limb amputation? A systematic review on the type and minimal dose needed. *Archives of Physical Medicine and Rehabilitation*, 105(6), 1194–1211. <https://doi.org/10.1016/j.apmr.2023.10.011>
2. Geusebroek, G., Buczny, J., Houdijk, H., Ziesemer, K. A., Maas, H., & van Dieën, J. H. (2025). Constant-torque stretching in ankle contractures results in greater changes in range of motion than constant-angle or dynamic stretching: A systematic review and meta-analysis. *Archives of Physical Medicine and Rehabilitation*, 106(7), 1108–1125. <https://doi.org/10.1016/j.apmr.2024.12.004>
3. Ingram, L. A., Tomkinson, G. R., d'Unienville, N. M. A., Gower, B., Gleadhill, S., Boyle, T., & Bennett, H. (2025). Optimising the dose of static stretching to improve flexibility: A systematic review, meta-analysis and multivariate meta-regression. *Sports Medicine*, 55(3), 597–617. <https://doi.org/10.1007/s40279-024-02143-9>
4. Jamieson, A. R., & Wijesundara, H. D. (2025). A review of adaptive equipment and technology for exercise and sports activities for people with disabilities. *Disability and Rehabilitation: Assistive Technology*, 20(1), 33–45. <https://doi.org/10.1080/17483107.2024.2372323>
5. Papadimitriou, C., Clayman, M. L., Mallinson, T., Weaver, J. A., Guernon, A., Meehan, A. J., Kot, T., Ford, P., Ideishi, R., Prather, C., & van der Wees, P. (2024). A new process model for relationship-centred shared decision-making in physical medicine and rehabilitation settings. *Health Expectations*, 27(4), e14162. <https://doi.org/10.1111/hex.14162>
6. Ptomey, L., Morgan, K. A., Blauwet, C. A., Boudreaux, B. D., Fernhall, B. O., Hauck, J., Legg, D., Tow, S., & Martin Ginis, K. A. (2025). ACSM expert consensus statement: Considerations and recommendations for prescribing exercise and designing physical activity programs for people with disabilities. *Medicine & Science in Sports & Exercise*, 57(11), 2588–2598. <https://doi.org/10.1249/MSS.00000000000003775>
7. Smith, S. S., Snodgrass, S. J., & Osmotherly, P. G. (2024). Elements of exercise prescription in randomised controlled trials of musculoskeletal rehabilitation in a one-on-one setting: A scoping review. *Musculoskeletal Science and Practice*, 69, 102901. <https://doi.org/10.1016/j.msksp.2023.102901>
8. Smith, S. S., Snodgrass, S. J., & Osmotherly, P. G. (2025). The key elements of the exercise prescription process in musculoskeletal rehabilitation in a one-on-one setting: A delphi-studies of Australian physiotherapy specialists. *Musculoskeletal Care*, 23(1), e70042. <https://doi.org/10.1002/msc.70042>

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9. Williams, T. E., DeMark, L. A., Olarewaju, T. A., Hawkins, K. A., & Fox, E. J. (2024). Stretching after spinal cord injury: A call for evidence for this common clinical practice. *Frontiers in Rehabilitation Sciences*, 5, 1505439. <https://doi.org/10.3389/fresc.2024.1505439>