

Diabetes & its Complications

The Challenges of a Systems Approach to Diabetes Management

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ABSTRACT

The article examines the challenges of organizing a systems approach to the treatment and rehabilitation of diabetics and identifies additional non-drug elements for supporting a comprehensive system of active disease management. A complete list of the most essential elements of the ANTIDIABET system proposed by the authors is presented. The article examines the organizational and educational elements of the diabetes management system, highlighting some shortcomings in their implementation.

Keywords

Systems approach, ANTIDIABET system, System elements.

Introduction

In preparing this article, we drew on the aforementioned literature, personal experience with diabetes prevention, and long-term observations of organizational and social challenges in managing diabetes among those around us.

Medical issues related to the diagnosis and treatment of diabetes have been adequately addressed in the scientific literature [1-6]. The authors are interested in the socio-psychological causes and aspects of deviant behavior in older adults and retirees that complicate diabetes management.

Diabetes mellitus (DM) shortens a person's life by an average of 10 years. It is a widespread, multifactorial disease caused by aging and the weakening of many body systems. For example, aging of the pancreas leads to gastrointestinal dysfunction, metabolic deterioration, obesity, and weakening of other organs. This affects all body systems, increases mortality from cardiovascular disease by 2-3 times, and can cause strokes, nerve damage, kidney disease, and liver disease.

Some seemingly strong people who develop diabetes in their 50s and 60s don't even realize it's a consequence of subtle development

of diabetes factors (excess weight, blood pressure, vascular spasms, etc.). They led a familiar lifestyle of cigarettes, beer, fast food, and television, unaware that their bodies begin to weaken after 40, and their habitual lifestyle violations have a greater impact on their deterioration.

The famous actor and martial arts expert Chuck Norris (March 10, 1940 – March 20, 2026) understood the mechanisms of aging well and slowed them down with physical activity, adhering to healthy lifestyle rules until his last day. But at 86, when many biological and genetic factors of aging are already in effect, it's time to gradually reduce the intensity of your exercise, even if you feel great. Then you can live longer and not die during training.

Smoking is especially dangerous. It triples the risk of vascular complications (heart attacks, strokes, diabetic foot amputation). Nicotine increases blood sugar and accelerates vascular destruction, impairing blood flow in the legs, causing non-healing ulcers and gangrene. We occasionally visited a friend of ours, a 50-year-old auto mechanic. He was not overweight and looked great, but he smoked and occasionally complained of foot problems. He took doctors' recommendations with humor and followed them without due diligence. Our persuasion and recommendations also yielded little result; he was psychologically unprepared to learn the various measures to combat diabetes and to adopt a modified lifestyle with significant restrictions on smoking, diet, and beverages. Soon,

his right foot was amputated. He stoically endured these new difficulties, continues to drive, optimistically renovates his house, but criticizes doctors and occasionally smokes. He doesn't see or fully understand his mistakes. We've met many such acquaintances in our lives, although all the other diabetics showed signs of obesity.

We believe that some men who successfully navigated sports and military service in their youth have an overly strong belief in their "iron" health and their ability to overcome life's challenges. This is how they were raised by their commanders and coaches. Some men view doctor visits and laboratory tests as a sign of weakness and patiently carry their problems within until death. As a result, many heavy smokers and "tough guys" face the development of retinopathy (vision loss), nephropathy (kidney failure), and neuropathy (nerve damage). Diabetes can arise from a hereditary predisposition, alcohol abuse, fatty barbecue dishes, sweets, and starchy foods, mental or physical stress, trauma, and other well-known factors.

Diabetes can arise from a hereditary predisposition, alcohol abuse, fatty barbecue foods, sugary and starchy foods, mental or physical stress, or trauma, as well as other well-known factors. However, this is rarely taught to our youth in regular (non-medical) schools and universities, and is rarely taught to adults until they present with symptoms of diabetes.

There is a clear discrepancy between the educational elements and the preventive objectives of the overall system, which includes many elements of diabetes management. However, in our opinion, this educational topic (and problem) is more important for the national security of most countries than some other topics and disciplines that are too theoretical, scholastic, and, in essence, divorced from the everyday challenges of individual survival, family, and society. Therefore, in our original Antidiabet system, educational, upbringing, and psychological elements of diabetes management occupy an equally important place alongside more expensive medical and pharmacological elements. We believe that the psychological, pedagogical, and educational elements of the Antidiabet system are more important than the therapeutic and pharmacological elements, as education and training, not medications, are the foundation for the effectiveness of all other elements of the Antidiabet system, which is being created and continuously improved in society, the state, in every medical institution, in every family, and in the lives of every individual striving to preserve our universal and highest value – the individual, their health, happiness, and well-being.

The Antidiabet system is a set of interconnected and interacting elements that provide a comprehensive approach to the prevention and control of diabetes at every social and governmental level of individual, family, community, and national life. An incomplete Antidiabet system is present in the lives of every diabetic.

The primary goal of our research is to enhance the effectiveness

of personal and public Antidiabetes Systems for the effective and timely stabilization of patients' blood sugar levels, improved metabolism, weight and exercise optimization, and ultimately, improved overall well-being and longevity.

Designing Antidiabet Systems at Different Societal Levels

Regional and personal Antidiabet Systems should include all elements and mechanisms for the treatment and prevention of diabetes, expanding the availability of specialized nutritional products, implementing methods for conscious lifestyle changes for diabetics, quitting bad habits, and other beneficial elements. Let's consider the basic components of a System that meets societal needs.

The main elements of a personal or public Antidiabet system are:

1. A mechanism for reliably acquiring (obtaining) and taking the necessary medications to normalize blood composition, body weight, metabolism, blood pressure, etc.
2. A mechanism for mandatory receipt and adherence to physician recommendations on all aspects of diabetes problems and prevention. Unfortunately, these recommendations are not always comprehensive and mandatory, as they are not fully covered and regulated by the control and management elements of incomplete ANTIDIABETES systems.
3. Optimal lifestyle: normalizing sleep-wake patterns, work, and nutrition. This includes social and everyday measures to normalize metabolism and blood pressure; it often includes elements of yoga therapy and nutrition to improve cellular sensitivity to insulin. Avoiding bad habits (smoking, alcohol, overeating, nocturnal lifestyle, working without rest, etc.) is also important.
4. Balanced nutrition and diet therapy. This includes proper, frequent meals, reducing fast carbohydrate intake, increasing vegetable consumption, and taking specialized supplements from wheat bran, herbs (chicory, burdock root), and herbs and berries (blueberries). These slow down the absorption of carbohydrates and help lower blood sugar levels. Anti-Diabetes Herbal Infusions: herbal compositions aimed at reducing thirst, dryness, and supporting the pancreas. These products are a dietary and preventative nutritional supplement and complement medication, lifestyle changes, and other elements.
5. Regular medical monitoring and self-monitoring of blood counts, body weight, and blood pressure; maintaining a self-monitoring diary for all elements of the Antidiabetes System; medication intake, food composition, diet, and physical and social activity. Using the self-monitoring diary, all elements are adjusted to suit the situation and each other. For example, physical activity is adjusted to match metabolic issues, caloric intake, and work schedule, and vice versa.
6. Ongoing training and development of accessible methods for combating diabetes across all elements of the Antidiabet System in schools and universities. This includes using a self-monitoring diary, an information and self-management subsystem, and ongoing guidance and training from doctors,

teachers, trainers, and coaches.

7. Maintaining a psychological, emotional, and religious commitment to success and the importance of steadfastly adhering to treatment conditions and protocols for all other elements of the system. For example, adopting and implementing a positive attitude toward people, life, and the environment, positive communication, and mutual support in "Diabetes Clubs," within the family, in society, in schools and universities, in the army, etc.
8. Professor and physician Yu. I. Polishchuk (1932-2024) developed unique recommendations for treatment outcomes at the intersection of gerontology, medicine, psychiatry, and sociology. He uncovered the relevant systemic connections between all treatment elements and cognitive disorders in aging individuals and the importance of combining the efforts of medical and psychosocial therapy in all treatment and prevention systems [7-11].
9. Professor A. A. Moskalyev proposes elements relevant to the Antidiabet system for slowing aging through caring for the gastrointestinal microflora. His recommendations include calorie restriction, the use of probiotics, acidity control, and the elimination of processed foods [12]. Thus, they are quite useful for all forms of diabetes and many other diseases.
10. Clinical follow-up: reminder systems for required tests or examinations. Infrastructure and digital healthcare (eHealth), digital diaries, and telemedicine: mobile apps for automatic insulin dose calculations, remote specialist consultations for Antidiabet systems.
11. National and regional public policies. Promoting healthy lifestyles by community leaders, educational campaigns at the state level to reduce sugar and trans fat consumption. Developing sports infrastructure, ensuring the availability of high-quality and healthy products in stores, access to recreational resources, and all other elements of Antidiabet systems, as well as their legal and enforcement protection.

The more developed the transportation and video communication system in a given area, the less need there is for separate, autonomous organizational structures. For example, in some countries, a patient can reach a large specialized center in one hour, covering over 100 km in comfortable conditions. This is much faster than many people travel to work.

We are confident that this list of Antidiabet system elements will be continually expanded as they are identified, their definitions refined, and their importance understood.

Studying the challenges of implementing the Antidiabet System elements

Our observations and conversations with specialists, patients, and their families show that most patients do not understand the full range of the above-mentioned elements of a complete diabetes management system. Moreover, some physicians and organizers of local Antidiabet systems do not always understand the full scope of the Antidiabet System. Their expertise is generally limited to

their personal experience and the functional and professional skills of their training. This is entirely natural due to the division of education and labor between specialists and all interested officials and individuals. One person cannot adequately understand the large number of functions and subsystems within the vast field of knowledge and issues related to the goals of the complete Antidiabet system.

Not even all textbooks provide a complete list of the elements of the Antidiabetes System. This is due to the necessary specialization and the narrow understanding of some specialists regarding the multifactorial nature of all areas of comprehensive intervention against diabetes. Only in the largest clinics with their own scientific base and long-term monitoring and training programs for diabetics do we see an approach to a more comprehensive system of elements for managing diabetes. However, even there, some elements are not always present due to the limitations of local conditions.

Long-term observations by many authors show that approximately half of people with signs of diabetes do not follow some of the recommendations for using all known and effective elements of the Antidiabet system. The reasons for the insufficient efforts to improve their health, in our opinion, are as follows:

Some patients, their loved ones, and Antidiabet System staff either do not notice, treat them lightly, or do not fully understand the importance of each element of diabetes management. Here we see the impact of heavy workloads, addiction, and professional burnout (fatigue).

Patients also experience these shortcomings. Some have an inner conviction that minor deviations from treatment regimens and a healthy lifestyle are not so dangerous. They skip individual classes or procedures, and nothing serious happens. For this, they pay with an unnoticeably growing and protruding belly, difficulties in everyday life, and they increase specific factors that contribute to their premature death. Some areas and elements of the Antidiabet system, particularly those related to organizational, legal, social, and educational/psychological aspects, are not adequately included within the responsibilities of clinics and the specialization of endocrinologists. Furthermore, under current regulations, treating physicians lack the time to fully explain everything to patients, some of whom don't even understand all the nuances of their situation and the essence of the information addressed to them.

Small deviations from adherence to all prescribed procedures do not immediately produce visible negative consequences, but accumulate and accumulate unnoticed in our bodies over the years. This creates the false impression that failure to adhere to individual elements of the Antidiabetes system is not a crime and does not entail serious consequences, although in fact, the opposite is true.

In some regions, dedicated specialists and the necessary conditions for high-quality patient training in all the areas and elements of

the complete Antidiabet system we've outlined, as well as specific methods for implementing them, taking into account the everyday, economic, psychological, organizational, and other challenges facing each individual patient, are either completely or partially absent. For example, these may include difficulties in the transition of older adults (pensioners) to a new life, a lack of funds, a lack of goal-oriented approach, and weakened cognitive skills and volitional mechanisms. Due to insufficient education of patients and their families, we see the following challenges in the overall comprehensive management of diabetes:

- Lack of knowledge of useful recommendations and technologies of a social, everyday, and psychological-pedagogical nature;
- Lack of awareness or underestimation of symptoms in the early stages at 30-40 years of age;
- Laziness, burnout, or aversion to adequate physical activity;
- Insufficient personal commitment to hard work and weak psychological support from others;
- Lack of consistency in the implementation of several interrelated areas of health management in a specific patient. For example, improving bowel function and metabolism, using fitness, yoga, herbal medicine, and changing diet and lifestyle.

Conclusion

Many elements of the ideal Antidiabetes system are already being implemented in many countries, regions, and families. They are partially formalized by a multitude of (still very fragmented and incomplete) regulatory acts and organizational structures composed of loosely interconnected scientific, medical, financial, human resources, organizational, and material resources (subsystems, elements). We see these elements, with varying degrees of comprehensiveness and effectiveness, in governments, local governments, and at the international level (UN, WHO), as well as in other institutions, ranging from municipal medical centers and first aid kits. Some organizations, in our opinion, are insufficiently coordinated, if assessed based on the scale and relevance of diabetes problems for a given society. We believe that socio-psychological factors are no less important than therapeutic and pharmacological factors.

For healthcare workers and patients in small, remote communities, medical videoconferencing and remote medical care, as well as rapid delivery of essential samples and medications (drones) are becoming increasingly important. Therefore, local communities have a choice in creating cost-effective organizational structures for their local Antidiabetes system.

With effective public education and awareness of health risks, such approaches will relieve regions of some of the costs of medical care in remote communities. For example, in Russia, a network of district and inter-district hospitals and corresponding medical transportation and communication facilities has been developing since the 19th century. The experience of other countries plays an important role here, simplifying the selection of an appropriate

option for organizing a local Antidiabet system, taking into account climatic and other conditions. Treatment protocols updated at major research centers, patient education programs, recommendations on nutrition, physical activity, psychological support for patients in diabetes clubs, and so on are of great assistance.

It's important to note the relevance of all the principles and areas of the systems approach discussed above for treating not only diabetes but also other human diseases. It's enough to review the relevant recommendations and texts to see the similarity of protocols and recommendations for a wide variety of diagnoses.

Diabetes is a death sentence primarily for the lazy, illiterate, and those not included in the Antidiabetes system. A person included in the diabetes prevention system has the chance to change this "sentence".

These elements, like a protective fortress, protect a person from all aspects of their life. The conceptual framework for a holistic and comprehensive diabetes prevention system proposed by the authors is the result of a study of the interdisciplinary efforts of many scientists from a wide range of fields.

We discuss the key elements (components) of a comprehensive and effective "Antidiabetes" system, which we propose to create or organize from existing elements in every region where there are groups of people in need of diabetes treatment and prevention. The methodological significance of the proposed conceptual framework for the Antidiabet system, which includes all the essential elements of a diabetes management system, lies in ensuring a comprehensive approach and understanding the mechanisms of disease control effectiveness in the life of an individual.

Some elements of a comprehensive systems approach to diabetes management have been less well described and are clearly underutilized in practice.

For example, in Shanghai, the world's first patient was cured of diabetes through a pancreatic cell transplant. (Science and Technology Commission of Shanghai Municipality). A man who had suffered from type 2 diabetes for 25 years was completely freed from insulin injections. An article about this medical breakthrough, led by doctors at Shanghai Changzheng Hospital, was published on the website of the journal Cell Discovery. According to the report, the patient, who underwent the innovative cell transplant in 2021, has been medication-free for 33 months since 2022. Prior to this, the man's body had almost completely lost all function of his pancreatic islet cells (the organ that secretes insulin). The patient was at high risk of serious complications and required several daily insulin injections to avoid a coma. The operation was described as "the world's first documented case of diabetes with severe islet dysfunction cured by autologous (i.e., transplanting cells from the patient's own body, without the need for a donor) regenerative transplantation of islets derived from stem cells". The team at the Changzheng Hospital Organ Transplant Center successfully

used the patient's own peripheral blood mononuclear cells and "reprogrammed" them for the desired functions. However, the limited scope of new treatments demonstrates the importance of focusing on other elements of the diabetes management system.

We see significant potential in promoting and promoting healthy eating habits, as well as education on how to select and prepare essential foods. There is considerable useful experience in how school-based education can increase physical activity and a healthy lifestyle, and optimize family and household relationships.

Schools and universities need to more strictly cultivate behavioral discipline and monitor compliance with recommendations across all aspects of health promotion. Diabetes clubs and schools, mutual support, and the exchange of experience and information will allow us to improve public education on self-monitoring methods and analyze the results of our participation in the Antidiabet system at a low cost.

However, education on healthy eating is practically absent from school curricula. This is evidenced by the school curricula themselves and our observations of the diets of students, musicians, and teachers. For most people, food is the primary source of energy, pleasure, and enjoyment. But not all of them take into account the well-known truth that our food can be both a cure for health and a cause of disease. Even enlightened and talented students and schoolchildren almost daily "assemble their future illnesses with a fork". Issues of healthy eating have been widely covered in the literature. However, in our opinion, this coverage is somewhat one-sided, without due consideration of the economic and socio-psychological aspects that complicate the implementation of good advice and good intentions. This is especially noticeable among students and aging adults with modest budgets. A study of their questionnaires and food diaries, even over 10 days, reveals significant deviations from both a typical healthy and a specific diabetic diet. For example, we confirm a clear lack of vegetables, especially onions, garlic, and greens. There's also a noticeable overindulgence in carbohydrates, fats, and fast food. Yet, prolonging an active and healthy life directly depends on this.

Many of our friends and family clearly lack knowledge and optimism in overcoming the challenges of old age. Some fear that by following diets, they are condemning themselves to a dull and depressing existence. Others are overly confident that minor deviations from doctor's recommendations will be compensated for by other treatments, which in reality doesn't happen.

Therefore, developing strict dietary discipline is an important and relevant link that requires additional coaching and psychological support from the community. Nutrition for people with diabetes should be part of the therapeutic plan and contribute to improved metabolism with any type of drug therapy. When creating your personal and family menu, consider your personal preferences, tastes, and budget. A therapeutic vegetable diet can be quite affordable with a rational approach and monitoring food intake in

combination with drinking water. Therefore, methods of education and self-education, cultivating Divine self-attitude technologies based on the methods of Academician G.N. Sytin, and providing every possible support to patients' faith, patience, and willpower in overcoming diabetes are more relevant than ever.

The authors urge that all of these elements be considered and funded within a unified and comprehensive ANTIDIABET system, which would organizationally unite all areas and efforts to combat diabetes under a single leadership. Almost everyone can point to elements that are insufficiently present in the daily lives of most diabetics. Only a few out of the millions of patients and their caregivers see the entire Antidiabet system. Only a few doctors and healers can provide recommendations for each of its elements of intervention for diabetes patients. These are primarily individuals enlightened not only in medical theory but also in other sciences, such as the systemic organization of activities, psychology, pedagogy, and even religion.

The practical organization of a systemic approach to combating diabetes is increasingly evident in certain large and successful clinics and hospitals. Society faces significant organizational, legal, and educational challenges to disseminate best practices worldwide in the form of specific standard treatment protocols, municipal organizational structures, legal acts, regulations, recommendations, and funding optimization.

For example, establishing tax incentives for effective centers offering comprehensive solutions to diabetes problems and for individuals who, through their efforts at the family and household level, contribute to reducing treatment and medication costs. Similar schemes are already being developed in Russia and a number of other countries to increase birth rates and strengthen families.

Awareness and effective implementation of the requirements of a systems approach will enable interested countries at all levels of society to improve the quality and effectiveness of the fight against diabetes in a relatively short time. The fight against COVID-19 has demonstrated that we have the knowledge, skills, and active structures for success.

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Appendices

Individual Physical Activity (Pa) Training

Any physical activity promotes lower blood sugar and body weight, reduces insulin resistance and abdominal obesity, improves dyslipidemia, and enhances cardiovascular fitness. Physical activity is hampered by apathy, laziness, and burnout, disbelief in results, and a lack of stimulating stimuli.

Daily aerobic exercise lasting 30–60 minutes is necessary. Your doctor, along with your health and body's reactions, will advise you on contraindications and precautions.

Coronary heart disease, respiratory diseases, joint diseases, and other conditions are not a hindrance to feasible and adapted efforts. Complete abstinence from movement and simple exercises, such as bending and rubbing, leads to a sharp deterioration in metabolism and premature death. The risk of coronary heart disease requires an ECG (or, if indicated, stress tests, etc.) before starting a physical activity program. In patients with type 2 diabetes receiving insulin or oral hypoglycemic agents (OGADs) that stimulate insulin secretion (and very rarely, other hypoglycemic agents), physical activity can cause hypoglycemia.

A Sofa In Diabetes Prevention

Living on the couch, with a TV, computer, and delicious food, the life of an aging retiree seems comfortable, sweet, and enjoyable. But a person who spends all their time on the couch won't live long. We don't judge anyone or impose any recommendations.

If a person is capable of analyzing information and wants to prolong their life, then after just a month of "carefree living" on the couch, it becomes noticeable that, despite all the pleasures and pleasant laziness, something is wrong. For example: weight and waist size increase, headaches and back pain begin, fat deposits on the chin increase, arms and neck weaken, legs swell, and shortness of breath when walking appears. After a while, it becomes increasingly difficult to trim thickening toenails and scratch your back. It becomes increasingly difficult to put on your favorite pants, shirts, and suits. And in the mirror, you increasingly see a puffy face, dark circles under your eyes, wrinkles, and sagging skin.

Knowing the mechanism behind these changes, each person chooses their own path and one of three strategies for activity and lifestyle, depending on a variety of personal capabilities, abilities, and aspirations.

1. Live a delicious, sweet, effortless life, satisfying all your food and intellectual pleasures, staying mostly on the couch and within your neighborhood.
2. Perform the minimum amount of movement and effort recommended by doctors, maintain a normal human appearance, and the ability to care for yourself within your usual home and region.
3. Be physically active, move more, and enjoy all the available joys of a healthy lifestyle, no matter how far from home.

These three basic strategies for retiring provide us with (approximately) 10, 20, or 30 years of relatively happy life. Sometimes more or less, depending on thousands of individual risks and factors.

Influenced by thousands of specific factors, we can identify many different types of life strategies, depending on the many variations of mental, physical, family, cultural, economic, geographic, and other influencing factors. But for us, the most important thing is not the name, but your choice, luck, and persistence in implementing it. Luck often favors hard workers over lazy people.

It has been observed that life at any age becomes more interesting, fulfilling, and lasting if we patiently expand our influence on shaping our healthy lifestyle and a healthy environment. This requires some knowledge, patience, and effort from everyone, but the reward is a second life for the retired person, expanding their freedom, happiness, and joy. No amount of money or pills can replace your personal efforts to create your healthy lifestyle. Money and pills can help, but the most important thing is your desire and effort.

Our observations of friends, relatives, and neighbors show that not everyone has the strength, knowledge, and willpower to make the transition first to the second, and then to the third, survival strategy. But each of us has a chance to try to change our lives for the better, even those who are tired, burned out at their previous job, disabled, and lack the resources for expensive wellness programs (personal pool, massage therapist, chef, cruises, etc.).

So, let's consider some everyday details and the simplest movements of our soul and body to begin the transition from the first happiness strategy to the second strategy and, God willing, to the third. Years of observation and experience from those around me have confirmed my hypothesis that whether on the couch (or in the toilet), or with a phone or TV, you can activate any part of your body (eyes, neck, abs, buttocks, arms, and legs) without taking your eyes off the screen.

The most important thing is to mentally prepare yourself to understand the relevance of specific movements for overcoming reluctance, laziness, pain, or fatigue.

Based on my many years of experience as an 80-year-old author and retired professor, I know that the most difficult thing is to start doing something useful without feeling forced, but with the desire to become healthier and happier. Start right now!

To do this, we simply need to think about the following desires and values in the form of simple personal wishes and bold statements:

- I want to reduce my belly and double chin,
- I want to become as slim as... (your favorite character).
- I want to strengthen my joints and internal organs.
- I want to strengthen the blood vessels in my neck, head, arms, and legs (from stroke).
- I want to take independent walks and trips again.
- And other WANTS, depending on your wishes and dreams.

Boldly state your simple wish and start taking action

Exercises Comfortable for A Sofa or Chair

Rub and stretch your fingers.

Bend your legs, lift your pelvis up, squeezing your buttocks.

Tighten, rub, and tap the muscles of your legs, abdomen, and back.

Alternately or together, pull your knees toward your chest, using your arms to help.

Gently lower your bent knees to the sides, twisting your spine.

Raise and lower the opposite arm and leg, etc.

Raise your legs to strengthen your thighs.

Tilt your head forward and to the sides, tensing your neck and cheeks.

Rub and stretch the muscles of your body from your eyes and neck to your feet.

Wiggle your feet and toes (flex and straighten them forcefully).

Tighten the muscles of your abdomen, thighs, buttocks, and perineum.

Perform 9-10 movements, combining them with various breathing techniques, such as holding your breath. You can do more or less, depending on your situation.

Every hour, remember the beauty and importance of strengthening your muscles and keeping them toned; do at least 2-3 movements. Some movements are invisible to others (for example, the last ones mentioned above).

Bicycle - simulate riding a bicycle. Stimulates the gastrointestinal tract and all pelvic muscles.

Knee Pull-In: Pull one or both knees toward your chest, clasping them with your hands, and hold for 10-20 seconds. Crunches: Lying on your back, bend your legs, then lower your knees alternately to the left and right, keeping your shoulders on the floor.

Self-massage: In the morning, in bed, gently massage your abdomen clockwise (for about 10 minutes).

Comfortable Exercises on the Toilet (Strange, But Useful)

While sitting on the toilet (or in a chair, or on the couch), you can perform simple exercises to improve the function of several important organs and metabolism. This location is convenient for those who forget or don't want to do various types of exercises. We often experience delays and difficulties in the toilet, which are a clear reminder of the importance of muscular activity for the gastrointestinal tract. The time spent (2-3 minutes per visit to the restroom) won't require any significant changes to your daily schedule, but it will provide the minimum amount of physical activity that experts consider sufficient. Here are some exercises specifically for the toilet. Of course, they can also be done in the car, in a chair watching TV, or lying on the couch (or on the bed or floor). Repeat these movements an average of 9-10 times. Fewer is fine, but the key is to start moving. Choose only those that feel beneficial to you at the moment and don't cause discomfort. Any exercises that stimulate peristalsis are helpful for preventing constipation and improving metabolism. Consult your doctor.

Shoulder stretches: Straighten your back, place your hands behind your back, and stretch backward, inhaling as you open your chest.

Back and lower back stretches: twist your torso to the side and bend over. Scratch your lower back and kidneys with your fists.

Strengthening the anal muscles (against hemorrhoids): Squeeze them for 5-6 seconds, lifting them up and inward, then relax.

Neck stretches: Slowly tilt your head left and right, forward and back. Abdominal breathing (while sitting): on the inhale, push your belly out as much as possible, and on the exhale, pull it in.

Bending and twisting your torso (in any position) helps activate peristalsis.

Adopting the "crow pose" (while squatting): Considered the most physiological for defecation. Use footrests in the toilet. Hundreds of models are available inexpensively to suit every taste and color.