

LECTURE

LECTURE THE EFFECT OF PHYSICAL ACTIVITY ON THE BODY



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▶ IT CONSISTS IN REVEALING
THE MECHANISMS BY WHICH
AN UNTRAINED ORGANISM
BECOMES TRAINED THE
PURPOSE OF THE LECTURE

UNDERSTANDING THE MECHANISM OF
TRAINING FORMATION IS A PREREQUISITE
FOR ACTIVE PROCESS MANAGEMENT

Questions:

- ▶ *PRINCIPLES OF PHYSICAL TRAINING STAGES OF MOTOR SKILL FORMATION*
 - ▶
 - ▶ *PRINCIPLES OF PHYSICAL TRAINING*
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ADVANTAGES OF A TRAINED BODY

1. A trained body can perform muscular work of such duration or intensity that an untrained person cannot do;
2. A trained organism is characterized by a more economical functioning of physiological systems at rest and with moderate physical exertion and the ability to achieve at maximum loads such a high level of functioning of these systems, which is unattainable for an untrained organism;
3. The period of workability is shortened (determined by pulse)
4. Physiological processes are accelerated (restores its functional abilities faster)
5. A trained organism increases resistance to damaging effects and adverse factors.



THE PRICE OF ADAPTATION-

IT CAN MANIFEST ITSELF IN TWO FORMS:

1. IN THE DIRECT "WEAR" OF THE FUNCTIONAL MOTION SYSTEM
2. IN THE PHENOMENA OF NEGATIVE CROSS-ADAPTATION, I.E. IN VIOLATION OF FUNCTIONAL SYSTEMS NOT RELATED TO PHYSICAL ACTIVITY

1. At the hormonal level, a violation of puberty and menstrual cycle in athletes
2. Violation of the function of the digestive organs in the form of spasm of the esophagus, stomach, intestines, ulcerative lesions associated with a decrease in blood supply to these organs.
3. The price of specialized adaptation is manifested in a decrease in endurance to another type of load.

MECHANISMS BY WHICH THE BODY FROM UNTRAINED BECOMES TRAINED

1. Urgent adaptation.
2. Long-term adaptation.
3. The intermediate stage of the formation of a cross-structural trace.



URGENT ADAPTATION

"urgent" adaptation is realized instantly, but the reaction proceeds "at the limit", with the loss of reserves and is accompanied by a pronounced stress reaction.

LONG-TERM ADAPTATION

"long-term" adaptation is characterized
by a perfect economical reaction.
Sustainable adaptation.

TRANSITION AN "URGENT" ADAPTATION TO A "LONG-TERM", STABLE ONE LIES IN THE FORMATION OF A BRANCHED PROCESS PROVIDED BY THE ACTIVATION OF THE SYNTHESIS OF NUCLEIC ACIDS AND PROTEINS "STRUCTURAL TRACE" IN THE FUNCTIONAL SYSTEM RESPONSIBLE FOR ADAPTATION TO PHYSICAL ACTIVITY.



FUNCTIONAL SYSTEM, RESPONSIBLE FOR
ADAPTATION, INCLUDES:

Afferent link-receptors,

The central link is the centers of neurohumoral regulation at all levels of the central nervous system

and the efferent link is skeletal muscles, respiratory and circulatory organs.

MOTOR SKILL- THIS IS THE DEGREE OF TECHNICAL PROFICIENCY THIS IS THE DEGREE OF TECHNICAL PROFICIENCY IT IS CARRIED OUT AUTOMATICALLY AND ACTIONS IT IS CARRIED OUT AUTOMATICALLY AND ACTIONS

PRINCIPLES - RULES OF RATIONAL CONSTRUCTION OF THE TRAINING PROCESS



STAGES OF MOTOR SKILL FORMATION

1. Generalization phase.

The beginning of physical exercise training. In response to the load, there is an excessive excitation of the cortical, subcortical and underlying motor centers in its spatial distribution, which corresponds to a generalized, with the mobilization of "excessive" muscles, but insufficiently coordinated motor reaction. The reason for the "imperfection" of the reaction is that the central, "controlling" system, i.e. the apparatus of neurohormonal regulation, is "imperfect" in an untrained organism.

Hence follows ***the first principle of physical training is the principle of gradual entry into the load.***

2. THE PHASE OF CONCENTRATION OF EXCITATORY-INHIBITORY PROCESSES IN THE MOTOR AREAS OF THE CEREBRAL CORTEX.

Hence the principle of physical training I learned the exercise, but the dynamic stereotype is unstable, it can collapse when training stops. The stage is characterized by the improvement of conditioned reflex stereotypes, the participation of "extra" muscles disappears, the motor reaction becomes generally more accurate and economical. – *the principle of regularity, duration.*



3. AUTOMATION PHASE - "SUSTAINABLE" ADAPTATION

It is characterized by the completion of the formation of a structural "footprint". It is this stage that is the basis for the use of fitness as a means of prevention, treatment and rehabilitation. A balanced system of integral central regulation is formed, characterized by economization, easier management and adequate performance of muscle work;

the principle is that it is necessary to partially, not completely, change the exercises,

There is an adaptation to increasing physical exertion -

the principle of gradual increase in load.

WITH LONG BREAKS IN TRAINING, THE SYSTEMIC STRUCTURAL TRACE MAY BE LOST. RESTORATION OF THIS TRACE HAS A LARGE STRUCTURAL "COST", I.E. IT REQUIRES ACTIVATION OF SYNTHESIS AGAIN NUCLEIC ACIDS AND PROTEINS.

The principle of continuity it is a condition for saving the structural reserves of the body.

GENERAL PRINCIPLES OF PHYSICAL TRAINING:

The principle of consciousness and activity – the student is aware of the need for movement and understands the physiological mechanisms of the effect of physical exercises on the body.



Показателями реакции организма на нагрузку являются

- частота сердечных сокращений (ЧСС)
- утомление

PRINCIPLE ADEQUACY, INDIVIDUALIZATION OF THE LOAD

THE CONTENT OF THE TRAINING SHOULD CORRESPOND TO THE CAPABILITIES OF THIS PERSON, INCLUDING TAKING INTO ACCOUNT THE TYPE OF PHYSIQUE, GENETIC PREDISPOSITION.



PRINCIPLE COMPLEXITY IMPACTS

The achievement of exercise-dependent health goals is achieved only with the complex use of motor means. Showing a specific effect, the exercise does not have a positive effect on other functional systems.

PRINCIPLE CONSISTENCY AND CONSISTENCY -

FOR EXAMPLE, JOGGING PROVIDES A GOOD CONDITION OF THE CCC AND RESPIRATORY SYSTEMS, BUT IT CANNOT PREVENT THE OCCURRENCE OF DISORDERS IN THE ODE. ASSERTS THE NEED FOR A CERTAIN SYSTEM THAT WILL ENSURE THE ACHIEVEMENT OF HEALTH.



PRINCIPLE GRADUAL INCREASE LOADS

While maintaining the training regime, adaptation to loads develops and there is no increase in functional indicators. We are not talking about increasing the load at each lesson, but throughout the time cycle.

PRINCIPLE **REVERSIBILITY** TRAINING EFFECTS.

As the training decreases, the training effects gradually decrease or disappear completely (detrenirovka effect).

THE PRINCIPLE OF JOY



FAILURE OF ADAPTATION – THE STAGE OF "WEAR"

1. It is realized during long breaks in training, when the structural trace may be lost. Recovery of the trace has a large structural "price", i.e. it again requires activation of the synthesis of nucleic acids and proteins, and may proceed unsatisfactorily, especially in presence of diseases.



THE "WEAR-OUT" STAGE

2. CONDITIONS IN WHICH PHYSICAL ACTIVITY IS COMBINED WITH INTENSE STRESSFUL, FOR EXAMPLE, COMPETITIVE, WEATHER SITUATIONS, EXAMS FOR STUDENTS, CAN CONTRIBUTE.



THANK YOU FOR YOUR
ATTENTION!

