



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

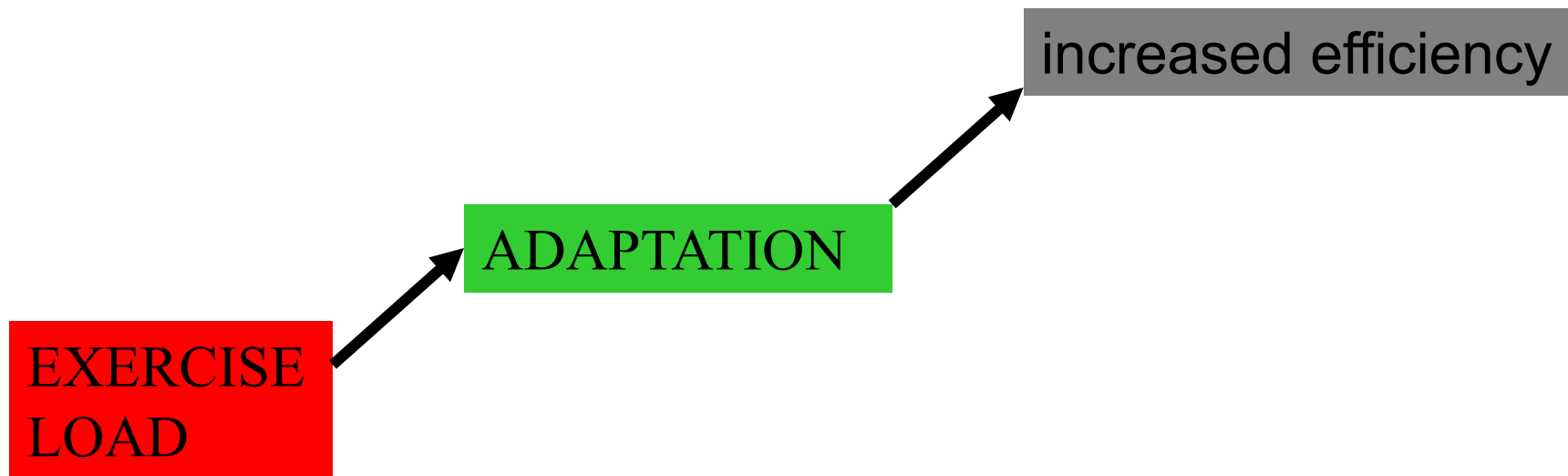
PHYSICAL PREPARATION

David Zahradník, PhD.

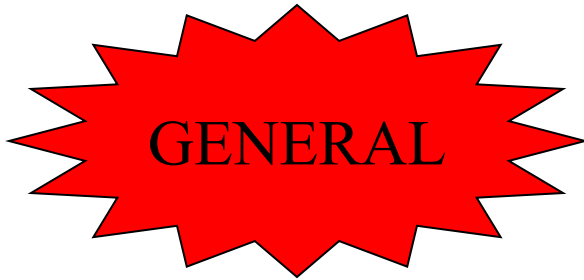
Projekt: Zvyšování jazykových kompetencí pracovníků FSpS MU a inovace výuky v oblasti kinantropologie, reg.č.: CZ.1.07/2.2.00/15.0199

PHYSICAL PREPARATION

- Is generally focused on developing motor abilities
- Adaptive changes can be achieved by repeated application of Exercise load.



PHYSICAL PREPARATION



- General preparation works on all motor abilities used in non-specific manifestations

- Consisting of the application motor abilities in specific sports disciplines

STRENGTH SPEED

ENDURANCE

KOORDINATION

Means of development

MOTOR ABILITIES



PHYSICAL EXERCISE

TRAINING OF STRENGTH ABILITIES



STIMULATION OF STRENGTH ABILITIES

The ability to resist external resistance with muscle contraction represents a basic principle of developing the complex of **strength ability**.

- Overcomes the resistance of the equipment (lifting, throwing)
- Overcomes the resistance of the human body (gymnastics, jumping)
- Overcomes the resistance of the opponent (judo)
- Overcomes the resistance of the environment (swimming, rowing)

Muscle contraction

Ca²⁺

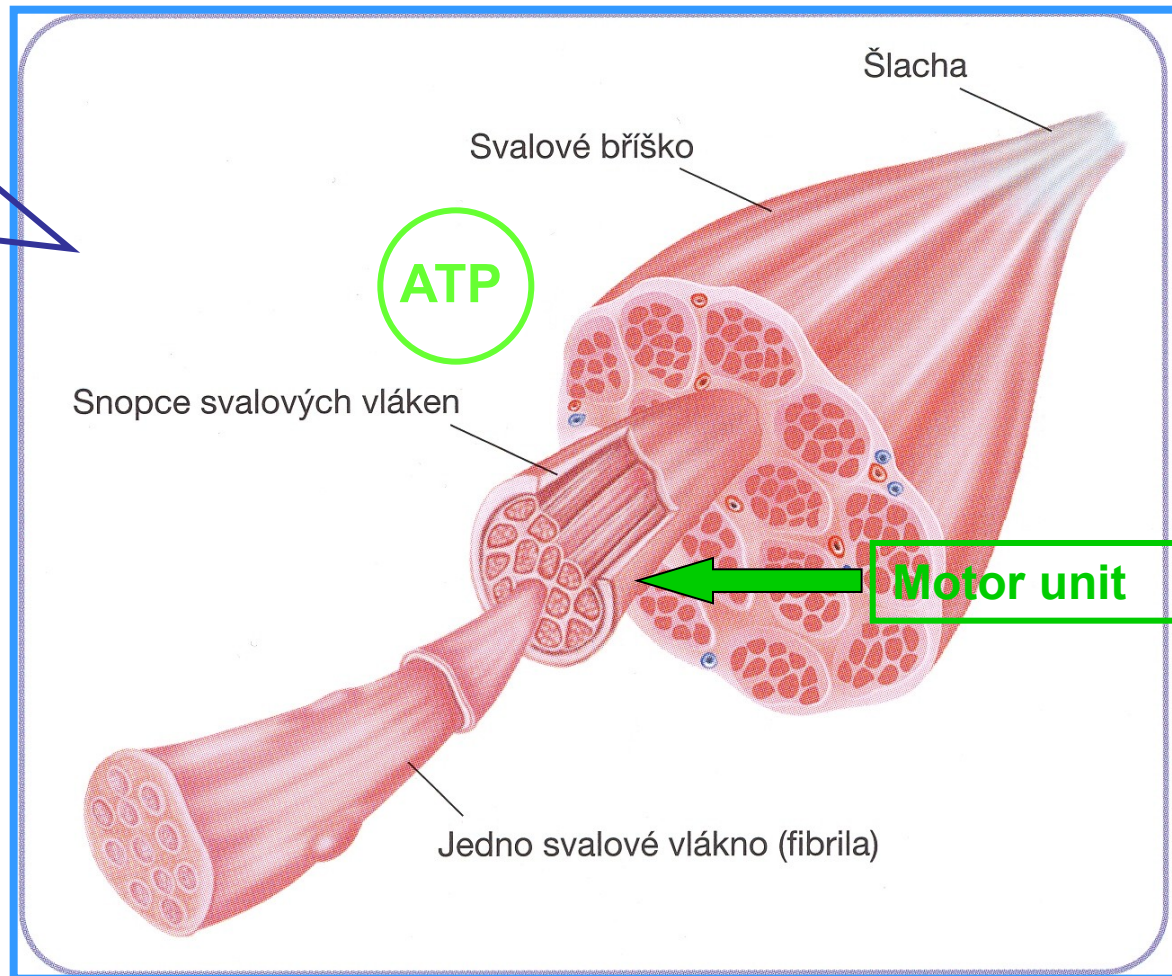
Actin

Myosin

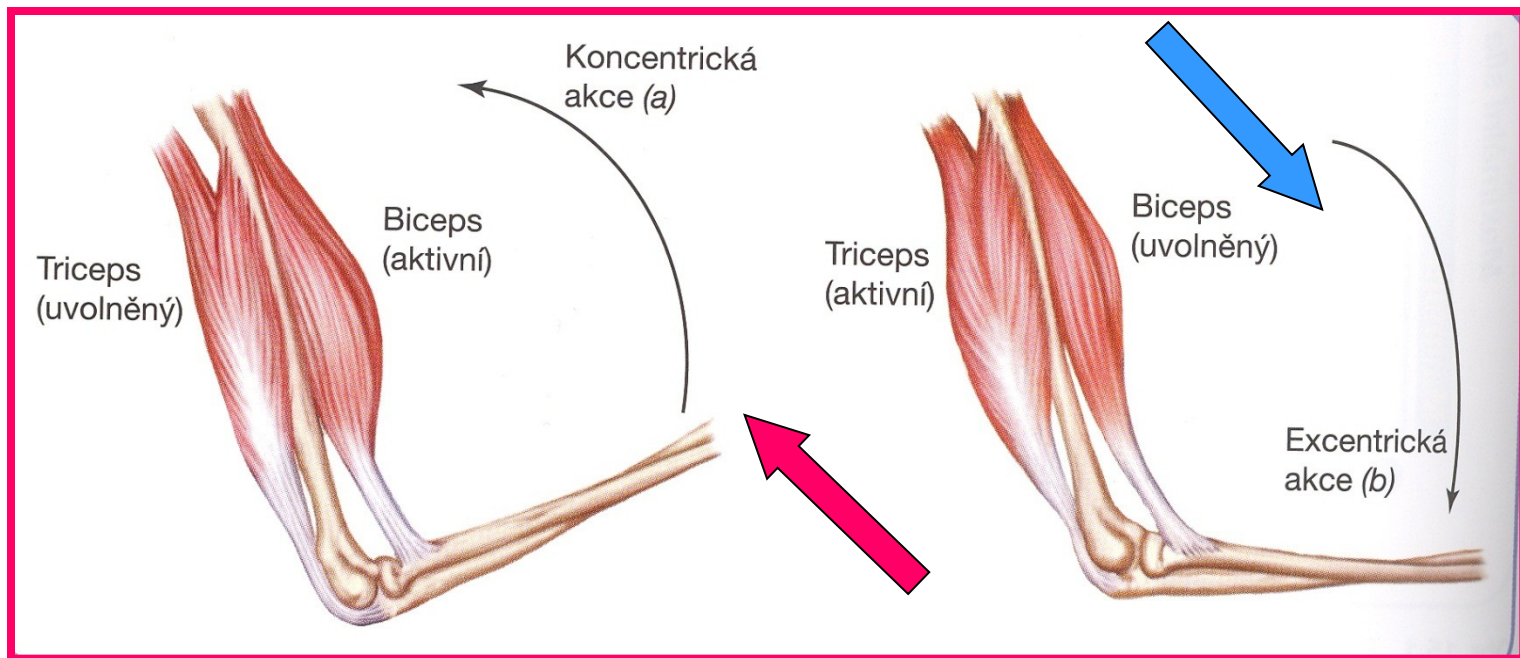
ATP

Motor unit

Inervation



Functional muscle mechanics



CONCENTRIC contraction – muscle shortens

EXCENTRIC contraction – muscle extends

ISOMETRIC contraction – muscle length is the same, only the muscle strain changes

Projevy svalové činnosti

Maximal strength is manifested by overcoming high or even limit external resistance at a slow speed with a specific muscle group usually in one repetition (e.g. in benchpress).

Explosive strength is manifested by overcoming low external resistance or weight of own body with maximal acceleration in single (acyclic) movement of participating segments (e.g. in throws, or take-offs).

Reactive strength is an ability to carry out muscle performance in motor activities which use stretch shortening cycle (SSC) with duration up to 200ms from beginning.

Endurance strength is manifested by repeated overcoming relatively low resistance at slow speed and multiple cyclic movements (e.g. cross-country skiing, sculling etc.)

Účinek silového tréninku

Strength development is understood as an improvement in absolute or relative values of overcome external resistance at constant number of repetitions for specific muscle groups or exercises.



Muscle hypertrophy development represents increase in crosscut of active muscle fibre.

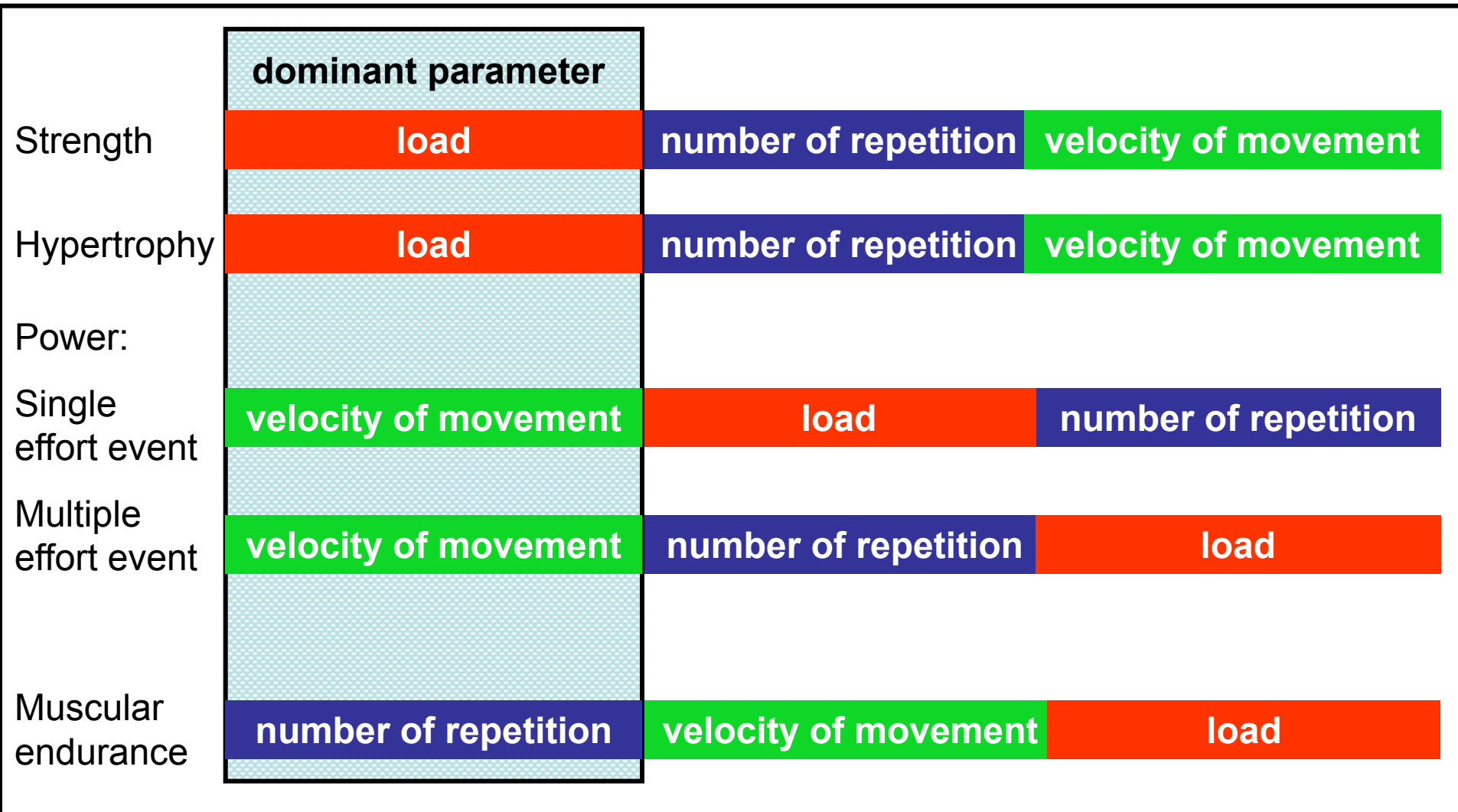
Net power output development at acyclic movement means improvement of optimum combination of speed of applied strength for dominant muscle groups in specific motor activities.

Net power output development at cyclic movement means improvement of optimum combination of speed of applied strength for dominant muscle groups in specific motor activities for a necessarily long period.

Muscle endurance development represents improvement in strength manifestation of specific muscle groups in activities that last for a relatively long period without declining intensity.

představuje zlepšení silového projevu konkrétních svalových skupin v činnostech po relativně dlouhou dobu bez snížení její intenzity.

Relationship among specific parameters



Overview of methods of strength development

● **Methods with a maximum resistance**



The method of maximal effort
The method of brakes of movement

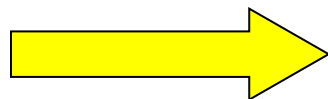
● **Methods without a maximum resistance**

Methods without a maximum speed of movement



The method of intermediate
The method of repeated efforts
The method of strength endurance

Methods with a maximum speed of movement



The method of speed
The method of plyometric



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Thank you for your attention