



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

# TRAINING COORDINATION ABILITIES

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

**Coordination ability** means an ability to quickly and purposefully perform difficult spatio-temporal movement structures.

Within this context, coordination abilities are understood as an externally visible manifestation of the control and regulation processes of the motor activity of the central nervous system.



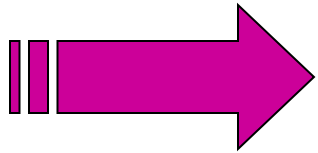
# Basic coordination abilities

- **Adaptive ability** enables modifications of motor activity of the basis of comparison or anticipation of new or changing conditions during performing motor activity.
- **Balance ability** is understood as an ability to keep body or its parts in a relatively stable position.
- **Combinatory ability** is understood as an ability to simultaneously put partial movements together into more complex movement structures.
- **Kinesthetic differentiation ability** means an ability to realize kinematic and dynamic features of movement.
- **Orientation ability** is an ability to realize position of the body or its parts in space and time.
- **Rhythm ability** enables to grasp and motorically express rhythm which which is externally determined or contained in the motor activity itself.

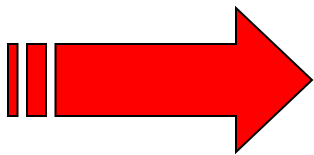
# The importance coordination abilities

Their higher levels are a value in itself  
Developing them is a precondition for the quality  
of technical preparation

The difference between technical preparation and development  
of coordination abilities:



Technical preparation aims at perfection, technical mastery of a limited number of required motor skills, their automation and stability control



Development of coordination abilities consists in being introduced to many motor activities, whereas perfect mastery is not the aim, the aim being only a certain degree of automation.

# Training coordination abilities



Sensitive period for developing coordination is between 5 and 6 years of age and around the age 12

Developing coordination abilities includes:

- ➔ **broadening motor experience** (e.g. headstand or beating a rhythm with the right hand),
- ➔ further, on the basis of already acquired motor experience, creating new original movement structure through the process of putting together mastered movements into more complex units (e.g. handstand, beating a different rhythm with the right and left hands),
- ➔ performing movements in new changed conditions which require new creative problem solution (e.g. a sequence of handstand – forward roll or beating a changing rhythm with the right and left hands).

# Principles and Procedures in Training Coordination Abilities

A variation can be reached by:

- faster or slower performance,
- change of rhythm,
- making the work-out space smaller,
- limiting or eliminating visual control,
- making the ground of support smaller,
- exercising “under pressure” (in limited time),
- asymmetric movements,
- mirror movements.

# Principles and Procedures in Training Coordination Abilities

- mastered skills are combined and connected,
- full concentration, precision and rhythm are focused on,
- the contents of motor activity and its difficulty is stressed and dominant,
- fewer repetitions are used (reason: fatigue decreases efficiency of stimulation),
- they are scheduled for the beginning of a training session.

# Selecting exercises

- ⦿ acrobatic exercises (rolls, take-offs, skips, linked exercises)
- ⦿ exercises with apparatus (rotation exercises, shapes)
- ⦿ exercises with tools (skipping ropes, balls, cones, coordination ladder, bosu )
- ⦿ stride variations
- ⦿ exercises related to overcoming hurdles (slalom tracks, hurdle tracks)
- ⦿ minor resistance exercises



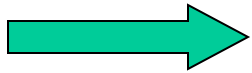
# AGILITY

**Agility** is the ability needed for the explosive change the speed and direction of movement

Agility is understood as a complex coordination capability of athlete

- Methods for the development of agility are similar to the training speed abilities.
- Use principles and procedures in training coordination abilities

# Flexibility Development



**Flexibility** means to reach required or maximum joint range through muscle contraction or through the action of external forces.

The main factors which affect flexibility include:

- Physique of joints (the shape of the joint, muscle hypertrophy, the lay-out of muscle tissue, the type of muscles).
- Sufficient strength of muscles performing the movement in the point.
- Motor control (the cooperation of agonists, antagonists and sunergists).
- Individual condition of the athlete (age, sex, psychical condition, health condition, fatigue).
- External conditions (temperature of the surroundings, time of the day, the quality of stretching).

- A basic precondition necessary for flexibility development is **relaxed muscle**.
- In skeletal muscles, there are two kinds of **proprioceptors**
- **Golgi bodies** monitor all tension stages of muscle tension; however, they best perceive the tension caused by muscle contraction.
- **Muscle spindles** have two types of neural receptors. Primary receptors react to both dynamic and tonic stretching.

## **Factors limiting muscle stretching:**

**Stretch reflex** is the basic function of nervous system; it maintains muscle stretching and reacts to sudden, unexpected muscle stretch. Protective functions (patellar reflex)

## **Factor supporting muscle stretching:**

**Reciprocal innervation** is enabled by synchronous control of muscle activity by the CNS.

**Myotatic inverse reflex** is related to the protective function of Golgi bodies.

Flexibility development is based on intentional suppression of factors which limit joint range and on introducing stimuli which lead to maintaining or increasing the range.

In practice, it is:

- ➡ necessary muscle relaxation,
- ➡ stretching muscles and ligament tissue,
- ➡ regulating reflexive activity of the muscle,
- ➡ strengthening antagonists
- ➡ elimination muscle imbalance

# Flexibility training

- Relaxation exercises
  - Static
  - Dynamic
  - Proprioceptive stretching
- Stretching exercises
- Strengthening exercises

## Main principles of flexibility development

- Warm-up and stretch properly.
- Combine relaxation, stretching and strengthening exercises with the weight of one's own body.
- Perform stretching slowly up to the point of feeling slight tension.
- Never exceed pain threshold.
- Not always is it possible to reach maximum position.
- Concentrate on stretched area and do not forget about regular breathing.
- Stretch less flexible part of the body first.
- In static exercises, hold in limit positions up to 60 seconds.
- A complex of 8-12 exercises for different joints within one training block.
- Stretch back less intensively but more frequently.



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Děkuji za pozornost