Lecture 9.

Theme (Тема): Exercise for Different Age Groups (Физические упражнения для различных возрастных групп)

Teaching Methods (Методы обучения):

Interactive lecture, comparative analysis, practical demonstrations, group discussion, problem-based learning, and case study evaluations. (Интерактивная лекция, сравнительный анализ, практическая демонстрация, групповое обсуждение, обучение на основе проблем и анализ кейсов.)

Technical Teaching Tools (Технические средства обучения):

Multimedia presentations, exercise demonstration videos, age-related fitness charts, physiological data graphs, interactive whiteboard, and health monitoring devices (heart rate monitors, pedometers). (Мультимедийные презентации, видеодемонстрации упражнений, таблицы возрастных нормативов, физиологические графики, интерактивная доска и пульсометры.)

Learning Outcomes (Результаты обучения лекции):

After completing this lecture, students will be able to:

1. Explain the physiological and biomechanical changes that occur with aging.
2. Identify the exercise needs of different age groups—children, adolescents, adults, and older adults.
3. Design age-appropriate physical activity programs.
4. Apply safe and effective training principles for each age category.
5. Promote lifelong physical activity and health awareness.

Lecture Plan (План лекции):

• Importance of physical activity across the lifespan.
• Physiological characteristics of different age groups.
• Exercise recommendations for children and adolescents.
• Exercise programs for adults.
• Physical activity for older adults and the elderly.
• Safety considerations and adaptations.
• Summary and discussion.

1. Importance of Physical Activity Across the Lifespan

Physical activity is essential for maintaining health, functional ability, and quality of life at every stage of life. Exercise strengthens the cardiovascular and musculoskeletal systems, supports mental well-being, and reduces the risk of chronic diseases such as diabetes, hypertension, and obesity.

However, the goals, methods, and physiological responses to exercise vary significantly between age groups due to differences in growth, hormonal balance, metabolism, and recovery capacity. Therefore, understanding age-related adaptation is crucial for designing appropriate training programs.

2. Physiological Characteristics by Age

Children and Adolescents:

- Developing musculoskeletal and nervous systems.
- High adaptability and recovery capacity.
- Limited anaerobic energy production, emphasizing aerobic activities.
- Need for variety and enjoyment to sustain motivation.

Adults (20–50 years):

- Peak strength, endurance, and coordination occur in early adulthood.
- Gradual decline in metabolic rate and recovery capacity begins around age 30.
- Balance of cardiovascular, resistance, and flexibility training is essential to prevent chronic diseases.

Older Adults (50+ years):

- Reduction in muscle mass (sarcopenia) and bone density.
- Decreased flexibility and balance, increasing fall risk.
- Slower recovery due to hormonal and metabolic changes.
- Need for low-impact, joint-friendly exercises.

3. Exercise for Children and Adolescents

For children and teenagers, physical activity is vital for growth, motor skill development, and socialization.

Guidelines:

- At least **60 minutes of moderate to vigorous activity daily.**
- Focus on fun, skill-based exercises—running, jumping, swimming, cycling, and team sports.
- Include basic resistance exercises using body weight (e.g., squats, push-ups).
- Avoid excessive weightlifting and repetitive high-impact activities.
- Encourage participation, not competition, to foster long-term adherence.

Benefits include improved bone strength, healthy body composition, coordination, and psychological well-being.

4. Exercise for Adults

Adults require a balance of cardiovascular endurance, muscular strength, flexibility, and mental health activities.

Recommendations (ages 18–64):

- At least **150 minutes of moderate-intensity aerobic activity per week** (e.g., brisk walking, cycling).
- **Muscle-strengthening activities** involving all major muscle groups at least **twice weekly.**
- Include flexibility and mobility sessions (e.g., yoga, stretching).

- For busy individuals, short high-intensity interval sessions can be equally effective.

Regular exercise reduces the risk of heart disease, stroke, depression, and metabolic disorders while improving energy levels and life satisfaction.

5. Exercise for Older Adults and the Elderly

For older adults, maintaining independence and preventing injury are key goals.
Recommendations (65+ years):

- Engage in **aerobic activity** (walking, swimming, cycling) at least **3 times per week.**
- Include **resistance training** 2 times per week to preserve muscle mass and bone density.
- Add **balance and coordination exercises** (e.g., tai chi) to reduce fall risk.
- Perform **flexibility exercises** regularly to maintain joint range of motion.
- Monitor intensity using the **Rate of Perceived Exertion (RPE)** scale rather than maximum heart rate formulas.

Safety considerations: gradual progression, medical clearance for chronic conditions, and hydration maintenance.

6. Safety Considerations and Adaptations

When designing exercise programs for different ages, it is important to:

- Conduct pre-participation health screening.
- Adjust intensity, duration, and frequency to individual capability.
- Emphasize proper technique and warm-up/cool-down routines.
- Avoid overtraining, dehydration, and high-risk movements.
- Ensure supervision and motivation, especially for children and older adults.

Age-appropriate programs prevent injury, encourage participation, and promote lifelong fitness habits.

7. Conclusion

Physical activity remains essential at every stage of life. From developing coordination in childhood to maintaining mobility in later years, exercise contributes to physical, cognitive, and emotional health. Adapting training principles to age-specific needs ensures safety, effectiveness, and long-term engagement in active living.

Key Vocabulary & Expressions

Term	Translation	Definition
Lifespan	Продолжительность жизни	The entire course of a person’s life
Motor skills	Двигательные навыки	Abilities that enable coordinated body movement

Term	Translation	Definition
Aerobic activity	Аэробная активность	Exercise using oxygen for sustained energy production
Sarcopenia	Саркопения	Age-related loss of muscle mass and strength
Bone density	Плотность костной ткани	Measure of bone strength and health
Balance training	Тренировка равновесия	Exercises improving stability and coordination
Flexibility	Гибкость	The ability of joints to move freely
Endurance	Выносливость	The ability to sustain prolonged activity
Rate of Perceived Exertion (RPE)	Шкала субъективного восприятия нагрузки	A method for measuring exercise intensity based on feeling
Adaptation	Адаптация	The body's adjustment to training or environmental stress

Discussion Questions

1. How do physiological changes affect exercise performance across age groups?
2. Why are children's exercise needs different from those of adults?
3. What types of exercises are most beneficial for older adults?
4. How can safety be ensured when training elderly individuals?
5. What strategies encourage lifelong engagement in physical activity?

References

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