Guidelines for independent work of students for preparation for a practical lesson and during the practical studies

<table>
<thead>
<tr>
<th>Academic discipline</th>
<th>Therapeutic dentistry</th>
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<tr>
<td><strong>Module number 5</strong></td>
<td>Deepening the clinical thinking of students. Modern methods of diagnosis, treatment and prevention of major dental diseases. Clinical examination of patients at the dentist.</td>
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<tr>
<td><strong>Topic of the lesson 6</strong></td>
<td>Physiotherapy in patients with uncomplicated caries.</td>
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<td><strong>Course</strong></td>
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<td><strong>Faculty</strong></td>
<td>Foreign students training faculty (dentistry)</td>
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1. **Actuality of theme.** Physiotherapy - this is the only form of treatment, which also increases the resistance of the body, strengthens the protective and adaptive capabilities of the body and has a reflex, humoral and physical and chemical effects on the body's tissues.

   It has significant advantages over other methods of treatment: universality (one factor used in various pathologies), physiology (does not cause excessive stress in compensatory-adaptive reactions) is not toxic, without allergization, is not invasive, well combined with other therapeutic agents, has lasting effects after the procedure enhances the effect of drugs available, cheap, so widely used in caries.

2. **Specific objectives.**
   1. Know contraindications for physiotherapy in patients with uncomplicated caries.
   2. Know the etiological, pathogenetic and symptomatic indications for the use of physiotherapy in patients.
   3. Know the principles of physiotherapy appointment in patients with uncomplicated caries.

4. **Basic knowledge, skills necessary for studying the subject:**

<table>
<thead>
<tr>
<th>Name of previous subjects</th>
<th>Received skills</th>
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<tbody>
<tr>
<td>1. Biophysics</td>
<td>Know physical factors</td>
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<tr>
<td>2. Normal anatomy</td>
<td>Define term &quot;caries&quot;</td>
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<td>3. Normal physiology</td>
<td>To know the physiology of the nervous and vascular systems of the body</td>
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<td>4. Pathological Anatomy</td>
<td>Know pathological processes - dystrophy, inflammation, etc.</td>
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<td>5. Radiology</td>
<td>Describe and analyze X-ray picture</td>
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<td>6. Propaedeutics of Internal Medicine</td>
<td>Know the rules of procedure and the interview and examination of the patient, to be able to interview the patient to hold his inspection to determine its constitution, the activity, expression, etc.</td>
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<tr>
<td>7. Therapeutic dentistry, section “caries”</td>
<td>Know the clinic of caries</td>
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4. **Tasks for independent work during preparation for the classes.**

   4.1. The list of key terms, parameters, characteristics which the student learn in preparation for the lesson:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Physiotherapy of patients</td>
<td>The use of physical (natural and artificial) in the treatment of patients.</td>
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<tr>
<td>Advantages of physiotherapy</td>
<td>Physiology, atraumatic, versatility</td>
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</tbody>
</table>
Types of Physiotherapy:

1. Natural
   - climatotherapy, balneotherapy, peloidotherapy

2. Preformed
   - Electromagnetic factors (currents, fields)
   - Factors mechanical nature (massage, ultrasound, vibrotherapy)
   - Factors airspace
   - Factors thermal nature (hydrotherapy, cryotherapy, thermotherapy)

Step reactions to physiotherapy
- Physical
- Physico-chemical
- Biological

Mechanisms of formation reaction of the body:
1. Nonspecific
   - Local
   - Reflex-segmental
   - General
2. Specific
   - Specific for this physical factor
   - General

General contraindication for physiotherapy
- Subject to the general state of the body

Some contraindications for physiotherapy
- Determining each type of physical therapy alone

The recipe of physiotherapy
- List of physiotherapy

The etiological indication about of physiotherapy of patients
- Causes comorbidities

Pathogenic evidence about of physiotherapy
- Normalization of immune processes
- Normalization of blood circulation
- Normalization of mineral metabolism
- Normalization of nonspecific resistance

Symptomatic indications for physiotherapy
- Removal inflammation, bleeding, purulent exudate, discomfort, hyperesthesia.

The complexity of physiotherapy
- Simultaneous with the appointment multiple physical treatments

Combined physiotherapy
- Appointments several courses of physiotherapy series

4.2. Theoretical questions for the class:
1. Define the concept "Physiotherapy of uncomplicated caries ".

2. Tell the advantages of physical therapy.
3. Tell the types of therapeutic physical factors.
4. What determines the reaction of the body to effect physical factor?
5. What stage of this reaction?
6. Tell the mechanisms of formation reactions of the body to effect of physical factor?
7. What are the contraindications for physiotherapy?
8. What are caused some contraindications for physiotherapy?
9. What is the recipe of physiotherapy?
10. Tell about etiological, pathogenetic and symptomatic indications for physiotherapy of patients with uncomplicated caries.
11. What is complex and combined physical treatment?
12. How to evaluate the effectiveness of physiotherapy particular patient?

4.3. Practical work (tasks) that are performed in class:
1. To be able to conduct a survey of patients with caries and identify contraindications to physical treatment.
2. To be able to identify the etiologic, pathogenetic and symptomatic indications for physiotherapy patients with caries.
3. To be able to assign physical therapy in the treatment of caries in specific patient.
4. To be able to identify the receptions for physiotherapy patients with caries, and assign complex and combined physiotherapy, referral to a physical write office.
5. To be able to determine the effectiveness of physical therapy.

5. Content of topic.

The modern definition of physiotherapy - is the branch of medicine that studies the effects on the body natural and artificial physical factors that are used to treat patients, disease prevention and medical rehabilitation.

The advantages and benefits of physiotherapy:
I. Universality of action (the same factor can be applied in different diseases).
II. Physiological and has a normalizing nature (physical factor as usual body stimulus, causing soft-adapted compensatory reactions).
III. The absence of toxicity, allergic effects, side effects.
IV. Non-invasive action.
V. Good compatibility with other therapeutic agents.
VI. The long aftereffect (therapeutic effect long shelf life and increases after the end of treatment).
VII. Potentiating effect of most drugs.
VIII. Availability and relative cheapness.

Types of therapeutic physical factors:
Natural (no preformed):
1. Climatotherapy, aerotherapy, speleotherapy, heliotherapy, thalassotherapy.
2. Balneotherapy.
3. Peloidoterapiya.

**Artificial (prefomed):**

1. Factors electromagnetic nature (6 types):
   a) constant electric current (galvanization, medicinal electrophoresis, elektrosoterapiya, electroanalgesia, electrostimulation, diadynamic).
   b) alternating electric current (ampliimpulse, interferential fluctuarization, ultratronotherapy, local and general darsonvalization).
   c) electric field (franklinization, infitoterapiya, electrostatic massage therapy UHF).
   d) magnetic field (continuous, pulsed, low-frequency, high-frequency physiotherapy).
   e) electromagnetic radiation frequency range (microwave therapy, Deci-, Centimeter wave therapy, short-wave therapy)
   f) electromagnetic radiation in the optical range (infrared radiation, chromotherapy, ultraviolet irradiation, laser therapy, photodynamic therapy).

2. Factors mechanical nature:
   - mechanical stress (therapeutic massage, chiropractic, acupuncture).
   - mechanical vibrations (vibrotherapy, ultrasound therapy, phonophoresis).
   - factors airspace (barotherapy, normooxygenation, oxygenobaro-therapy, oxygenohelio-therapy, carbogenes, aeroion-therapy, aerosol-therapy, halatherapy).

3. Factors thermal nature (hydrotherapy (pouring, sponging, wet wrapping, showers, baths, washing), baths, saunas, cryotherapy, paraffin, ozokerit-terapy, thermotherapy, batch cryotherapy).

**The response of the body to determine the effect of physiotherapy:**

1. The physical nature and dosage factor.
2. The initial functional status and quality of the individual organism.
3. The electoral body's sensitivity to a particular factor.
4. The nature of the disease process.

**Stages of reaction in response to the action of physical factors:**

I. PHYSICAL - physical energy performance physical factor on the biological system as a whole, tissues, cells, intercellular substance.

II. PHYSICO-CHEMICAL - Primary effects (shift):
   - Heat generation.
   - Changing the concentration and ratio of ions in cells and tissues.
   - The formation of free forms biologically active substances.
   - The generation of free radicals.
   - Changes in the spatial structure (conformation) of proteins.
   - Changing the electric potentials of organs, tissues, cells.

III. BIOLOGICAL - There are direct and reflex changes in organs and tissues.

**Mechanisms of formation reaction of the organism**

**the effect of physical factors are:**

UNIVERSAL:

Nonspecific aimed at increasing the general resistance, improved adaptation:
- Local reactions of the body
- Reflex-segmental
- General

**SPECIFIC:**
Activated specific factors are inherent only this factor effect.

**General contraindications to physiotherapy:**
1. Tumors.
2. Systemic diseases of blood and bleeding tendency.
4. Individual intolerance of physical factor.
5. The total depletion of the patient.
7. Acute infectious process.
8. Epilepsy, hysteria, convulsive seizures, psychosis with psychomotor agitation.

**Some contraindications for physiotherapy:**

**Galvanization, electrophoresis:**
- Acute skin disease.
- Acute inflammation, especially pus.
- Toxic conditions.
- Pharmacological contraindications to the drug.
- Violation of the integrity sheets in places imposition electrodes.

**UHF and microwave therapy:**
- Hypotension.
- Active tuberculosis.
- Limited (encysted) purulent processes.
- Metallic foreign bodies within range.

**Aeroiono-, aerosoltherapy:**
- Pulmonary tuberculosis.
- Asthma. Errors in the appointment of physiotherapy in the treatment of caries:
  - Appointment of ultraviolet radiation without a biodose and dosage regimen;
  - The use of lead electrophoresis;
  - the drug is introduced during electrophoresis without regard to polarity;
  - the optimal electrophoresis technique is not selected;
  - The principles of the appointment of physiotherapy, especially complexity, are not taken into account.

**The principles of physiotherapy:**

The unity of etiological, pathogenetic and symptomatic physiotherapy, while prescribing factors that simultaneously cause local, segmental and general reactions, individualization of physiotherapy and its combination with psychotherapy are applied - it is carried out taking into account age, gender,
constitution, the presence of concomitant diseases, reactivity and biorhythms of the body, individual contraindications.

The duration of the course is determined by the dynamics of subjective and objective indicators of the course of the disease.

The optimality of treatment lies in the fact that the parameters of the treatment factor, the method of application should correspond to the nature and phase of the pathological process.

The dynamism of treatment lies in the fact that physiotherapy should correspond to the patient’s condition, take into account the clinical dynamics, and consistently use physical factors, periodically repeat treatment courses.

The complexity of treatment consists in the combined and simultaneous use of physical factors:
- Joint treatment - the simultaneous appointment of several physical factors (electrophoresis and ultraviolet radiation).
- Combined treatment - the use of physical factors sequentially with a time interval of 1-2 days or a change in one course to another.

**Pathogenetic indications for physiotherapy of carious lesions:**

1. Normalization of mineral metabolism:
   - Electrophoresis of calcium and fluoride preparations with simultaneous general intake of Ca. (2.5% gluconate solution, calcium glycerophosphate, 1-2% sodium fluoride, 3% remodent).
2. Normalization of non-specific resistance:
   2. Aeroionization of air.
   3. Anesthesia for the preparation of cavities:
      The device ELOZ-1. , the active electrode is the anode (boron), the passive one is the ear clip, the direct current is individual, not more than 30 mA, isolation with rubber dam is required.

**Errors of physiotherapy appointment with caries:**
- Appointment of thermal treatments for acute inflammation;
- Appointment of UV irradiation without biodosesschemes and their admission;
- Application for electrophoresis lead electrodes;
- The drug is administered during electrophoresis excluding polarity;
- Do not select the optimal method of electrophoresis;
- Do not take into account the principles of physiotherapy appointment, especially complexity.

6. **Tasks for self-control:**

Test tasks:

1. For the differential diagnosis of uncomplicated caries with chronic apical periodontitis, apply:
   A. Vital staining
B. Luminescent diagnosis
C Transillumination
D. Examination of the output of the peripheral branches of the trigeminal nerve
E. EDI.

2. For the differential diagnosis of uncomplicated caries with chronic pulpitis, apply:
A. EDI
B. Luminescent diagnosis
C Transillumination
D. Examination of the output of the peripheral branches of the trigeminal nerve
E. Vital staining.

3. For the differential diagnosis of initial caries with fluorosis, physical methods are used:
A. Vital staining
B. Luminescent diagnosis
C. Definition of ohmic resistance
D. Examination of the output of the peripheral branches of the trigeminal nerve
E. EDI.

4. In the treatment of uncomplicated caries using the ELOZ-1 apparatus, the following current is used:
A. Diadynamic
B. Permanent
C. Modulated
D. Currents of Darsonval
E. Ultrasound.

5. When treating uncomplicated caries with the ELOZ-1 apparatus, current is applied by force:
A. 1-5 mA
B. no more than 30 mA
C. up to 50 mA
D. up to 50 mA
E. not more than 1 mA.

6. For the prevention of caries in winter, apply:
A. Electrophoresis
B. Phonophoresis
C. General Ural Federal District No. 10-15
D. Currents of Darsonval
E. Hydrotherapy.
7. In the treatment of initial caries for electrophoresis, apply:
A. Solutions of calcium, fluoride
B. Heparin solution
C. Antiseptic solution
D. Biostimulants
E. Vitamins.

8. With uncomplicated dental caries, EDI is:
A. 1-5 mA
B. from 20 to 30 mA
C. up to 50 mA
D. up to 100 mA
E. not more than 2-6 mA.

9. With multiple caries and insufficient fluoride content in electrophoresis is mainly used in water:
A. 1-2% sodium fluoride
B. 3% "Remodent"
C. "Gluftored"
D. Biostimulants
E. Vitamins.

10. With multiple caries and the optimal fluorine content in water, electrophoresis is mainly used:
A. 1-2% sodium fluoride
B. 3% "Remodent", calcium preparations
C. "Gluftored"
D. Biostimulants
E. Vitamins.

Situational tasks:

1. Patient Ch., 23 years old, undergoes a course of treatment for multiple caries, complains of increased tooth sensitivity during initial caries from thermal irritants. Physiotherapist prescribed electrophoresis 2.5% solution of Calcium glycerophosphate No. 10, duration 15 minutes. For electrophoresis prescribed:
A. DC
B. Alternating current
C. Electromagnetic current
D. Darsonval
E. Ultrasound.
2. Patient A., 16 years old, suffers from polyallergy, is being treated by a dentist for chronic deep caries 2.6, the preparation is very painful. Prescribe adequate pain relief:
   A. Analgine 0.5
   B. Anesthesia 2% Novocaine
   C. Anesthesia 2% Lidocaine
   D. Aerosol 10% Lidocaine
   E. Electric anesthesia.

3. Patient G., 24 years old, undergoing treatment for multiple caries. Physiotherapist prescribed electrophoresis of 2.5% solution of Calcium gluconate No. 10 on the cervical areas, duration 15 minutes. Electrophoresis current strength:
   A. 1-5 mA
   B. 10-15 mA
   C. 20-30 mA
   D. 1-5 mA
   E. 5-10 mA.

4. Patient G., 22 years old, undergoing treatment for multiple caries. Physiotherapist prescribed electrophoresis of 2.5% solution of Calcium gluconate. What is the best course of treatment?
   A. 1 procedure
   B. 2 procedures
   C. 5 treatments
   D. 10-15 treatments
   E. Constantly.

5. Patient G., 24 years old, undergoing treatment for multiple caries. Physiotherapist prescribed electrophoresis of 2.5% solution of Calcium gluconate No. 10 on the cervical areas. What is the duration of treatment?
   A. 1 minute
   B. 2 minutes
   C. Unlimited
   D. 15 minutes
   E. 1 hour.

6. Patient G., 26 years old, undergoing treatment for multiple caries in winter in a sanatorium of a neurological profile. Physiotherapist prescribed a general UV. Before treatment, determine:
   A. Anamnesis
   B. Individual skin biodose
   C. With individual biodose
   D. Individual skin biodose is not determined
   E. Mental status.
7. Patient P., 26 years old, undergoing treatment for blooming caries, suffers from severe epilepsy. The dentist prescribed electrophoresis of 2.5% Calcium glycerophosphate No. 10, 15 minutes. What is the doctor’s mistake?
A. Incorrect concentration of calcium solution
B. Invalid number of procedures
C. Incorrect procedure time
D. Not taken into account the history of the disease
E. Not defined allergic history.

8. Patient K., 22, a resident of a city with a low fluoride content in water, undergoes treatment for multiple caries, complains of increased tooth sensitivity during initial caries from thermal irritants, for the treatment of which electrophoresis is mainly used:
A. 1-2% Sodium fluoride
B. 3% "Remodent"
C. "Gluftored"
D. Biostimulants
E. Vitamins.

9. Patient S., 22 years old, a resident of the city with an optimal fluoride content in water and low salinity, undergoes a course of treatment for multiple caries, complains of increased tooth sensitivity from cold during initial caries, electrophoresis is optimal for treatment:
A. 1-2% sodium fluoride
B. 3% "Remodent"
C. "Gluftored"
D. Biostimulants
E. Vitamins.

10. Patient H., 23 years old, completed a course of treatment for multiple caries, complained of increased tooth sensitivity during initial caries from thermal irritants. Physiotherapist prescribed electrophoresis 2.5% solution of Calcium glycerophosphate No. 15, duration 15 minutes. How to determine the effectiveness of physiotherapy treatment?
A. Identify Impossible
B. Generally not determined
C. Define immaterial
D. Lack of complaints, caries progression
E. Decrease in caries resistance
6. Recommended literature:

**Base:**

**Additional:**

**Electronic resources:**
2. Electronic resource: [https://www.booksmed.com/stomatologiya](https://www.booksmed.com/stomatologiya)
3. Electronic resource: [https://studfile.net/search/?q](https://studfile.net/search/?q)

Guidelines compiled assistant

of the department therapeutic dentistry, PhD

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