

MINISTRY OF HEALTH OF THE REPUBLIC OF MOLDOVA

STATE UNIVERSITY OF MEDICINE AND PHARMACY

NICOLAE TESTEMITANU

# NOTEBOOK

FOR PRACTICAL WORK

HYGIENE

*of the student of the year* \_\_\_\_\_ *group* \_\_\_\_\_

*the faculty* \_\_\_\_\_

\_\_\_\_\_  
*(name, first name)*

*Professor* \_\_\_\_\_

CHISINAU, 2023

Approved by the Quality Management Council, *Nicolae Testemițanu* State University of Medicine and Pharmacy, minutes No. 01 of 28.10.2022

THE WORKBOOK FOR PRACTICAL IN **HYGIENE** is developed by

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*Elena Ciobanu*, PhD, associate professor,

having the main goal to facilitate the knowledge acquisition in accordance with the study plans.

**References:**

*Ion Bahnarel*, PhD, university professor

*Alexei Chirlici*, PhD, associate professor

**Translated by:** *Rusu Radu*, assistant professor

The notebook corresponds to the subject of the study program of the students of the Medicine faculty and it is a technical guide for carrying out the hygienic research provided by the study plan.

**The material is published in the author's edition**

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**DESCRIEREA CIP A CAMEREI NAȚIONALE A CĂRȚII DIN REPUBLICA MOLDOVA**

**Notebook for practical work:** Hygiene / Ministry of Health of the Republic of Moldova, State University of Medicine and Pharmacy *Nicolae Testemițanu*; developed by Catalina Croitoru, Elena Ciobanu; translated by: Rusu Radu. – Chișinău: CEP *Medicina*, 2023. – 74 p.: tab.

În red. aut. – [15] ex.

ISBN 978-9975-82-322-7.

613(07)

N 88

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## Practical work №

### THEME: Studying individual nutrition

#### *The purpose of the work:*

- ✓ appreciation of compliance with the energy balance ;
- ✓ determination of the daily caloric intake and the correction duration, necessary for body mass correction.

#### Report on the work performed

1. determining the ideal-theoretical body mass (ITBW), *the formula proposed by Britman :*

$$\text{ITBW} = \text{height (cm)} \times 0.7-50 \text{ (kg)}$$

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2. determining the difference between the ITBW and the real mass (RM) (*the positive result confirms a surplus of weight, the negative result – a deficit of weight*)  
 difference = RM – ITBW (kg)
- .....
- .....

3. determination of energy imbalance:

$$\text{energy imbalance} = \text{each extra kg of weight} \times 6800 \text{ (kcal)}$$

$$\text{energy imbalance} = \text{each kg in weight deficit} \times 4100 \text{ (kcal)}$$

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4. determining the caloric value (Q) of the daily ration for maintaining the ITBW:Q  
 (men) = 815+36.6 × ITBW (kcal)  
 Q (women) = 530+31.1 × ITBW (kcal)
- .....
- .....

5. determination of the share of the daily caloric value of correction (necessary to increase or decrease the caloric value of the daily food ration ):  
 share of caloric value = 20% (25%) of Q (kcal)
- .....
- .....

6. determining the caloric value of the daily food ration for the ITBW correction period:  
 calorific value = Q ± share of the caloric value (kcal)
- .....
- .....
- .....



**Practical work №**

**THEME: Assessing the correctness of individual nutrition through the calculation method**

*The purpose of the work:*

- ✓ appreciation of the nutrition from energetic point of view;
- ✓ formulating recommendations regarding the correction nutrition in accordance with its physiological norms;
- ✓ learning the methods of assessing the correctness of individual nutrition.

**Report on the work performed**

**I. Determining the value of daily energy expenditure**

**A. Directed expenses**

1. All activities within 24 hours are recorded and timed.
2. Energy costs are calculated.
  - 2.1. For each type of activity, the energy expenditure values are found, kcal/kg/min (table 5, page 65, General Hygiene, I.Bahnarel, Gh.Ostrofeț, Lili Groza, vol.I, Chisinau, 2013 *or* table 7, page 15, Igiēna, Gh. Ostrofeț, Lili Groza, L. Cuznetov, Chisinau, 1994).
  - 2.2. Calculate the energy expenditure for the entire duration of the given activity (kcal/kg), by multiplying the duration (min) by the energy expenditure (kcal/kg/min).
  - 2.3. The sum of the products between the duration of the activity (min) and the energy expenditure (kcal/kg) is made.

Calculation of energy expenditure

No.	Activity	Duration (min)	Energy expenditure	
			kcal/kg/min	energy expenditure for the whole duration, kcal/kg
		of	b	a×b



### Conclusion

Directed energy expenditure is ..... kcal. For the basal metabolism is ..... kcal, and the specific dynamic action of food (thermal effect of food) requires ..... kcal.

The total energy requirement for 24 hours is ..... kcal. So, according to therecommended energy values, I am referring to the population group (According to the table, I should have been part of population group I. The deviation may be caused by an incomplete, less accurate timing).

### II. The caloric value of the food ration

Determination of the caloric value of the food ration

The name of the pieces	Food products used	Quantity, g	Caloric value, kcal	
			for 100g. product	for the whole quantity
1	2	3	4	5
<b>Breakfast</b>				
Total breakfast				
<b>Lunch</b>				
Total lunch				
<b>Dinner</b>				
Total dinner				
Total / day				

Determination of the daily caloric value after meals (in % of the general amount)

Table	The results according to the calculations	The caloric value of the food ration according to the norms
1	2	3
luncheon		
The lunch		
Dinner		

**Conclusion**

According to the calculations made, the caloric value of the daily ration is .....kcal, which (does not) correspond to the previously calculated physiological needs (it differs by .....kcal). Taking into account the fact that students refer to population group I according to the recommended energy values, the energy requirement in 24 hours must be kcal. The caloric value of the ration (doesn't) satisfy these needs (probably due to incomplete calculations).

The caloric value of the daily ration on account of breakfast is .....%, on account of lunch ..... %, on account of dinner %, which (not) corresponds to the norms ( ).

**General conclusion**

From the calculations we deduce that the surplus (deficit) in weight is caused by the reduced (exaggerated) physical activities, and (or) the increased (reduced) caloric value of the food ration.

**Recommendation**

1. To increase (decrease) the caloric value of the food ration by..... kcal.
2. To correct the diet, increasing (decrease) the caloric value of breakfast by %, lunch by .....%, dinner by .... %.

Lecturer's signature \_

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Caloric value and the chemical composition of the food  
ration

Type of food	Products included in the dish	quantity, g	proteins		lipids		carbs	vegetal fibers	mineral salts		vitamins					energy value, kcal
			animal	vegetal	animal	vegetal			Ca	P	A	Caroten	B <sub>1</sub>	B <sub>2</sub>	C	
<b>Breakfast</b>																
Total breakfast																
<b>Lunch</b>																

Total lunch																	
<b>Dinner</b>																	
Total dinner																	
<b>Total / day</b>																	

**Conclusion**

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Evaluation of the food ration (to be completed)

No.	Indices	Individual data	norms
1	Daily calories, kcal		
2	Protein (gr.)		
	including - animal		
3	Lipids (gr.)		
	including - animal		
4	Carbohydrates (gr.)		
5	% of calories on the account:		
	protein		
	lipids		
	carbs		
6	P:L:C ratio		
7	Distribution of calories at meals, %		
	breakfast		
	lunch		
	dinner		
8	Vitamin A, mg		
9	Vitamin C, mg		
10	Ca, mg		
11	P, mg		
12	Ca: P		

Note: since 30-40% of vitamin C is destroyed during heat processing, 60% of the calculated amount will be taken.

**Conclusion**

From the obtained results we deduce that food ensures (does not ensure) energy expenditure. The surplus (deficit) is ..... kcal.

The amount of proteins is .....g, lipids ..... g, carbohydrates .....  
g,

which corresponds (does not correspond) to hygienic standards.

The amount of vitamin C is .....mg%, being sufficient (insufficient). The amount of vitamin A, Ca salts, P corresponds (does not correspond) to hygienic standards.

The diet corresponds (does not correspond) to the requirements.

**Recommendation**

The surplus (deficit) of energy can be corrected by increasing (decrease) the amount of

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It is necessary to increase ( decrease ):

the amount of protein with .....g, on account of the following food products

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the amount of lipids with .....g, on account of the following food products

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the amount of carbohydrates with .....g, on account of the following food products

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The necessary amount of vitamin A can be recovered on account of the products

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of vitamin C

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of Ca salts

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of the salts of P

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The correction of the diet can be achieved by increasing (reducing) the caloric value of breakfast, lunch, dinner by .....%, .....%,.....% respectively.

Lecturer's signature \_

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## Practical work №

### **THEME: Research of vitamin content in food products. Appreciation of the vitamin value of the food ration. Control over the body supply with vitamin C**

***The purpose of the work:***

- ✓ learning the methods for determining vitamin C in food products;
- ✓ learning the methods of determining the body's saturation with vitamin C.

### **Report on the work performed**

#### **I. Determination of ascorbic acid in vegetables and conifer decoction:**

1. Method used: *titrometric method with Tilmans reagent.*
2. The principle of the method is based on the redox reaction between ascorbic acid and Tilmans reagent. Ascorbic acid, being oxidized, reduces the Tilmans reagent. The Tilmans reagent in the neutral and alkaline medium has a blue color, in the acidic medium - red. Thus, the reagent, being reduced by ascorbic acid, discolors (the blue color changes to pale pink).

The amount of vitamin C in vegetables and decoction of conifers

indicator	Onion	Cabbage	Potato	Boiled potato		Decoction of conifers
				The amount	% loss	
1	2	3	4	5	6	7
Tilmans reagent consumed during the titration, ml					-	
The amount of extractive solution (HCl 2%), ml						
The amount of food product sampled, g						
The volume of extract taken for titration, ml						
The quantity of vit. C, mg%						
Normative value, mg%						

### **Conclusion**

**Variant 1.** The amount of vitamin C in all raw vegetables corresponds to the normative values due to the fact that they are freshly collected and the vitamins did not manage to destroy during storage. In cooked vegetables, the amount of vitamin C is lower than in raw vegetables, which proves its destruction during thermal processing. The amount of vitamin C in the decoction of conifers corresponds to the normative values, which proves that it was correctly and recently prepared.



**Practical work №**

**THEME: Hygienic assessment of the quality of some food products  
(sanitary expertise of some of the main food products)**

**The purpose of the work:**

- ✓ knowing the quality indices of milk, meat, fish and bread according to the Technical Regulations;
- ✓ assessing the quality of milk and dairy products.

**Report on the work performed**

the quality indices of milk and dairy products according to the Technical Regulation "Milk and dairy products" (2010)

Indices	Milk					Kefir		Sour cream	
	Sample N o.1	Sample N o.2	Sample N o.3	Sample N o.4	Norm	Sample	Norm	Sample	Norm
<i>Organoleptic indices</i>									
color									
smell									
taste									
<i>Physico -chemical indices</i>									
density, g/ cm <sup>2</sup>					1,024-1,030	X		X	
acidity, °T					16-20		25-130		60-100
<i>Try at:</i>									
starch						X		X	
Sodium bicarbonate						X		X	
pasteurization						X		X	

**Conclusion**

**Variant 1.** The evidence of ..... fully correspond to the hygiene requirements in force and can be used in nutrition.

**Option 2.** The evidence of ..... partially correspond hygienic requirements in force (because.....) and can be used in food with certain restrictions (thermal processing, .....).



**Option 3.** The evidence of ..... do not correspond to the hygiene requirements in force (because ..... ) and can only be administered in animal feed.

**Option 4.** The evidence of ..... do not correspond to the hygiene requirements in force (because ..... ) and cannot be used in food. It is mandatory.....

Determination of bread quality indices according to the Technical Regulation "Bakery and pasta products" (2007).

<b>Indices</b>	<b>Characteristic</b>	<b>Norm</b>
The name of the bread		
<i>Organoleptic indices</i>		
Exterior aspect:		
• surface		
• color		
Form		
Characteristic of the shell		
Core feature:		
• smell		
• taste		
<i>Physico -chemical indices</i>		
Humidity, %		30-50
Porosity, %		51-65
Acidity, <sup>a</sup> T		1.5-8.0

**Conclusion**

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Lecturer's signature \_\_\_\_\_

**Practical work №**  
**THEME: Food poisoning, their prevention. Research methods**

***The purpose of the work:***

- ✓ acquiring the research technique of food poisoning cases;
- ✓ formulating preventive measures.

**Report on the work performed**

Solving the  
situation problem

Problem No. \_\_\_\_\_

1. What microorganisms, toxins, substances, plants, etc. could they have caused the intoxication?

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2. What food products or what dishes were the cause of food poisoning?

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3. What conditions contributed to the emergence of food poisoning?

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4. What emergency measures must be taken and who exactly must execute them?

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5. What questions will be asked to those affected (or relatives) to elucidate the case?

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6. What materials will be sent to the laboratory and by whom?

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7. What laboratory tests or additional investigations are necessary to establish the diagnosis?

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8. What preventive measures will you take?

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**Conclusion** (form of intoxication according to classification)

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Lecturer's signature \_\_\_\_\_

**Practical work №**

**THEME: Hygienic assessment of drinking water quality**

**The purpose of the work:**

- ✓ learning the methods of preventing diseases caused by the use of low-quality water;
- ✓ learning the methods of determining the physical and chemical properties of water;
- ✓ appreciation of the results obtained.

**Report on the work performed**

Determination of drinking water quality indices

Indices	Water samples						Norm
	1	2	3	4	5	6	
<b><i>Organoleptic indices</i></b>							
Smell, °							
Taste, °							
Color, °							
Transparency, cm							
<b><i>Physico -chemical indices</i></b>							
pH							
Ammonia, mg/l							
Nitrites, mg/l							
Nitrates, mg/l							
Chlorides, mg/l							
Sulfates, mg/l							
Iron, mg/l							
Oxidability, mg/l of O <sub>2</sub>							
General hardness	mg equivalent /l						
	°G*						

\* °G= mg equiv/l × 2.8

**NB** All determinations are qualitative. Nitrates are determined using diphenylamine. All determinations are made in test tubes, except for oxidability and general hardness which are made in retorts.

**Conclusion**

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## Practical work №

### THEME: Water quality conditioning methods

**The purpose of the work:**

- ✓ systematizing knowledge about water conditioning methods;
- ✓ learning water conditioning methods.

### Report on the work performed

#### I. Coagulation of water

Indices	Water samples		
	1	2	3
Temporary water hardness, mg.equiv/l			
Dose of coagulant mg/l (for 200 ml of water) according to the table			
Coagulant dosage determined experimentally, mg/l			
Final dose of coagulant (for 1 liter of water)			
The amount of dry coagulant for 1 liter of water, g			

#### II. Water chlorination

Indices	Water samples								
	1			2			3		
	cup			cup			cup		
	1	2	3	1	2	3	1	2	3
Amount of lime chloride 1%, added, ml	0.1	0.2	0.3	0.1	0.2	0.3	0.1	0.2	0.3
Amount of sodium thiosulphate 0.001N (at titration), ml (x)									
Residual chlorine, mg/l									
The chosen glass									
Chlorine dose for 1 liter of water, mg/l									
The amount of dry lime chloride per 1 liter of water									

Residual chlorine =  $x \times 0.0355 \times 5$



## Practical work №

**THEME: Chemical factors of the air environment and their influence on the body. Air pollution with bacteria and dust. Express methods for the determination of chemical substances in air. Determination of CO<sub>2</sub> according to the Vinocuroff method**

***The purpose of the work:***

- ✓ knowledge of air collection methods for the determination of chemical substances and dust;
- ✓ learning the methods of determining some chemical substances and dust in the air;
- ✓ proposing and arguing recommendations for improving air quality.

### Report on the work performed

#### I. Determination of CO<sub>2</sub> content in rooms (Vinocuroff method)

- volume of collected air... ..ml
- conditioning volume (V<sub>0</sub>)... ..ml
- concentration of CO<sub>2</sub> ..... mg/m<sup>3</sup> (%)
- the standard value of CO<sub>2</sub> in different rooms.....mg/m<sup>3</sup> (%)

#### II. Determination of SO<sub>2</sub> content in rooms

- volume of collected air... ..ml
- conditioning volume (V<sub>0</sub>)... .. ml
- concentration of SO<sub>2</sub>.....mg/m<sup>3</sup>
- the standard value of SO<sub>2</sub> in the rooms .....mg/m<sup>3</sup>

#### III. Determination of the content of toxic substances with the UG-2 gas analyzer

- ammonia.....mg/m<sup>3</sup>
- standard value of ammonia in rooms.....mg/m<sup>3</sup>

#### Conclusion

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**Recommendations to improve air quality**

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**III. Solving the homework problem**

Problem No. \_\_\_\_\_

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Lecturer's signature \_

## Practical work №

### **THEME: Hygienic assessment of the microclimate in children and medical institutions (Part I)**

#### *The purpose of the work:*

- ✓ learning the methods of studying and assessing the microclimate factors in the rooms;
- ✓ knowledge of the sanitary norms of the microclimate.

#### **Report on the work performed**

##### **1. Determination of the temperature regime in the rooms**

1.1. Note the air temperature norms for different rooms.

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1.2. Note the allowed temperature differences horizontally and vertically.

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1.3. Note the air temperature measurement points for establishing the temperatureregime in the room.

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1.4. Note the air temperature measuring devices.

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1.5. The results.

Air temperature in the room

Height from the floor, m	Temperature on the diagonal, °C			Horizontal temperature difference
	to the inner wall	in the middle of the room	at the outer wall	
0.1				
1.0				
1.5				
Vertical temperature difference				

**Conclusion**

**Variant 1.** The temperature regime in the room indicates a uniform temperature, because the horizontal and vertical temperature difference does not exceed the normative values. An average temperature value of ..... is recorded. °C \_

**Option 2.** The temperature regime in the room indicates an uneven temperature, because the horizontal and /or vertical temperature difference (underline) exceeds the normative values, constituting ..... °C.

An average temperature value of... is recorded. °C \_

**2. Determination of air humidity**

2.1. List the types of air humidity.

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2.2. Note the air humidity standards for different rooms.

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2.3. List the devices for measuring air humidity.....

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2.4. The results:

- dry thermometer indications
  - the August psychrometer .....
  - Assman psychrometer.....
- the indications of the wet thermometer
  - the August psychrometer.....
  - Assman psychrometer.....

2.4.1. Calculate the absolute humidity of the air:

- with the August psychrometer

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- with the Assman psychrometer

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2.4.2. Determine the relative humidity of the air:

a) *according to calculations:*

- with the August psychrometer

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- with the Assman psychrometer

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b) according to the table:

- with the August psychrometer

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- with the Assman psychrometer

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### **Conclusion**

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### **3. of air movement speed (air velocity)**

3.1. Name the air movement speed norms for different rooms.

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## Practical work №

### **THEME: Hygienic assessment of the microclimate in children and medical institutions (Part II)**

#### *The purpose of the work:*

- ✓ learning the methods of studying and appreciating the complex action of microclimate factors;
- ✓ knowledge of the sanitary norms of the microclimate.

### **Report on the work performed**

#### **1. Determination of the effective temperature**

1.1 . Write down the definition of effective temperature.

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1.2. Note the actual temperature norms.

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1.3. Results:

1.3.1. actual temperature based on the tables

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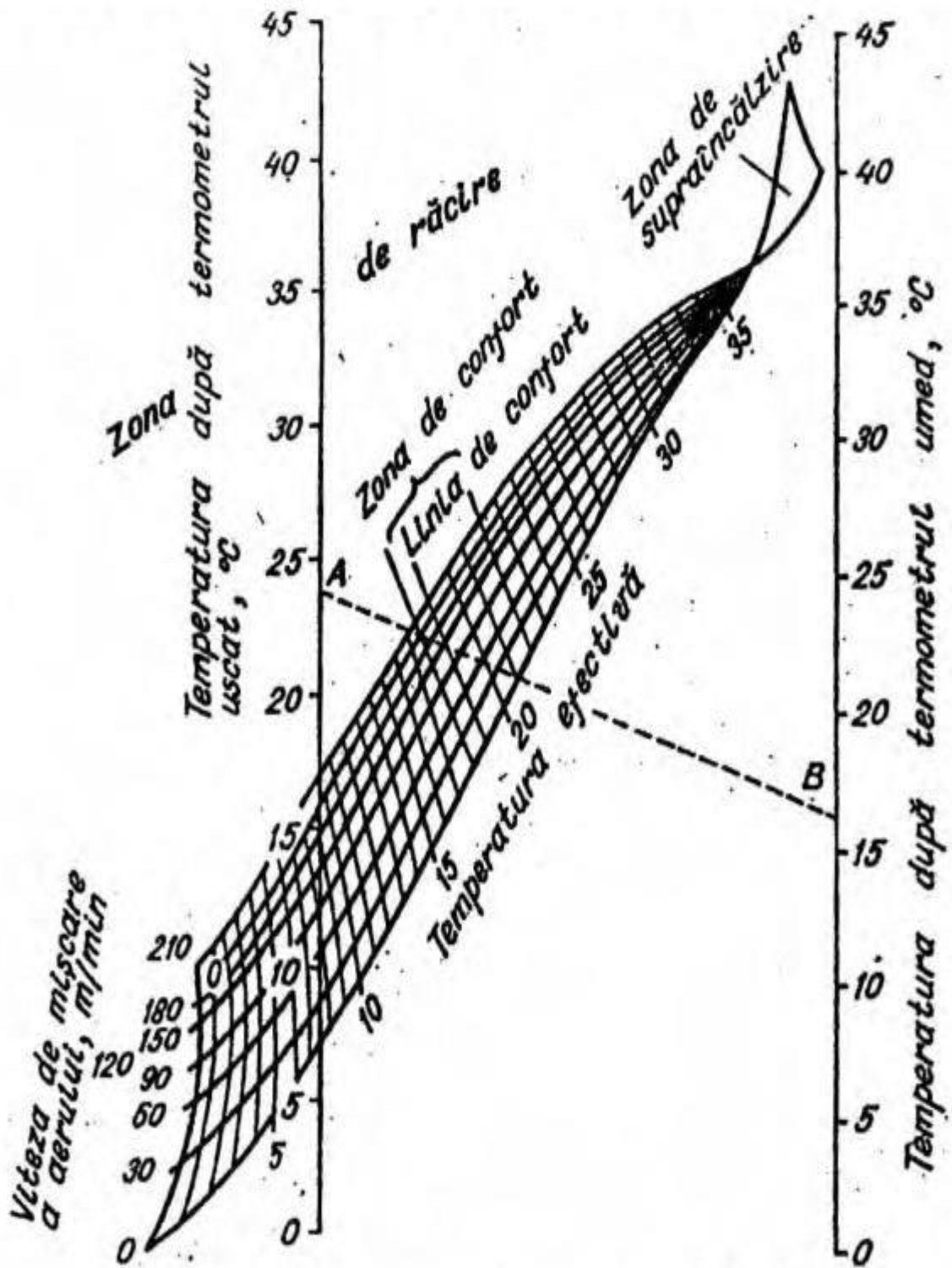
1.3.2. effective temperature based on the nomogram

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● its value and appreciation

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Effective temperature nomogram



## Practical work №

### **THEME: Hygienic assessment of natural lighting in children and medical institutions**

#### *The purpose of the work:*

- ✓ learning the methods of determining natural lighting indices;
- ✓ assessing the lighting and formulating recommendations to improve the assessed indices.

#### **Report on the work performed**

##### **I. Determination of natural lighting**

- position, configuration and window sizes  
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- window orientation  
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- distance between two windows, cm  
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- $E_i$  (the lighting inside the room)  
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- $I_{t_{is}}$  (lighting outside the room)  
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- surface of the windows  
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- floor surface  
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- distance from the floor to the windowsill, cm  
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- the distance from the floor to the upper edge of the window, cm  
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- distance from the upper edge of the window to the roof, cm  
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- distance from the center of the work table to the window (leg BC)  
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- room depth, cm  
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- the device used to determine NCL  
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**Practical work №**

**THEME: Hygienic assessment of artificial lighting in children and medical institutions**

*The purpose of the work:*

- ✓ learning the methods of determining artificial lighting indices;
- ✓ assessing the lighting and formulating recommendations to improve the assessed indices.

**Report on the work performed**

**I. Appreciation of artificial lighting**

- 1.1. light intensity at the workplace, lx.....
- 1.2. calculation according to the «e» coefficient
  - the number of incandescent lamps.....
  - the power of incandescent lamps, W.....
  - total power, W.....
  - the surface of the room, m<sup>2</sup>.....
  - the specific power of the lamps, W/m<sup>2</sup>.....
  - coefficient «e».....
  - lighting, lx.....
- 1.3. calculation according to the "Watt" method
  - the number of incandescent lamps.....
  - the power of incandescent lamps, W.....
  - the specific power of the lamps, W/m<sup>2</sup>.....
  - lighting at the specified specific power of 10 W/m<sup>2</sup>, lx.....
  - lighting, lx.....
- 1.4. calculation of the specific power of incandescent lamps for standard lighting ...
- 1.5. calculation of the number of incandescent lamps for standard lighting.....
- 1.6. determining the level of illumination according to the specific power of the lamps fluorescent.....
  - the number of fluorescent lamps.....
  - power of fluorescent lamps, W.....
  - total power, W.....
  - the surface of the room, m<sup>2</sup>.....
  - the specific power of the lamps, W/m<sup>2</sup>.....
  - lighting, lx.....
- 1.7. calculation of the specific power of luminescent lamps for standard lighting ...
- 1.8. calculation of the number of fluorescent lamps for standard lighting.....
- 1.9. determining the reflection coefficient of the fund
  - the intensity of the light falling on the surface, lx.....
  - intensity of light reflected from the surface, lx.....
- 1.10. calculation of the brightness index of the illuminated surface
  - illumination (luxmetry), lx.....



## Practical work №

### THEME: Hygienic assessment of room ventilation and heating

***The purpose of the work:***

- ✓ acquisition of calculation and laboratory methods for assessing effectiveness ventilation and heating;
- ✓ assessment and recommendation of measures based on the data obtained.

#### Report on the work performed

1. CO<sub>2</sub> content in the classroom (from the previous lesson).....%
2. Hygienic evaluation of room ventilation
  - 2.1. type of ventilation .....
  - 2.2. number of people in the room.....
  - 2.3. room volume...m<sup>3</sup>
  - 2.4. required volume of air (in the ventilation process)
    - 2.4.1. for one person..... m<sup>3</sup>/h
    - 2.4.2. for.....persons.....m<sup>3</sup>/h
  - 2.5. the necessary multiple of the air exchange
    - 2.5.1. for one person.....
    - 2.5.2. for.....persons.....
  - 2.6. the actual volume of air (in the ventilation process).....m<sup>3</sup>/h
  - 2.7. the real multiple of the air exchange.....

#### Assessment of effectiveness ventilation

indices	Necessary	Real	Norm	Findings
Ventilation volume	$L_n =$	$L_r =$	$L_n \leq L_r$	calculation method
Multiple air exchange	$S_n =$	$S_r =$	$S_n \leq S_r$	
CO <sub>2</sub> _	0.07-0.1%	x=	$01 \geq x$	laboratory method

#### Conclusion

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**Practical work №**

**THEME: Expertise of hospital projects. Appreciation of the location, systematization of the units and specialized departments of hospitals**

**The purpose of the work:**

- ✓ acquiring the methods of general expertise of hospital construction projects;
- ✓ hygienic assessment of the location and internal systematization of hospitals.

**Report on the work performed**

**SCHEME-INSTRUCTION FOR EXPERTISE OF THE HOSPITAL PROJECT**

*Based on the materials and drawings, make the hygienic characteristic of the project.*

1. take knowledge of the project explanation, note:

- the name of the hospital project

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- which blocks the hospital complex includes

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2. take knowledge of the situational plan:

- appreciate the correctness of the choice of the place (land) for the construction of the hospital (variety of wind frequency, natural factors, possible sources of air pollution - dust, toxic chemicals, noise, etc.)

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3. Appreciate the general plan of the hospital:

- construction system

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- functional areas and their location

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- the number of field accesses

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- the configuration

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- the surface of the land

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- surface to a bed

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- land construction density

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- characteristic of the green area: the total area and the area per bed (for the contagiousdiseases section it will be characterized separately)

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- the distance between the blocks

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- the distance between the blocks and the borders of the land  
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- road characterization  
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- characterization of accesses  
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- characterization of walking paths  
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- sketch the general plan of the hospital  
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- organization of hospitalization of women in labor: location of the section and its specificity

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- rooms for discharge of patients, their location

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6. Rate the medical care unit (therapy):

- the number of medical care units

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- characterization of the corridor (type, width)

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- the number of rooms in the department, how many beds each is provided for

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- what rooms each health care facility includes

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- common rooms for the entire therapy department

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- location of the nursing position

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- the deepening coefficient

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- the characteristic of the artificial lighting of the wards

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- the distance between the beds

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- the distance from the outer wall to the beds

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8. Sanitary expertise of the surgery department and the diagnostic block:

- the connection between the operating block of the surgery department and the diagnostic block

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- the dressing room, the surface, the orientation

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- location of the purulent surgery department

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- the location and number of postoperative rooms, how many beds are in each

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9. Appreciate the specifics of the operating unit:

- location of the operating room in the hospital system.....

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- the connection of the operating room with the surgery department, the hospitalization department and the radiology office

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- the rooms of the operating room  
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- operating rooms there are, their correspondence with the number of beds in the ward  
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- whether or not there is an operating room for septic patients  
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- operating room: orientation, surface, characteristic of natural lighting(NCL, LC)  
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- preoperative room (surface)  
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- the room for the anesthesia machine: its location in relation to the operating room and the one PREOPERATIVE  
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- the sterilization room: its location, the connection with the operating room  
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- the rooms of the operating room  
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10. Appreciate section of contagious diseases:

- location of the department in the hospital complex  
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- what rooms does the department have?  
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- admission booths, corresponding number of booths to the number of beds from the section, their surface  
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- types of wards  
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- the percentage of beds in half-box, box (isolation room), wards compared to the total number  
.....  
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- the internal systematization of the box, half-box, surface, orientation, number of box beds (half -box)  
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- ordinary halls.....  
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- organizing the feeding of the sick, sterilizing dishes  
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11. Appreciate the specificity of maternity systematization:

- isolation of the maternity ward from the gynecological department



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- manipulation room: orientation, surface  
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- connection with the physiotherapy service  
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13. The sanitary expertise and assessment of the pediatric department:

- location of the section compared to the sections for adults  
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- the number of beds in the department  
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- pediatric department communicate with others or not  
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- it is possible to quarantine the section  
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- whether or not there are boxed rooms or boxes for the isolation of children in the department.....  
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- total area and for a bed  
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- the percentage of beds in north-facing rooms  
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- game room: orientation, surface  
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- dining room: orientation, surface

- heated veranda for children's daytime sleep, for how many beds, its orientation

- the room for treatment with ultraviolet rays, its surface

- the rooms for mothers, where they are located, for how many places

- rooms for breastfeeding

14. Characterization of the auxiliary blocks of the hospital:

- the food block: the particularities of systematization and exploitation, the connection with the curative blocks.

**Conclusion**

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**Recommendation**

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**Practical work №**

**THEME: Physical and intellectual work. Functional changes in the body during the work process**

**The purpose of the work:**

- ✓ assimilation of the changes occurring in the body during work;
- ✓ learning the physiological methods of investigations during work;
- ✓ acquiring the methodology for assessing the degree of physical effort or body strain;
- ✓ recommending measures to prevent fatigue and maintaining work capacity.

**Report on the work performed**

Investigation of physiological changes

Indices	before activity	after activity	after 10 minutes
<b><i>Central nervous system</i></b>			
the latent period of the reaction video engines, ms			
the latent period of the reaction acustomotori, ms			
working memory %			
Strength attention, s			
<b><i>Cardiovascular system</i></b>			
frequency, beat/min			
blood pressure, mmHg			
systolic blood pressure, mmHg			
diastolic pressure, mmHg			
pulse pressure, mmHg			
mean dynamic pressure, mmHg			
systolic flow, ml			
cardiac output, l/min			
<b><i>Respiratory system</i></b>			
frequency breathing / min			
respiratory volume, l			
<b><i>The neuromuscular apparatus</i></b>			
♦ <b><i>Tremometry</i></b>			
the number of touches/s			
♦ <b><i>Dinamometry</i></b>			
muscle strength, kg			
muscular resistance, s			

**Conclusion** (*appreciate functional changes during work and during the recovery period, indicate signs of fatigue*)

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**Practical work №**

**THEME: Methods of research and assessment of children's physical development and teenagers**

**The purpose of the work:**

- ✓ learning the methods of assessing the individual and collective physical development of children and teenagers;
- ✓ learning the methods of establishing health groups.

**Report on the work performed**

**I. Appreciation of the level of physical development of children and teenagers**

1. Complete the table

Child's name/surname	Age	Kind	Waist (cm)	Body mass (kg)	Chest Circumference at Rest (cm)	The vital capacity of the lungs
1						
2						
3						

2. Preparation of variational-statistical tables for each researched somatometric index (waist, cm; body mass, kg; chest perimeter, cm).

To set the variational string, the minimum and maximum values are found in the number of cards proposed. Arrange the sheets in ascending order of the index (waist, cm; body mass, kg; chest perimeter, cm) and include the data in the table in column 1 – *index variant (a)*. A separate table is prepared for each index. Count the number of cards with the same variant of the index and enter them in column 2 - *the number of cases (p)*, next to the respective variant (*a*). As a result, all the cases in the string are distributed variational and it is established frequency (*p*) the repetition of each case.

Gender \_\_\_\_\_, age \_\_\_\_\_ of the group of examined children.

*Waist, cm*

№	Indices, <i>a</i>	Frequency, <i>p</i>	$a \times p$	$(M - a) = d$	$d^2$	$d^2 \times p$
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

11						
12						
13						
14						
15						
16						
17						
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36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
total no		N	$\Sigma a \times p$			$\Sigma d^2 \times p$



3. Calculate:

a) the arithmetic mean for each researched index (waist, body mass, chest circumference);

$$M = \frac{\sum a \times p}{N}$$

b) mean square deviation for each researched index

$$\sigma = \pm \sqrt{\frac{\sum d^2 \times p}{N}}$$

c) the error of the arithmetic mean for each researched index

$$m = \frac{\sigma}{\sqrt{N}}$$

*Body mass, kg*

№	Indices, <i>a</i>	Frequency, <i>p</i>	<i>a</i> × <i>p</i>	( <i>M</i> − <i>a</i> )= <i>d</i>	<i>d</i> <sup>2</sup>	<i>d</i> <sup>2</sup> × <i>p</i>
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
total no		N	$\Sigma a \times p$			$\Sigma d^2 \times p$

$$M = \frac{\sum a \times p}{N} \quad \sigma = \pm \sqrt{\frac{\sum d^2 \times p}{N}} \quad m = \frac{\sigma}{\sqrt{N}}$$

Chest circumference, cm

No	Indices, a	Frequency, p	a × p	(M - a) = d	d <sup>2</sup>	d <sup>2</sup> × p
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

11						
12						
13						
14						
15						
16						
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38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
total no		N		$\sum a \times p$		$\sum d^2 \times p$



5. Assessing the level of **individual physical development** in three children by the method:

a) *sigma deviation* with the graphic representation of the physical development profile Parameters of physical development in three children

Indices	Individual data	Arithmetic mean, $m$	Mean square deviation, $\sigma$	Deviation from on average	sigma deviation
	$a$	$b$	$c$	$d=b-a$	$e = \frac{d}{c}$
Waist	1.				
	2.				
	3.				
Body mass	1.				
	2.				
	3.				
Circumference of the ribcage	1.				
	2.				
	3.				

Graphic representation of children's physical development profile

	-4 $\sigma$	-3 $\sigma$	-2 $\sigma$	-1 $\sigma$	M	+1 $\sigma$	+2 $\sigma$	+3 $\sigma$	+4 $\sigma$
Waist									
Body mass									
Circumference of the ribcage									

**Appreciation of individual physical development**

- average physical development – deviations within  $\pm 1\sigma$ ;
- above-average physical development – deviations within the range from  $\pm 1.1\sigma$  to  $\pm 2\sigma$ ;
- high physical development – deviations within the limit from  $\pm 2.1\sigma$  to  $\pm 3\sigma$ ;
- subaverage physical development – deviations within the limit from  $- 1.1\sigma$  to  $- 2\sigma$ ;
- low physical development – deviations within the limit from  $- 2.1\sigma$  to  $- 3\sigma$ .

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## Conclusion

*b) the regression scale*

## Conclusion









## Notes

A series of horizontal dotted lines for writing notes.







