LABORATORY NO. 14.

14.1. THE METHODS USED TO ESTIMATE CHILDREN PHYSICAL DEVELOPMENT

Some physical development indicators are available for all ages: the chronological age, the sex, the weight; others refer to one age group: the height of the uter of the pregnant young woman, the adult voice gets in the teenager boy.

To estimate the physical development of children, we use three methods:

- **somathoscopy;**
- **somathometry;**
- **physiometry.**

14.1.1. SOMATHOSCOPY

Through somathoscopy we estimate:

- the skin and mucous membranes;
- the fat tissue through cutaneous part;
- the muscular development;
- the thorax (normal formed or deformed) form;
- the coiumn (normal, with deviation: scoliosis, cyphosis, lordosis);
- the pelvis equilibrium (normal, inclined), the inferior limbs (normal, deformed);
- posture (very good posture: the longitudinal axis of the head, trunk and inferior limbs are in the same frontal plane; bad posture: the longitudinal axis of the head, trunk and inferior limbs are not on the same frontal plane);
- the general aspect of the proportion between the body segments: head, trunk, limbs;
- the secundary sexual characteristics development.

We estimate this development as normal or abnormal, which corespond or not to the majority of the population.

14.1.2. SOMATHOMETRY

Through somathometry (anthropometry) we estimate the following indicators:

- the height;
- the wheight;
- the cranian perimeter;
- the arm perimeter of its half length of the arm;
- the thorax perimeter;
- the molet perimeter;
- the skin folds: tricipital, subscapular, crural.

14.1.2.1. THE HEIGHT ESTABLISHING METHOD

Until 3 years, estimation will be made with the pediometer, the child will be in dorsal decubitus and in the presence of two people. The child is layed his back, the head touches the fixed vertical thin plate, the eyesight will be perpendicular on the measure surface of the plane; the shanks will be in extension; the cursor (indicator) will be at heels' level. The reading will be in cm and mm.

After 3 years old, measuring will be done with anthropometer that presents a vertical fixed axis (tijă) graduated in cm and mm, and a mobile cursor on this axis. The subject, barefooted and with a few clothes on his body (for a good

observation of the body position), layes on a plane surface (the apparatus platform), with the body wheight equal distributed on the two inferior limbs, the heels, posteriors and shoulder blades which will be joined, the line of the eyesight perpendicular on the body, the arms will hang free, and in direct contact with the vertical plane of the axis, will be the: head, back, posteriors, heels. We ask the subject to breath in and to stay in this complete extension position. We bring the cursor to the highest level of the subject's head. We write this value in cm and mm.

14.1.2.2. THE WEIGHT ESTIMATION METHOD

The weight is established with the persons balance that is standardised. The subject, with a few clithes on him, stands in the center of the balance platform, with the body weight equally distributed on the two inferior limbs. Recording of the results will be done with in Kg and hundred grams.

14.1.2.3. THE PERIMETER ESTIMATION METHOD

We measure the perimeters with the metric ribbon.

- **THE ARM'S PERIMETER**

The arm's perimeter (at the half length of the arm) will be bended on the forearm with an angle equal to 90^0. We establish the guide mark for the acromion extremity and olecran extremity and, at the half of distance, we measure the arm's perimeter in cm and mm.

- **THE CRANIAL PERIMETER**

For this establishing the metric ribbon will be fixed posteriorly, at the level of the most proeminent occipital protuberance, and anterior, at the level of the eyebrow arch. The long hair will be bound in order to not to distort data. This will be measured in cm and mm.

- **THE THORAX PERIMETER**

This perimeter is measured the suckling in dorsal decubitus (position), and at the older kids, in standing position. The metric ribbon will be fixed under the inferior angle of the shoulder blades, will pass under the gathered arms, and it will be brought anteriorly, to the mezosternal point. If the breasts are developed, the metric ribbon will be passed on the superior size of breasts. The results found are made in the breathing pause, in the break between the last expiration and the following inspiration. The results are recorded in cm and mm.

14.1.2.4. THE CUTANEOUS PLICATURE'S SIZE ESTABLISHING

This is measured with anthropometric compasses.

- **THE TRICIPITAL CUTANEOUS PLICATURE**

This is measured at the half length of the posterior face of the forearm, at the triceps level, at the half distance between acromion and olecran.

The decontracted arm will form with the forearm a right angle (90^0).

The examiner picks up a cutaneous plicature (skin and fat tissue) between thumb and index finger, at 1 cm of the established measuring point. Reading is realised with compasses, in cm and mm.

- **THE SUBSCAPULAR CUTANEOUS PLICATURE**

It is established under the inferior angle of the shoulder blades, on the one oblique line that forms with horisontal line an angle of 45^0.

Carefully, the examiner pick up with the left hand a cutaneous plicature at 1 cm distance of the established place,and the measuring is done with the compasses, the result being expressed in cm and mm.

- **THE CRURAL CUTANEOUS PLICATURE**

This is measured at the thigh's mediane level, at the half distance between inguinal groove and the proximum extremity of the knee pan. It is picked up a vertical cutaneous plicature. When the establishing is done of the inferior limb, this will be relaxed, and the knee will be a little bended. The other inferior limb take the body's weight. It is expressed in cm and mm.

After these four anthropometric estimations we have derived indicators such as:

- **QUETELET INDICATOR** or indice of the corpulence.

It is counted with a formula:

$$\frac{weight(Kg)}{height^2(m)} = IQ$$

It is used after the age of 9-10 years (prepuberty).

INTERPRETATION

IQ<16 - 1st degree denutrition;
IQ - 16-17 - 2nd degree denutrition;
IQ - 17-18.5 - 3rd degree denutrition;
IQ - 18.5-25 - normal developed;
IQ - 25-30 - 1st degree obesity;
IQ - 30-40 - 2nd degree obesity;
IQ > 40 - 3rd degree obesity.

- **RÖHRER INDICATOR** or the ponderal indice

It is used for the new born kids and it is counted with a formula:

$$\frac{weightatthebirth(g)}{lengthatthebirth(cm)^3} = IR$$

We establish children' development as being harmonious or faulty.

14.1.3. PHYSIOMETRY

With this method we establish:

- **THE MUSCULAR FORCE OF THE HAND**

The muscular force of the hand is measured with the dynamometer, sepparately for each hand. The dynamometer is maintained in the hand, and the subject grasps as strongly as he can, two times for each hand. We record the maximal value in Kg.

- **THE VITAL CAPACITY**

The vital capacity is recorded with the apparatus named spirometer. The subject will be taught to make a profound inspiration, and after this a maximal expiration, in this way the air is coming into the spirometer. We make two estimations and we consider the maximal value (in cm), only.

- **THE ARTERIAL PRESSURE**

This is measured in pause, in the sitting position, at the right arm. We make two estimations, and we record the second result, only. We mark the maximal and the minimal value, in mm Hg.

- **PULSE (FREQUENCE OF THE HEART BEATS)**

Pulse is measured through palpating of the radial artery, for a period of 1 minute. The subject is in the sitting position. The pulse is measured before the arterial pressure establishment.

After these physiometric estimations we consider the physical development harmonious or faulty.

For a correct estimation of the physical development the sigmal classes method is the best.

With this method we compare individual indicators with the average value, established for a country or a geographycal group.

We have 5 areas in the sigmal classes:

- area with very high indicators: $M+2\sigma$ - $M+3\sigma$;
- area with high indicators: $M+\sigma$ - $M+2\sigma$;
- area with middle indicators: $M-\sigma$ - $M+\sigma$;
- area with low indicators: $M-2\sigma$ - $M-\sigma$;
- area with very low indicators: $M-2\sigma$ - $M-3\sigma$.

Lately we meat frequently 3 areas instead of 5 areas.

These are:

- area with high indicators;
- area with middle indicators;
- area with low indicators.

We meat this areas in the Gauss's curve.

14.2. THE METHOD USED TO ESTABLISH THE CHILDREN PSYCHICAL DEVELOPMENT

The frequently used methods for a correct neuropsychical evaluation are:

- **OBSERVATION**

This method consists of a research plan, and it is realised without the notice of the observed person. Research can be realised without the contribution of this method.

- **BIOGRAPHY**

This method consists of noticing the most important events which took place in the child's life.

- **EXPERIMENT**

The experiment supposes to establish the psychic phenomenon that is investigated. The main characteristic of the experiment consists of intervention and progressive changing of one factor that is activated on the subject and recorded by his psychical activity.

There are two types of experiments:

- *experiment* that takes place in the *laboratory*. This is provoked and followed in the artificial conditions of the laboratory.
- *natural experiment*, that imitates the current models of the psychical requirement in life and that take place under normal conditions of the subject's activity (ex. psycho-pedagogic experiments).

- **TEST**

The test is a brief psychological method, standardised, and these results are interpreted through comparing with the standard.

We use a few types of tests:

- Depending on the used material:
  - verbal;
  - nonverbal.
- Depending on the measured content:
  - knowledge tests;
  - aptitudes tests;
  - intelectual level tests;
  - intelligence tests.
- Depending on the aimed purpose:
  - behaviour tests;
  - personality tests;
  - projective tests.
- Depending on the application manner:
  - individual tests;
  - collective tests.

- **SOCIOMETRY**

This method has the aspect of one questionaire, that consists of items for each member of the social microgroup, that gives information on the preferences or nonpreferences, in decreasing order of their intensity, opposite to the other members of the collectivity.

In social microgroups are established the following relations:

- univocal relations (X rejects Y, and Y is indifferent opposite X);
- mutual relations (X rejects Y, and Y at his turn rejects X).
- the subgroup existence (three, four pupils choose each other mutually).