

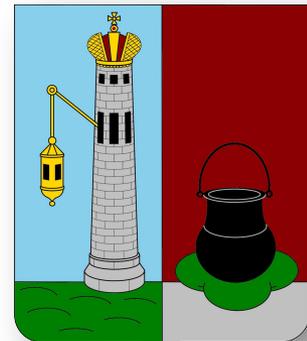


# 17. The weight

Fitness trainers and nutritionists (experts in healthy eating) are arguing: is it really necessary to measure it daily to control body weight? Some of them consider this approach unnecessary and even harmful. State well-founded arguments in favor of a particular position and confirm or refute them by experiment.



Reporter: Ekaterina Novikova  
Team: Island 418, Russia, Kronshtadt



# Plan of Research

**Subject:** Changes in a person's body weight during a certain period of a time.

**Object:** Family members of different ages and occupations.

**Aim:** Investigate the causes of changes in human body weight and find out the need to measure it every day.

**Tasks:**

1. To measure the body weight of each family member every morning, on an empty stomach in the same clothes for 100 days.
2. To make a comparative analysis of the results and theoretical positions.
3. To make recommendations for the weight control.

**Methods:**

- 1.Observation
- 2.Measurement
- 3.Analysis
- 4.Comparison

# Work schedule for solving the problem

## **The hypothesis of the research:**

There are a ton factors affected to the weight changes: eaten food and water, trips to the toilet, clothing, and even sweating, etc.).

On the other hand, if a person follows proper nutrition and exercise, then in the long run the weight will be stable.

## **Tasks:**

1. Measure the weight of 5 people:

- Grisha(12 years old)
- Alice (7 years old)
- Natasha (5 years old)
- Father (36 years old)
- Mother (36 years old)

Weight measurements are done at 09:00 on an empty stomach, each measurement was recorded in a spreadsheet for 3 months.

2. Analyze changes in weight among members of a family of five people.

# A bit of theory

Fitness trainers: weigh yourself every day.

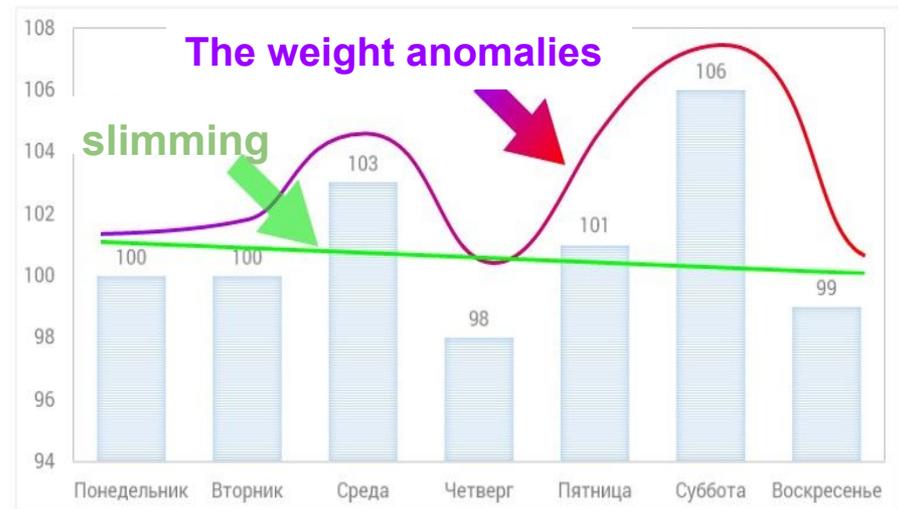
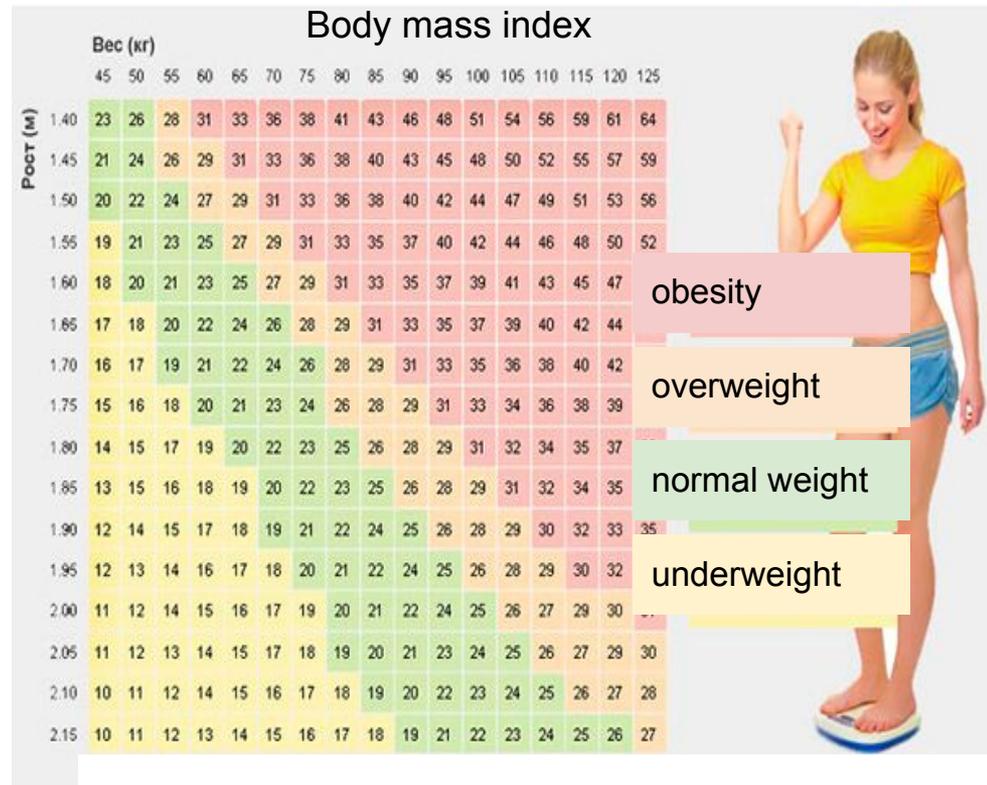
Pediatricians: monitor the child's weight daily (from birth up to 14 days), monthly (for 1-12 months), and several times a month (for 1-3 years), and finally once a year (for 3-18 years old)

Adults: weighing once or twice a year for medical examinations.

A person's weight is affected by many factors.

Weight changes during the day are absolutely normal.

Our weight is different every day.



## Weekly body mass measurements (kg)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Grisha	43,4	42,5	41,7	42,9	43,5	42,9	43,6
Alice	27,1	27,8	27,4	26,3	28,5	28,0	28,9
Natasha	16,3	16,4	16,6	17,5	17,8	17,2	18.0
Mother	68.1	68.3	68.5	68.2	67.9	68.4	68.6
Father	72.3	72.8	73.0	72.4	72.8	72.1	71.9

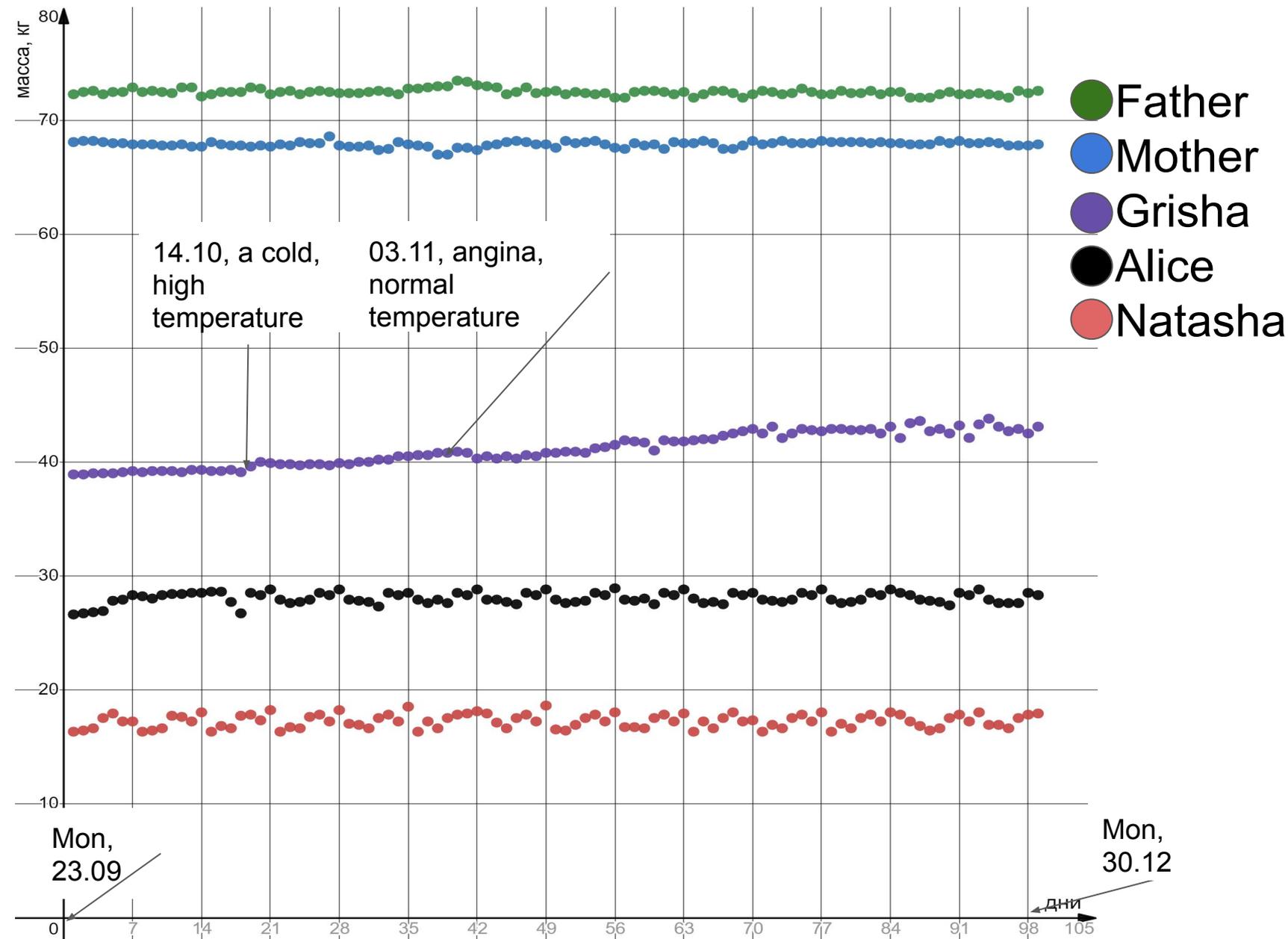
Measurement of body weight for a week among five family members on a regular household scale. The accuracy (the measurement tolerance) is 100 g. Then all the measurements were recorded in a spreadsheet — for 100 days.

	A	B	C	D	E	F	G	H
1		дата	№ п/п	Гриша	Алиса	Наташа	мама	папа
2		1 23.09.2019	1	43.0	27.9	16.3	68.1	72.3
3	вт	24.09.2019	2	42.7	27.8	16.4	68.2	72.5
4	ср	25.09.2019	3	42.9	27.7	16.6	68.2	72.6
5	чт	26.09.2019	4	42.5	26.9	17.5	68.1	72.3
6	пт	27.09.2019	5	43.0	28.5	17.8	68.0	72.5
7	сб	28.09.2019	6	42.9	28.3	17.2	68.0	72.5
8	вс	29.09.2019	7	43.6	28.8	18.0	67.9	72.9
9	пн	30.09.2019	8	43.0	27.9	16.3	67.9	72.5
10	вт	01.10.2019	9	42.7	27.6	16.4	67.9	72.6
11	ср	02.10.2019	10	42.9	27.7	16.6	67.8	72.5
12	чт	03.10.2019	11	42.5	26.9	17.5	67.8	72.4
13	пт	04.10.2019	12	43.0	28.5	17.8	67.9	72.9
14	сб	05.10.2019	13	42.9	28.3	17.2	67.7	72.9
15	вс	06.10.2019	14	43.6	28.8	18.0	67.7	72.1
16	пн	07.10.2019	15	43.0	27.9	16.3	68.1	72.3
17	вт	08.10.2019	16	42.7	27.8	16.4	67.9	72.5
18	ср	09.10.2019	17	42.9	27.7	16.6	67.8	72.5
19	чт	10.10.2019	18	42.5	26.9	17.5	67.8	72.5
20	пт	11.10.2019	19	43.0	28.5	17.8	67.7	72.9
21	сб	12.10.2019	20	42.9	28.3	17.2	67.8	72.8
22	вс	13.10.2019	21	43.6	28.8	18.0	67.7	72.3
23	пн	14.10.2019	22	43.0	27.9	16.3	67.9	72.5
24	вт	15.10.2019	23	42.7	27.6	16.4	67.8	72.6
25	ср	16.10.2019	24	42.9	27.7	16.6	68.1	72.3
26	чт	17.10.2019	25	42.5	26.9	17.5	68.0	72.5
27	пт	18.10.2019	26	43.0	28.5	17.8	68.0	72.6

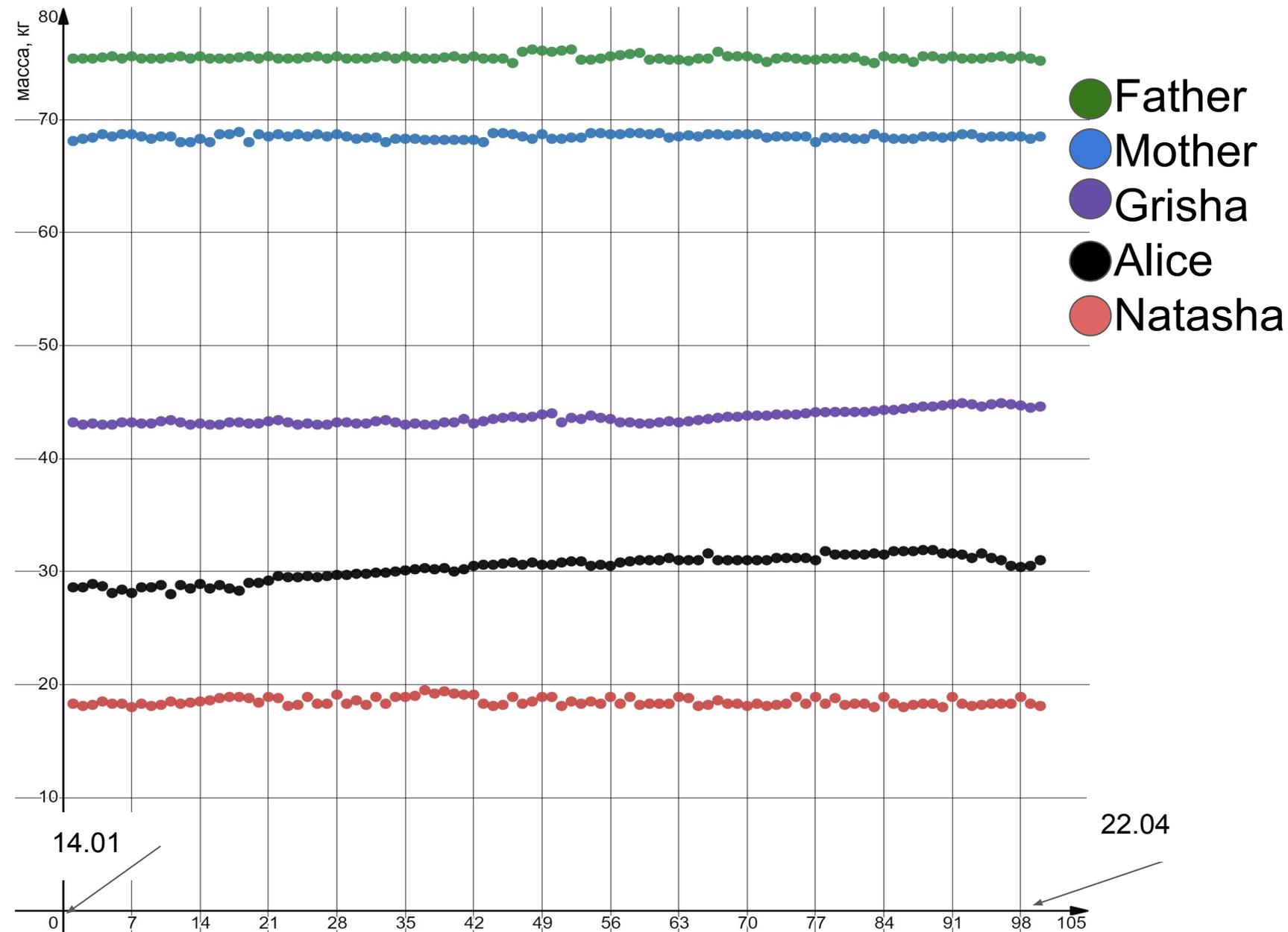
**Results**  
**measurements of**  
**body weight per**  
**month** (a fragment of  
a spreadsheet).

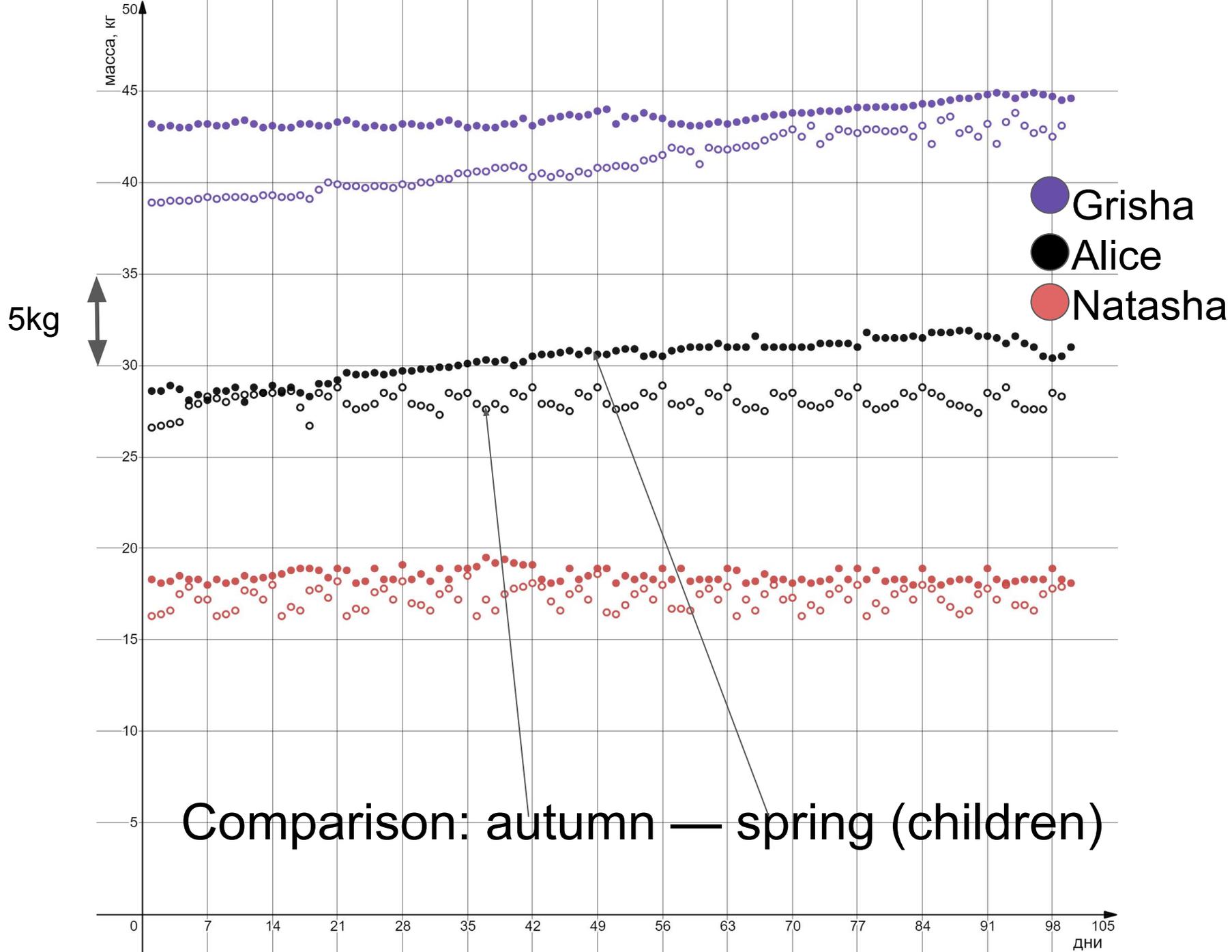
During the month,  
the body weight  
fluctuations of all  
family members  
were from 100 g to  
1500 g.  
These results  
processed by  
Desmos and the  
graphs built.

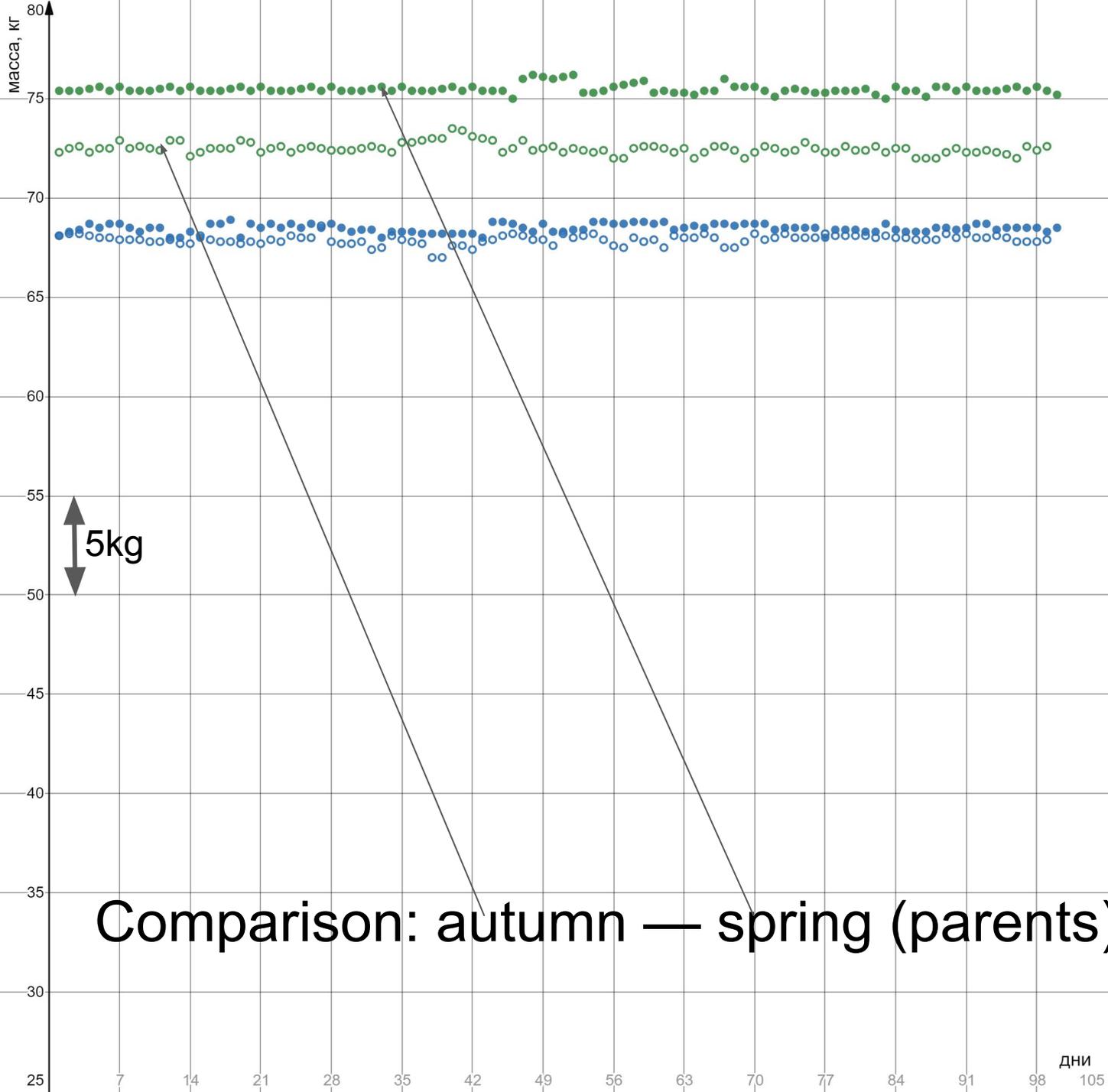
# Body mass measurements in 100 days (autumn)



# Body mass measurements in 100 days (spring)



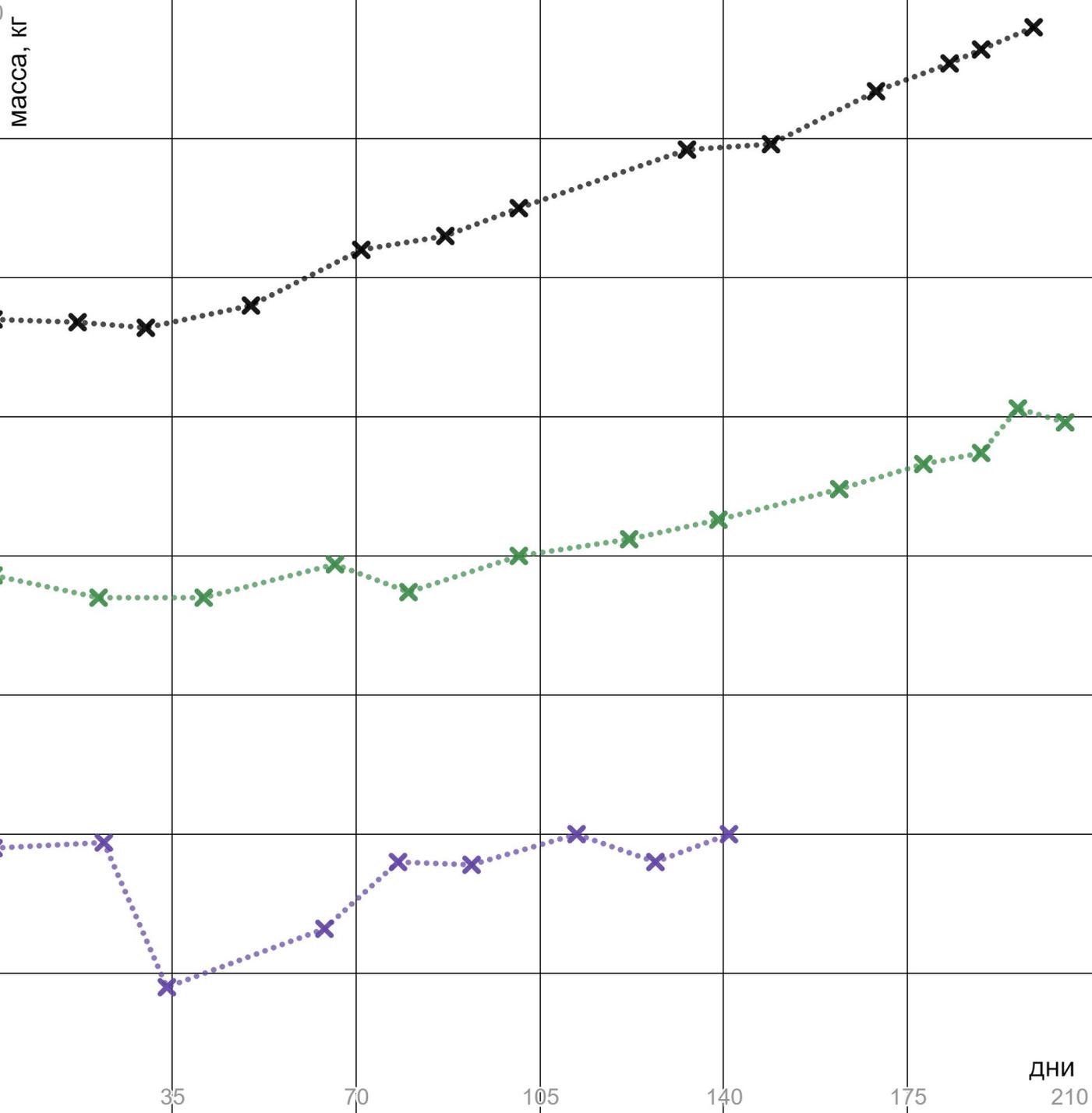




**Conclusion:**

The graphs show that the weight of an adult is more stable than that of children

- Father
- Mother



Weighing data for three 38-years-old pregnant women (from the pregnancy observation card, from the family archives of students of the PMK "Voskhod")

# Conclusions

Overall, we have achieved the research goal.

We analyzed a large amount of data.

Our research has shown weight control is necessary. But daily control may not be the only solution to control and maintain body weight.

Body weight is affected by a large number of factors:

## **in the short term (day)**

- Amount of eaten food and water
- Sweating
- Trips to the toilet
- Health and mood

## **in the long-term period (week, month, etc.)**

- Growth (in childhood and puberty)
- Aging
- Occupation
- Change of residence
- Psychological characteristics of the individual

**— and we proved it experimentally.**

# Corollary

Strictly control the body weight should be to very young children (up to one year, up to three years old) and children with health problems.

As well as pregnant women, nursing mothers, the elderly people, people with pathologies . Changes in body weight in these categories can be a signal of illness, malnutrition or overeating.

Thus, the answer to the question of our task: "is it so necessary to measure body weight every day to control it?" — does not have a clear answer.

We advise You to always consult a specialist!

# Used sources

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<https://www.medicalnewstoday.com/articles/295575#Even-though-weight-loss-is-mo-dest,-self-monitoring-seems-to-be-effective> (пер. на рус.  
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3. Гончаров Л. О причинах колебания веса в течение суток.  
<https://levgon.ru/stati/diety/802-o-prichinah-kolebaniya-vesa-v-techenie-sutok.htm>
4. Детское питание. Полный справочник. — м.: ЭКСМО, 2008.
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# Concluding remarks of the Reporter

## The questions:

Insignificant, not related to our research controversy

From Opp. about the pregnant women: why did you quest this question?

From Rev. about the temperature...

Fitness trainers and nutritionists (experts in healthy eating) are arguing: is it really necessary to measure it daily to control body weight? Some of them consider this approach unnecessary and even harmful. State well-founded arguments in favor of a particular position and confirm or refute them by experiment.

## Discussion:

Controversy our task was not to investigate why weight changes - only **how** exactly it changes.

The opponent did not understand our task and the discuss showed it.



## About our research

We conducted a study of dependence on several factors: genders and age, season and occupation of the several members of the family. the results of the study were presented to you in tables and graphs too.

A us-formulated hypothesis and a corresponding experimental plan an corresponding conclusion