

Measuring the dependence between blood pressure and time essay sample



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The aim of the investigation is to examine the dependence between the blood pressure and the hour.

The role of the blood is to supply organism with oxygen and nutrients. To reach every part of the body, blood is distributed by artery tissues. Because of the large size of human body, blood is pumped from the heart to arteries under certain pressure enabling in filling its role.

It is known that blood pressure is change by many factors, e. g. exercises, eating habits or smoking. Throughout the day, the need for oxygen is changing, causing the change of blood pressure.

What is worth investigating is to examine how much blood pressure varies throughout the day and find possible reasons for eventual changes.

The extract below explains how blood pressure is regulated:

‘ Blood arriving at the carotid bodies carrying a high concentration of carbon dioxide stimulates chemoreceptors in these regions to transmit impulses to the vasomotor centre. Nerve fibres leaving the chemoreceptors link with fibres from the carotid sinus by means of synapses before passing to the vasomotor centre. When the vasomotor centre is stimulated in this way it sends impulses to the blood vessels to vasoconstrict and therefore raises blood pressure. As increased carbon dioxide concentration in the body is usually brought about by increased activity by body tissues, the blood containing the carbon dioxide will be transported more rapidly to the lungs where removal of carbon dioxide in exchange for oxygen can take place more quickly’¹

The result of the experiment shows that the blood pressure is the highest in the morning and the afternoon, because of them being the most intense parts of the day. The lowest blood pressure was recorded in the night, the process of sleeping is the most soothing part of the day. It is worth noticing that also sport style is an important factor of the value of blood pressure.

Graph 1 and Graph 2 present that the middle-aged man have the highest both systolic and diastolic blood pressure. It is caused by the fact that male generally have stronger tendency to overweight than women, which is bad for artery system. Graph 3 additionally shows the differences between values of systolic and diastolic blood pressure of the individuals.

Values of systolic and diastolic blood pressure with the highest and the lowest point outlined. Low blood pressure is caused by the relaxation during the sleep. The work of body and the brain is decreased, organism does not need as much oxygen as in the day, therefore the circulation of blood is slower.

The summit of blood pressure is reached at 8: 00 AM, when the object was preparing for starting the day. Probably it was the growing level of stress caused by a hurry that led to increase of blood pressure.

Unfortunately many conditions which could influence the result were not considered, such as genotype, lifestyle or health habits. In addition the size of sample group was too small to fit more general research.

Evaluation:

Weaknesses:

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I. Participants should be asked whether they take any drugs which reduce/increase their heartbeat

II. The activity of individuals during the experiment slightly different: they were going to sleep at different times, eating different portions of food etc. – that might have influenced the result

Limitations:

I. The sphygmomanometer I used was manual, less precise than automatic sphygmomanometer

II. In theory 4 people were measured at the same time, but it is impossible with only one sphygmomanometer and one person that takes the measurements. In the result, the time difference between the first and the last person measured can reach 10 minutes.

III. Some variables were outside control, e. g. amount of eaten food or stress before work

Possible improvements:

I. Each age group should consist of the greater number of women

II. Bigger sample group should be introduced in order to generalize the outcomes

III. A scale for stating whether someone has an active or passive sport style should be elaborated

IV. The blood glucose level of each participant could be measured to show the overall physical condition and health of participants

1 “ Biological Science 1 & 2. Third edition” D. J. Taylor, N. P. O. Green, G. W. Stout, Cambridge University Press, Cambridge 2006