

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ІНОЗЕМНИХ МОВ  
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР**

**МАТЕРІАЛИ  
VIII МІЖВУЗІВСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ  
КОНФЕРЕНЦІЇ  
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ  
КАФЕДРИ ІНОЗЕМНИХ МОВ**

**“TO LIVE IN A SAFER WORLD”**

**(Суми, 28 березня 2014 року)**

The eighth scientific practical student`s, postgraduate`s and teacher`s  
LSNC conference

## FUNCTIONAL MRI

Avdeev S. LS-203

Mokhonyok Z.A. – EL Advisor

Medical technology has advanced in recent years. Now one can dissect the body in the finest photos and create three-dimensional models of organs and tissues with the help of scanning technology to find in malfunction and to diagnose diseases.

Nevertheless, a relatively new type of scanning technology called functional magnetic resonance imaging (fMRI) raises this technology one step further. fMRI can not only help to diagnose diseases of the brain, but allows doctors to get into our mental processes to determine the way we think and feel. Functional MRI can detect even if we tell the truth.

fMRI is based on the same technology as the usual MRI – it's a noninvasive technique that uses a strong magnetic field and radio waves to create detailed images of the body. But instead of creating images of organs and tissues, as MRI does, functional MRI looks at the blood flow in the brain to detect areas of its increased activity. These changes in blood flow are transmitted to computer and help doctors to understand better how our brain works.

Mapping the brain, for example, researchers try to identify the region of the brain where pain is processed to create more effective analgesic agents. Other researchers investigate the brain region responsible for time perceiving to invent new methods of treatment for patients who have difficulty with time perception.

Functional MRI can also help scientists in planning the operation. If a patient is in need of brain surgery, doctors can first scan the brain for determining the exact site of tumour to avoid damage to important brain functions.

However, MRI also has its drawbacks. Firstly, it is quite expensive. Secondly, MRI can capture a clear image only if scanned person remains completely motionless. And thirdly, researchers still do not clearly understand how it works.

The biggest complaint from researchers is that MRI can only look at blood flow in the brain. It can't interrupt with the activity of

individual nerve cells (neurons), which are crucial for mental functions. Each region of the brain scanned by MRI consists of thousands of individual neurons. The latter can discover a lot of unique facts, because certain areas of the brain shown on MRI can present a number of different functions. That's why it is complicated to distinguish what kind of brain activity is currently represented on the scan.

Some critics argue that MRI is nothing more than a high-tech version of phrenology, a pseudoscience of the 19th century that claimed a person's character to be identified by the shape and form of the skull. In future researchers hope to make MRI more scientifically reliable by improving its accuracy, focusing on individual neurons. These scientists believe to get a more complete and accurate picture of the brain activity by recording the electrical activity of neurons.

## EXERCISE AS A PROPHYLAXIS OF HEART DISEASES

A. Tveresovskiy, Sumy State University, LS-201

N.Horobchenko, EL adviser

Over the past century we have become increasingly sedentary due to the technical advancements of today's world. Studies have shown that the decline in our physical activity associated with these advancements plays a great role in the decline of our health. Cardiovascular diseases are the main cause of mortality in almost all countries, accounting for 36% of all deaths in 2013. They cover a range of diseases related to the circulatory system, including ischemic heart disease and cerebrovascular disease (or stroke). A sedentary lifestyle is one of the 5 major risk factors (along with high blood pressure, abnormal values for blood lipids, smoking, and obesity) for cardiovascular disease.

The American Heart Association has stated that the leading cause of heart disease is physical inactivity. The Surgeon General's report states that "regular physical activity or cardiorespiratory fitness decreases the risk of cardiovascular disease mortality in