Physiological Dependence and Addiction

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How Addictions Influence Your Physiology

While the initial consumption of various drugs or alcohol is mostly voluntary, the abuse and addiction to these substances happens because physiological and psychological changes will influence that person to consume the substance again and again. For example, brain MRIs show physical changes in the brain of a drug addict, especially in those areas responsible for judgment, decision making, memory and behavior. Let's take a closer look at addiction physiology.

Most abusive drugs will affect the brain's reward system in one way or another by increasing the levels of the "feeling good" chemical dopamine. Besides giving a sense of pleasure, dopamine also is involved in movement, various emotions, cognition and motivation.

By abusing a drug, the reward system is over stimulated, eventually leading to a euphoric state and thus will make the drug addict repeat the behavior (take the drug again) to feel better again.

Beside the involvement of the reward system, scientists believe that a stress mechanism also occurs in drug dependence (or addiction). During drug use, a hormone called corticotrophin releasing factor (CRF) activates the hormone producing glands, particularly so-called hypothalamic-pituitary –adrenal axis. As a result, emotional changes commonly associated with drug addiction will occur.

Changes in the behavior are also explained by changes seen in the brain cells (at the synapse level where the neurons connect one with another).

Allostasis is a medical term that refers to the process of achieving stability (balance) through physiological and psychological changes and this explains the complex mechanism behind additions. Drug addicts will express new allostatic states as they consume more and more of the addictive substance and stress appears to further aggravate the consumption of the drugs, and therefore changes in the allostatic state.

Neuroplasticity is a very interesting mechanism of the brain that also supports the change in physiology associated with addictions. Simply put, the brain can manifest physical changes (i.e. increase gene expression, change signals between cells, create new synapses between neurons) as needed. Along with changes in dopamine (associated with reward system mechanism) signs of neuroplasticity had been seen in the brains of individuals with drug addiction.

When physiological dependence occur, a drug addict will typically display some of the following symptoms: taking the drug in larger amounts than intended, being unable to decrease the amount of drug used, spending significant time to obtain that drug and this activity can interfere with work, relationships and generally speaking with his or her social life. Finally, people with a drug addiction will likely continue to use the drug although they are aware of the damaging results on their health.

Thus, addictions are not the result of just unhealthy behaviors, they do influence your body and the way it works,

its physiology. The nerve cells connect differently, the brain functions differently and the function of the whole body is altered by alcohol, nicotine or those active ingredients found in illicit drugs. While it is important to deal with the mental component, a complete treatment will also take into consideration these physiological changes and treat them accordingly.

Do you need some help choosing a rehab? Take a look at some great ways to help you choose.