HUMAN 101

"The simple instruction manual to ourselves, that which we were never taught."

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Six axioms to a simpler life and better back:

Axiom 1:

Breathing is obviously important; therefore we should do it correctly.

Fault: During inhalation the chest is rising (minor fault) and/or the stomach moves inward (major fault).

Trouble: These faults cause tightness around the shoulders and neck; which can lead to tension headaches and neck and shoulder pain.

Correction: Practice inhaling through the abdomen (the lower the better). You may even hold your shoulders down on the sides of a chair to help stop the chest from rising. By doing this you should feel a bit of tightness around the lower ribs. That is your diaphragm, doing its job! Remember the muscles of the diaphragm and pelvic floor (kegels) are part of the "core" too.

Axiom 2:

Flexing the spine, (as in touching the toes), smashes the protective discs in your back; this can cause serious back pain.

Fault: Letting the spine bend instead of bending at the hips during any motion, not just lifting.

Trouble: Bending the spine in this way, smashes passive tissues in the spine such as the all important disc(s). Over time, this leads to cracking in the disc or even a dreaded herniation. This sole movement has been proven to be responsible for disc herniation.

Correction: To correct this, practice hinging at the hips. This is perhaps much easier said than done. Start by sitting on your knees and rising up and back down while keeping your spine neutral (slight curve). Your spine is neutral when it is relaxed. You may check this on yourself by placing your hands on your lower back muscles and standing up straight. When you are standing up straight and your chest is up, the muscles should be relaxed. When you flex or bend forward around the spine the muscles will turn on. They are trying to tell you to be cautious! Work on rotating exclusively around the hips not allowing the spine to flex forward. We often lose confidence in our leg and hip muscles to hold us in a semi squat position for daily activities for short but prolonged periods of time (such as washing our face at the basin, loading dishes, etc.). When this happens we naturally use our backs and bend (flex) our lower back in the direction it was never designed to go, thus resulting in tissue injury. This means that

bending over to touch your toes and letting the spine bend will disrupt the passive (non active) tissues of the spine over a given time frame. It's scary how much we actually do this motion on a daily basis without realizing we are doing it (laundry, dishwashing, putting on shoes, and standing up, etc).

Axiom 3:

Sitting for extended periods deforms protective ligaments and causes instability

Fault: Sitting for over 20 minutes will spell trouble when standing or lifting (i.e. a bag off the floor).

Trouble: Some tissues are deformable, ligaments being one of them. When seated for over 20 minutes the ligaments slowly deform and become lax. This laxity can last for up to thirty minutes once you stand up. In simple terms this means: you are not stable! Over time this causes micro trauma in the spine which leads to macro trauma and pain if not corrected.

Correction: Stand up at least 2-3 times per hour of being seated. Even if you stand up for a 5-10 seconds, it is enough to combat silly putty ligaments. Remember when standing, keep the spine neutral (refer to axiom 2)!

Axiom 4:

Decreased hip mobility leads to hip, back, and shoulder problems

Fault: When the hips are not functioning the back is not functioning therefore the shoulders are not doing their optimal job either. Sound complicated? It's all connected, so read on:

Trouble: In order to move forward (walk, jog, or run) our hips must be able to rotate to their full capacity. If the hips do not push us forward properly, our lower back extends ever so slightly to get the extra push. Interestingly enough, if the pelvis and lower back are not working in harmony it will put an extra work load on the shoulders as well! This is due to the muscular attachments through the spine into the arms (specifically the latissimus dorsi muscles for you anatomy nerds).

Correction: To correct this, the simple rules are that, your hamstrings should be able to flex to 70-90 degrees but more importantly they should be symmetrical; the front of your legs (quads) should stretch to around 146-148 degrees, again symmetrically; your hip should be able to rotate in (38-45 degrees) and out (35-40 degrees) evenly and without pain; and you should be able to pull your knee to your chest without your opposite leg raising off the floor. If any of these are troublesome, active hip stretching may help out (click on the link).

Axiom 5:

> ***Stress causes physiological changes and while we cannot change how we feel, we can change our thoughts and actions.***

Fault: We believe that we do not have a choice in whether we stress, depress, or even care-less.

Trouble: Often we forget that stress, even though a word often associated with the mental function, has a profound effect on our physiology. More important we forget that we have the ability to choose how we respond to situations that cause stress. The same goes with depressing (unless it is major depressive disorder, which has genetic ties) in that, we choose to depress. Just as coffee and nicotine are highly addictive, so are moods. The molecules of caffeine and nicotine bind to receptors in no different a manner than mood molecules (serotonin, dopamine, etc.). When we saturate our thoughts with nasty responses and moments, we saturate the receptors with high or low levels of mood molecules. We become desensitized to normal amounts and must outwardly act to achieve the same "high." We construct our "perfect world" in our mind and this perfect world may include one or more of the following in any order or concentration:

1. Love and Belonging
2. Power/Competence
3. Freedom/Responsibility
4. Fun/Learning

These 4 items drive our behavior, which is made up of acting, thinking, feeling, and physiology. We cannot change the last two directly.

Correction: This correction is not as difficult as it may seem at first, however, it takes time. Metaphorically speaking, it is like walking through a wheat field over and over until the path becomes apparent. When faced with a difficulty, remember that you can only change 2 things directly:

1. What you want (how you act)
2. What you think

Through changing these two items we are able to indirectly change our feeling and physiology (total behavior).

Axiom 6:

> ***A light brace through the torso muscles is enough to be a natural back brace when walking or standing***

Fault: Not using our torso muscles ("core") in a proper manner results in improper stabilisation of the spine during lifting, pushing, pulling, twisting, and walking.

Trouble: The lumbar spine is inherently an unstable system, when there are no muscles or ligaments attached. Since there are no ribs to hold the lower back in place and the articulation of the joints isn't that great, so we must rely on proper muscle control through the torso in order to provide stability. When we are not able to do this properly or fail to do so at all, we put ourselves in a position to injure our lower back.

Correction: Try pushing air out of your lungs very quickly, when you do so, you should feel your abdominal muscles contracting. This is the same muscular contraction as bracing. Other ways to encourage the action of bracing: forceful laughing, coughing, or pretending that you are about to be punched in the stomach!