

A Posture Perfecting Activewear for Daily Wellness

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Short Communication

It is well known that progressive slouching, a condition that affects the elderly, chronic patients, office workers and even athletes, is the silent killer in daily living and in the work place, contributing to back and neck pain, fatigue, and poor performance. But did you know that poor posture can also cause restricted lung capacity and poor digestion?

Breathing seems natural and automated, yet it is complex, varying greatly with body movements, stance, and posture. Here is how breathing works: your abdominal muscles relax while your diaphragm contracts downward, pushing all your abdominal organs out of the way. Your intercostal muscles contract to expand your rib cage, lowering the air pressure in your lungs and creating a vacuum in the chest cavity. Air inflows through your oral and nasal cavities in response to the vacuum. The intercostal muscles and diaphragm relax while the abdominal muscles contract, pushing air out of the lungs.

Good posture also allows you to breathe deeply and increase your oxygen intake. However, if you're rounded like a little T-rex while sitting at your desk, driving for long hours, or hunched over a dental chair all day, you may experience a variety of health issues [1], including less than ideal breathing at a reduced lung capacity, which can potentially elevate your cortisol levels, among other detrimental effects.

The hunched back that often accompanies bad posture leaves little room for your lungs to fill up when you breathe which can cause frequent shortness of breath or make exercising difficult. When you are hunched over, you can't take in nearly as much air as your lungs can actually hold, while your abdominals become weaker in supporting your breathing. Numerous studies support these claims—in one posture and breathing study, having a slumped posture resulted in lost maximum oxygenation and lung capacity [2,3]. Lin et al. [2] showed that slumped sitting produced the worst lung capacity and expiratory flow compared to standing and supported normal sitting. Without proper oxygenation, you may be at risk for physical fatigue and mental stress, insufficient lactic acid metabolism, mood swings, weight gain, and added stress to your heart, a frequent cause of heart attacks. Standing or sitting up straight creates the space between your ribs and organs that allows them to function properly, whereas slouching forward, in contrast, causes the rib cage to push down on your internal organs. This pressure on your internal organs can cause digestive problems. Quantifying the idea that poor posture has a negative impact on physical and mental health, the National Health Institute has estimated that poor posture complications account for over \$ 90 B in health care costs.

Over the years, many have attempted to improve posture in the workplace to address musculoskeletal complaints, improve production, and reduce absenteeism. Commercial posture-correcting gadgets, for example, have become increasingly popular on social media, but there's not much evidence supporting their effectiveness. Wearable braces also offer support, yet prevent muscles from working well on their own [4].

Thus, there still has not been a cost-effective technology breakthrough or advancement to improve workplace posture wellness programs. In fact, not much research has been done to alter breathing and posture altogether in a wellness program. While proposed solutions such as standing desks at work may potentially positively impact posture and breathing, some professions such as dentists simply cannot afford to stand due to the nature of their work. Thus, a better solution is needed to fulfil the connection between posture and breathing.

Recently, studies [5,6] assessing an innovative Posture activewear (IFGfit, USA) have reported et al. high compliance, comfort, and effectiveness as an adjunct to physical therapy. In a recent study conducted on Division I student athletes, over 90% of subjects said they would recommend this corrective posture active wear [7], which is crafted without wires and uses engineered fabrics to correct posture, increase chest expansion for better performance, and facilitate recovery. The self correcting posture activewear changes the wearer's body structure instantly, naturally, and continuously; and it can accommodate physical challenges in the workplace at a cost equivalent to one physical therapy session. It is about time we have an alternative choice in active wear that comes with health benefits, as well as a solution for poor posture complications in the workplace.

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