

## SPECIAL ISSUE

# Increase Strength and Mood with Posture

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*Body postures can project nonverbally how a human being feels. Postural changes affect thoughts, emotions, and energy levels, and conversely, energy levels, emotions, and thoughts affect posture. The purpose of this study was to explore how changes in erect or standing body posture affect positive energy levels, emotions, and thoughts. For example, increases in perceived arm muscle strength as well as recall of positive emotional memories due to posture changes will positively affect client beliefs about coping with difficult life circumstances. In this study, 33 participants paired up as “testers” or “subjects” and took turns standing either in an erect or collapsed/slouched posture. All subjects proceeded through a manual muscle testing procedure by raising their arms and attempting to resist the steady downward pressure applied by the tester to their forearm near their wrists. All but one (98%) of the subjects perceived greater arm strength as they resisted the downward pressure when they stood in an erect posture compared with when they stood in a collapsed/slouched posture. Similarly, testers observed that the subject were much stronger in their ability to resist the downward pressure in the erect versus slouched position ( $p < .01$ ). The somatic feedback of muscle strength and the guided practice of how body position may affect recall of memories can be used to demonstrate the mind/emotion and body interactions. This study points out that psychology and bioneurofeedback training needs to understand how important body posture, movement, and somatic feedback are as part of the therapeutic and teaching process. Somatic awareness can be used as a tool to change behavior because changing the posture affects strength and recall of memories, which are important parts of the mind-body equation that underlies health and illness.*

*I couldn't believe it, I could not think of any positive thoughts while looking down!*

## Introduction

Body posture can project nonverbally how we feel (Coulson, 2004; Pitterman & Nowicki, 2004). For example, when standing erect, we occupy more space and tend to project power and authority to others and to ourselves (Huang, Galinsky, Gruenfeld, & Guillory, 2010). When we feel happy, we walk erect with a bounce in our step. We may jump with joy when we achieve our goals or collapse when we receive bad news. More and more in contemporary life, we sit collapsed for many hours with our spine in flexion. We crane our heads forward to read text messages, a tablet, a computer screen, or to watch TV (Asundi, Odell, Luce, & Dennerlein, 2010; Straker et al., 2008). Our bodies collapse when we think hopeless, helpless, powerless thoughts or when we are exhausted. We tend to slouch and feel “down” when depressed (Canales, Cordás, Fiquer, Cavalcante, & Moreno, 2010).

We may shrink and collapse our posture to protect ourselves from danger when we feel threatened because in prehistoric times, this reaction would protect us from predators as we were still prey (Ogden, Minton, & Pain, 2006). In modern times, we may still give the same reaction when we worry or respond to demands from our boss (Andrews et al., 2007). Under cognitive (social evaluative) threat, compared with the threat of being physically harmed, we may blank out and have difficulty thinking and planning for future events (Fraizer & Mitra, 2007). When the body reacts defensively, the whole body-mind focuses on immediate survival. Rational and abstract thinking is reduced as we attempt to escape (Ernst-Vintila, Delouvé, & Roland-Lévy, 2011).

Emotions and thoughts affect our posture and energy levels; conversely, posture and energy affect our emotions and thoughts (Peper & Lin, 2012). For example, Peper and

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*Don't slouch! How many times do I have to tell you to sit up straight?*

Lin (2012) have shown that when we skip, our energy increases significantly as compared with walking in a slouching posture for 2 minutes, which diminishes energy levels. Furthermore, if you have reported feeling chronically depressed over the past 2 years, you experience a significant drop in subjective energy when walking in a slouching posture for 2 minutes. Posture also affects recall of positive or negative memories; Wilson and Peper (2004) observed that if you sit in a collapsed position, it is easier to recall hopeless, helpless, and powerless memories compared with positive empowering memories. In contrast, when participants sat in an erect, upright posture, it was easier to recall positive empowering memories compared with hopeless, helpless, and powerless memories. These findings were confirmed in an elegant study on the recall of positive and negative words while participants walked on a treadmill in two different postures for which they received feedback (Michalak, Rohde, & Troje, 2014). In a slouched (depressed) posture, participants recalled significantly more negative words than when they walked in an upright, erect body posture as if they were happy.

Hormone levels also change in a collapsed posture (Carney, Cuddy, & Yap, 2010). For example, 2 minutes of standing in a collapsed position significantly decreased testosterone and increased cortisol as compared with a “power posture,” which significantly increased testosterone and decreased cortisol while standing. As Cuddy (2012) pointed out in a Technology, Entertainment and Design (TED) talk, “By changing posture, you not only present yourself differently to the world around you, you actually change your hormones.” As Booiman and Peper (2010) reported, when an individual presents a more erect posture to the world, the world around him or her may respond in a more positive way. For example, when a shy and slouched person attempts to sit beside you at a party, the first thought of many people is, “Oh no, not the whole evening.” However, if that person had an open and more erect posture and asked to join your table, your first thought and response could be, “Yes of course, please sit down.” These subtle thoughts and nonverbal communications affect people’s social experiences (Booiman & Peper, 2010).

Subtle changes in posture affect our psychophysiology, which is a phenomena well known in sports as “psyching out” (Vealey, 2009). When people are intimidated or somehow know they cannot win, they often give up and slightly collapse. When people are taught awareness and change of posture in randomized controlled trials with the educational Alexander technique, the therapeutic Mensen-

dieck Method, or other somatic approaches, numerous dysfunctions can be improved, such as back and balance (Dennis, 1999; Haugstad et al., 2006; Haugstad et al., 2008; Jones, 1976; Little et al., 2008). The objectives of this study were (a) to explore how changes in body posture while standing affect strength, as perceived by both the experimenter and subject, and (b) to apply this somatic feedback experience to encourage awareness and facilitate changes in beliefs.

## Methods

### Participants

Participants included 33 physical therapists (5 men, 25 women, 3 not specified), with an average age of 46.2 years ( $SD = 12.4$  years).

### Procedure

In this study, all participants paired up as testers or subjects and took turns testing each other while standing either in an erect or collapsed/slouched posture. Each pair proceeded through a manual muscle testing procedure (Mendell, & Florence, 1990; Schmitt, & Cuthbert, 2008) by raising each arm and attempting to resist the steady downward pressure applied by the tester to a forearm near the wrists. The testers determined which outstretched arm was stronger, and then all of the testing proceeded with the strongest arm. The subjects stood either in an erect posture or collapsed posture while they raised their arm and attempted to resist the downward pressure applied to their forearm near the wrists. The order of collapsed or erect posture was counterbalanced. The specific instructions were:

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Stand behind your partner and ask her/him to lift her/his right arm straight out as shown in Figure 1. For each test, apply the same gentle pressure downward on the right (or dominant) forearm near the wrist while your partner attempts to resist the downward pressure. Apply enough pressure downward so that the right arm begins to go down. Then relax and repeat the same manual muscle test exercise with the left (or nondominant) arm. Then relax. Thereafter, use the arm that felt the strongest and resisted the downward pressure the most.

Continue with the following sequence. Half the subjects started with the slouched position followed by the erect/tall position, and the other half started with the erect position followed by the slouched position. The testers stood behind their partners so there was no overt visible

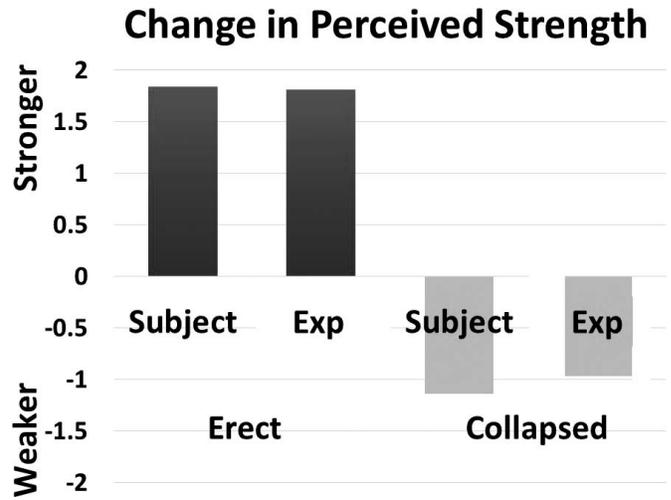


**Figure 1.** Experimenter pressing down on the arm while the subject resists the downward pressure.

feedback of what could be observed from the face of the subjects by the testers. The subjects lifted their strongest arm straight out, and the tester applied a gentle pressure downward at the forearm so that the arm began to go down while the subject attempted to resist the downward pressure. After this manual muscle test procedure, the subjects were asked to relax and let their arm hang beside their body.

The subject then stood in the second position (either slouched or erect/tall) and again lifted the same arm straight out. The tester applied the same manual muscle test pressure downward so that arm began to go down while the subjects attempted to resist the downward pressure. Again, after the test, the subjects were asked to relax and let their arm hang beside their body.

Both subjects and testers recorded their subjective experience, rating the effort they perceived on the scale from -3 (weaker) to 0 (no change) to +3 (stronger), while



**Figure 2.** The perceived strength to resist the down pressure on the arm in either the erect or collapsed position as observed by the subjects and the testers.

resisting the downward pressure of the arm down. These perceptions of strength were rated while standing erect as well as in a slouched posture.

### Results

An analysis of variance (ANOVA) showed that subjects subjectively felt stronger and were more able to resist the downward pressure when they stood in an erect/tall posture as compared with a collapsed posture,  $F(1, 58) = 85.9, p < .001$ . Ninety-eight percent of the subjects felt that their arm was stronger when standing erect. The ANOVA also showed the testers felt that the subjects were much stronger in their ability to resist the downward pressure in the erect/tall versus collapsed position,  $F(1, 59) = 74.6, p < .001$ , as shown in Figure 2. The subjective rating by the subjects and the testers of the subjects' relative strength in pressing down on the arm were not significantly different as measured with  $t$  test (erect  $p = .46$ ; collapse  $p = .50$ ).

There was a negative correlation between perceived strength and severity of reported depression ( $r = -.4$ ).

### Discussion

The subjective experience of strength is a metaphor of how posture affects our thoughts, emotions, hormones, and immune system. When slouching, subjects experienced less strength to resist the downward pressure and felt weaker. In this state, it is much more challenging to project authority, think creatively, and solve problem successfully. Obviously, the loss of strength relates to the change in the shoulder/body biomechanics and affects muscle activation recorded from the trapezius and medial



**Figure 3.** Sitting in a collapsed position (photo by Jana Asenbrennerova). Reprinted by permission from Gorter and Peper (2011).

and anterior deltoid when the person resists the downward applied pressure. The surface electromyography of the upper trapezius and medial and anterior deltoid muscles is significantly higher when erect as compared with slouched position (Peper, Booiman, Lin, Harvey, & Del Dosso, 2015).

In the slouched position, the subjects felt more hopeless, helpless, and powerless. Memories are embedded and conditioned with our body posture, and body postures covertly evoke the associated memories, thoughts, and emotions as well as shift our energy level.

In a therapeutic/educational setting with skeptical clients, this exercise can be repeated numerous times and the outcome will be the same, no matter which arm, which order of position, or how often it is repeated. The clients can use the change in body posture (e.g., collapsed to erect posture) to learn to identify internal and external cues that trigger the change in posture and substitute alternative behavior (Peper et al., 2014). For example, students at San Francisco State University have often

reported that they blank out on exams or class presentations while in a collapsed posture. When they become aware of their collapsed posture and then shift to standing erect, in an assertive power posture while breathing slowly and diaphragmatically, they report feeling calmer and can think again. Similarly, clients who are experiencing worry, sadness, and discomfort may be able to shift their posture and look upward with their eyes. In this new posture, they often find it is easier to think of positive options.

The power of posture on memory recall can also be experienced in the following exercise (Gorter & Peper, 2011; Wilson & Peper, 2004).

### *Posture Affects Memory Recall*

Sit comfortably on a chair and then collapse downward so that your back is rounded like the letter C. Let your head tilt forward, and look at the floor between your thighs, as shown in Figure 3.

While in this position, recall hopeless, helpless, powerless, and depressive memories one after the other for 30 seconds.

Then, let go of those thoughts and images and, without changing your position and still looking downward, recall empowering, positive, and happy memories one after the other for 30 seconds.

Shift position and sit up erect, with your spine slightly arched with a functional curve and your head held tall while looking slightly upward, as shown in Figure 4.

While sitting in this position, recall as many hopeless, helpless, powerless, or depressive memories one after the other for 30 seconds.

Then, let go of those thoughts and images. Without changing position and while still looking upward, recall as many empowering, positive, and happy memories one after the other for 30 seconds.

Ask yourself: In which position was it easier to evoke negative memories, and in which position was it easier to evoke empowering, positive, and happy memories?

Overwhelmingly, participants report that in the downward position, it was easier to recall negative and hopeless memories. By contrast, in the upright position, they report it was easier to recall positive and empowering memories. In many cases, participants reported that when they looked down, they could not evoke any positive and empowering



**Figure 4.** Sitting in an upright position (photo by Jana Asenbrennerova). Reprinted by permission from Gorter and Peper (2011).

memories. It is not surprising that when people feel optimistic about the future, they say, “Things are looking up.”

Mind and body affect each other. The increase in depression and fatigue may in part be caused by sitting or standing in a collapsed posture at work, at home, and/or walking in a slouched pattern. When an individual shifts from a collapsed, slouching body posture to an erect posture or switches from walking in a slouching position to skipping with one’s head held high, a sense of subjective energy may significantly increase (Peper, 2012; Peper & Lin, 2012).

You can lighten your mood and give yourself the opportunity to be empowered and hopeful when you shift your posture. When feeling down, it is okay to acknowledge the feeling and say, “At this moment, I am feeling overwhelmed, and I’m not sure what to do.” When your energy is low, again acknowledge this to yourself: “At this moment, I feel exhausted,” or “At this moment, I feel tired,” or whatever phrase fits the feeling. As you acknowledge it, be sure to state “at this moment.” The

phrase “at this moment” is correct and accurate. It implies what is occurring without a self-suggestion that the feeling will continue, which helps to avoid the idea that this was, is, and will always be. The reality is that whatever we are experiencing is always limited to this moment, as no one knows what will occur in the future. This leaves the future open to change and new possibilities.

Remind yourself that you can shift your mood by changing your posture as well as with movement (Carek, Laibstain, & Carek, 2011; Martinsen, 2008). For example, when you are outside, focus on the clouds moving across the sky, the flight of birds, or leaves on the trees. In your home, you can focus on some inspiring art on the wall or photos of family members you love and who love you. To increase access to positive feelings, hang the positive pictures slightly higher on the wall so that you have to look up. You can also put pictures above your desk or as a screen saver on your laptop or smartphone to remind and to evoke positive memories. In addition, when using your car, adjust the inside rear view mirror so that you sit more erect to see. Observe that at the end of the day you tend to readjust the mirror when you are tired. Instead of adjusting the mirror, adjust your posture by arching your back slightly while breathing out and stretch your neck to look upward with a smile. Or, before driving away, walk a little bit farther by putting your car at the end of the parking lot instead of as close as possible to the front door.

## Conclusion

An essential part of the holistic approach to health and wellness involves incorporating awareness of body posture and movement and providing some form of somatic feedback as part of the therapeutic and patient education process. Without teaching that a collapsed body posture may affect the healing process, only one half of the mind-body equation that underlies health and illness will be affected. The body affects the mind/emotions just as the mind/emotions affect the body; shifting posture will shift mood. The somatic feedback approach is another strategy for clients for whom cognitive therapy approaches are challenging. Using the concepts derived from these studies, apply them to yourself and clients.

Each time you collapse or have negative thoughts, change your position to a more erect position. It only takes 2 minutes of posture change to initiate changes in your hormones, energy levels, strength, and moods. These 2-minute changes done often may change your life. Think about—and change—your posture while standing in line, sitting at the computer, waiting for the

microwave to heat the food, waiting for the printer warm up, and so forth. Finally, instruct yourself to get up and move about frequently to prevent low energy and depression. Stretch and walk around, stand straight, and feel the weight on both feet while you imagine you are like a tree—rooted in the earth while reaching upward to the light.

After having done these two practices, I realized how powerful my body effects my mood and energy level. Now each time I am aware that I collapse, I change my posture while breathing exhaling, and often stand up and stretch. To my surprise, I have so much more energy and my negative depressive mood has lifted.

I never realized that changing my posture in a more straight position makes my exercises so much easier. Now I can repeat them many more times with less effort.

—21-year-old male student

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