# Sword and Spirit

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***Life Hacks from the Martial Arts...***

# Benefits Beyond Technique

## Posture & Movement in Aikijutsu

When a person begins the study of a martial art, they often have some common goals in mind. Losing weight, getting in shape, and learning self-defense are pretty typical, and most legitimate martial arts schools will provide tools to allow students to achieve those goals. Some people look for a challenge, something to provide the means to improve self-confidence and discipline, and again, these are achievable goals for the student in many arts or other pursuits. Some benefits that practitioners notice after training for some time, like comradery with others or improved stamina, can also be achieved through a variety of arts or other activities.

As of this writing (February 2018), I have been studying aikijutsu for just over three years, but I have trained in a number of other martial arts over the course of nearly 20 years. One result of my training in aikijutsu that I have not experienced in my prior training is the positive effect on my posture and general body coordination. I did not originally seek this in my training, but the associated benefits I describe herein are certainly worth pursuing as goals — and seem to be inherent to the aikijutsu practiced at Itten Dojo and the pedagogy used by its instructors.

I have actively sought to maintain my posture more consistently in my everyday life because of its importance to my training, and some of those closest to me have commented that I am carrying myself and moving differently. If I am faithfully maintaining my posture, my shoulder muscles — where I otherwise store my stress — do not ache like they often do. When I catch my reflection in a mirror or see pictures of myself, I look more relaxed and confident if my shoulders are pulled down and back rather than raised up and curling forward. Improving my training, avoiding pain, and looking better have been some of my personal outcomes for focusing on my posture, but I was left wondering about what else posture could do.

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I know when I see senior practitioners of aikijtsu, there is something besides the *hakama* that indicates their seniority. Even in street clothes, their movements and carriage are graceful and powerful and demand respect. At least a portion of this effect is their posture and gait, and both have certainly been molded by their training.

The posture and movement create presence and seem to affect those who hold it and those who observe it. In order to more deeply understand these observations, I have examined various sources regarding physiology, psychology, and social psychology. In this essay, I have summarized several studies and findings that seem particularly relevant to the benefits of maintaining posture and coordinated movement during training and throughout the day. As I have often heard from my seniors, "Everything is *budo*." Improved posture and movement, as a benefit particular to training in aikijutsu, may subtly, powerfully, and positively affect numerous aspects of practitioners' lives.

**Physical Self**

Correct posture allows for proper allocation of muscle effort.[1, 2] According the physical therapist Rupal Patel, if correct posture and bodily alignment is established, interior stability muscles that hold bones in place can work at low effort for a long time help maintain posture.[1] Other muscles, like the large muscles of the legs and torso, are free to rest or to perform tasks. These muscles tend to fatigue more easily, and if they are employed to maintain an unbalanced posture, pain and tiredness can result. For habitual poor posture, the brain recruits the larger exterior muscles before the interior stability muscles. Over time, the misallocation of muscular effort to maintain a slouch or slanted shoulders, for example, can result in mechanical instability, injury, and arthritis.[1, 2] With practice and awareness, posture can be improved to prevent or mitigate the effects of poor posture. As noted by Patel, the brain can learn to prefer correct posture over poor posture.

In performing tasks necessary for independent living, like cooking and cleaning,[3] and tasks often performed at work,[4, 5] posture is as an important factor. In a study that monitored older adults (some of whom had mental and physical impairments) as they performed cooking and cleaning tasks, "critical posture" was defined as a motion that included a $>60°$ trunk inclination.[3] In performing such mundane, daily tasks, critical posture was noted as a risk for injury, particularly for anyone with mobility and/or balance issues. Further, such postures increase the incidence of fatigue and injury the longer critical posture is maintained.

Even though these researchers were primarily concerned with home design to avoid critical postures, training that includes maintaining upright posture helps avoid performing daily tasks in a "critical" posture. As has been said to many of us in the dojo, it is not necessary, preferable, or wise to bend at the waist to tie one's shoes. In bending over, critical posture is exceeded and one is extremely vulnerable. It is much better to maintain a normal back alignment and sit down on a chair or even squat, bending at the knees, to perform the task.

In extensive reviews of available studies related to work-related musculoskeletal injuries, conducted by the National Institute for Occupational Safety and Health (NIOSH)[4] and members of the medical community,[5] awkward posture was indicated as a risk factor for injury. Musculoskeletal disorders considered include the dysfunction or injury of bones, joints, and soft tissue like ligaments, tendons, and nerves. NIOSH reported that posture was a factor for work-related musculoskeletal injury to the neck, shoulders, elbows, wrists, hands, and lower back.

In the medical literature review, the most common biomechanical risks for inducing musculoskeletal disorders and injuries included awkward posture.[5] In both reviews, awkward posture was a factor along with other risk factors, such as smoking, body mass index, repetitive movement, and forceful exertion. Additionally, general physically or mentally stressful tasks are associated with increased risk of musculoskeletal disorder.[5] Managing and training correct posture throughout daily tasks at home or at work should reduce the risk of musculoskeletal disorders — and their associated pain. While there are apparently multiple factors that interact to determine risk of work-related musculoskeletal injury, engaging in training that develops awareness of correct posture could mitigate the risks.

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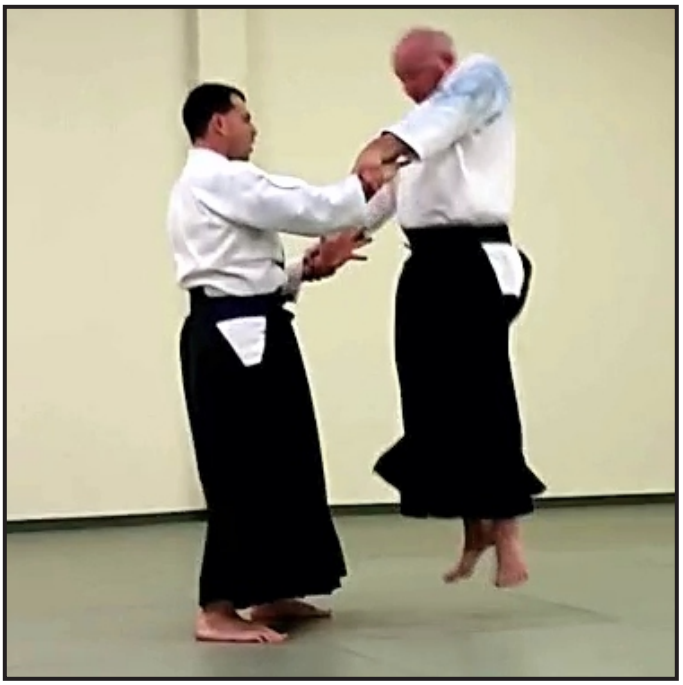
### Emotional and Psychological Self and Self-Perception

There have been numerous psychological studies on how posture and bearing affect one's perception of self. Likely the most famous of the recent studies on so-called "power poses" was conducted in 2010[6] and resulted in a very popular TED Talk given by one of the co-authors.[7] The 2010 study and TED Talk reported that people asked to adopt an expansive, powerful posture (as opposed to a contracting, weak posture) were more likely to engage in risk-taking behavior because they felt more confident in their chances to obtain a favorable outcome. In this case, the risky behavior was gambling in a supposed game of chance that was actually controlled by the researchers. Those who adopted the expansive posture were observed to gamble more — but the researchers also seemed to observe hormonal changes that correlated to risk taking behavior and a sense of confidence.

The TED Talk encourages people to adopt a "power pose" for several minutes before entering a stressful situation, like giving a presentation or taking a test, to gain confidence to help them perform better. Unfortunately, the 2010 study was based on a very small sample size, and other researchers were unable to replicate the results in larger studies, particularly the results related to hormone changes.[8, 9] Now, two of the co-authors diverge in how they interpret their previous research, with one completely discontinuing work in the area[10] and another re-evaluating the results related to supposed hormonal changes but continuing to study self-perception based on posture and "power posing."[11]

While scientific controversy may surround the above study in "power poses," there are other relevant and interesting research studies in the area of posture and its effects. A study on meta-cognition — what we think about our thoughts — used confident and doubtful seated postures to evaluate people's confidence in their self-evaluative thoughts.[12] Researchers asked subjects to adopt a confident or doubtful posture and list several positive and negative attributes of themselves. The strongest effect was seen with the combination of confident posture and thinking about positive attributes: subjects were most confident in their thoughts when combining confident



posture and positive thoughts. Essentially, people were observed to feel the most confident, correct, and effective when combining dominant posture and positive thinking. Training the body for confident (correct) posture and simultaneously training the mind in positive thinking and self-efficacy may have a virtuous effect on overall well-being.

In a related study, participants were held in upright or slouched seated postures using physiotherapy tape. They were then given various stressful reading/speaking tasks and evaluated for emotional and physiological stress responses by monitoring blood pressure and heart rate.[13] Participants maintained the postures for only about 30 minutes, and yet there were several potentially advantageous responses related to the upright posture.

Those who maintained the upright posture displayed less self-consciousness and higher self-esteem. They were physiologically and psychologically more alert and indicated a lower self-evaluated fear response. The participants who maintained the slouched posture spoke more slowly and used more negative and sad words in a speech task. They also expressed feelings of sluggishness and were physiologically evaluated as less alert.

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Poor posture was also associated with a more fearful response to potentially dangerous tasks. In this case, posture adopted before and during a socially stressful task affected how the participants felt, how they performed, and their physiology.

Another study has shown that one's posture can affect the perception of pain, and, perhaps more intriguing, the posture of someone you interact with can affect your own strength and perception of pain.[14] In the first case, subjects were asked to adopt an expansive and dominant posture, a neutral posture, or a contracting, submissive posture. Before and after the posturing, subjects were asked to indicate their tolerance for pain felt when researchers administered a blood pressure measurement. Subjects experienced pain in their arms as the blood pressure cuff constricted blood flow, and their levels of pain tolerance were then recorded as the pressure of the cuff. Subjects who stood in a dominant posture exhibited a statistically significant increase in pain tolerance, while those who adopted neutral or submissive postures actually exhibited a decrease in pain tolerance. Essentially, those people who display dominant, powerful postures can increase their abilities to withstand pain!

In the second part of the above study, subjects interacted with individuals who, for the purposes of the experiment, adopted a dominant or submissive posture during the interaction.[14] Subjects were observed to adopt the *opposite* posture of the person they interacted with. If the subject spoke with someone in a dominant posture, the subject adopted a submissive one, and *vice versa*. Those subjects who faced a person in a dominant posture showed significantly decreased pain tolerance, and those who faced a person in a submissive posture showed a less intense but still significant increase in pain tolerance.

Interestingly, a change in grip strength was also observed: those facing a dominant person lost significant grip strength as a result of the interaction. Those facing a submissive person had little change in grip strength. Not only does consciously adopting a powerful posture affect one's own perceptions of pain, the posture of the person you face can affect you. Or perhaps more interestingly, your posture can affect the perception of pain of the person with whom you interact.

By engaging in training that demands correct and dominant posture, the postural changes eventually bleed into non-training aspects of life. In training or in a physical confrontation, the benefits of correct posture implied by the studies described above are many. Feeling more powerful and effective reduces self-doubt, and a powerful posture could impose a more submissive demeanor on a person with whom there is an interaction. In a physical confrontation, decreased perception of pain and maintained strength are meaningful advantages.

### How Others Perceive You

How I feel about myself is important, but the judgements and perceptions of those who interact with me or observe me are important as well. As described above, postures can be interdependent — and influence the perceptions of pain and the strength of those with whom we interact.[14] Therefore those judgements of my physical posture and movement can affect my chances of getting a job, being perceived as competent, or even being a victim of crime.

Non-verbal communication, such as facial expression, tone of voice, and gestures and posture, can affect how credible a person seems and therefore how persuasive they are in their overall communication.[15] In certain situations where there is a clear power differential, it could be socially unacceptable and counter-productive to adopt postures or facial expressions that strongly assert dominance. In high-stakes professional encounters, like a job interview, a pitch to investors, or an important presentation, the overall impression created is a combination of *what* we say and *how* we say it. This perception was studied in a stressful, mock job interview in which subjects were asked to give a persuasive speech to try to convince evaluators to hire them for their "dream job."[16]

Subjects only had a short time to prepare for their speeches, and during the preparation, they were asked to adopt a powerful/expansive posture or a weak/contractive posture. During the actual performances, subjects did not differ significantly in their postures; however, those who

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had prepared in a powerful stance were viewed more favorably by the evaluators. The non-verbal "presence" determined who was evaluated as being captivating and enthusiastic — and who would likely be hired in a real interview. This type of *je ne sais quoi* is very desirable, and it may be nurtured by controlling posture outside of the view of important audiences. Being captivating and having presence are hard characteristics to define, but we often know it when we see it in others, and it can provide an edge over other equally qualified competition.

**Posture, Movement, and the Potential for Victimization**

Being viewed as more qualified and more engaging has obvious benefits in certain circumstances, like for job interviews or other persuasive tasks. Other circumstances, such as being among a pool of possible crime victims, have potentially grave consequences. Even here, posture and coordination of movement seem to provide some influence on who may be chosen as a victim and who would be "too much trouble" for a would-be criminal. In this final section, studies that investigate how posture and coordinated movement impact victim selection are presented. It is important to note that the studies themselves assert that victims are not at fault for their victimization — the criminals bear the responsibility for their actions. It is empowering, however, to consider how something as fundamental as posture and movement training could in fact reduce the risk of victimization, and it provides a compelling case to engage in training that encompasses such fundamental aspects of movement.

There have been numerous social psychological studies on how criminals choose prospective victims. A study from 1981 used people incarcerated for violent crimes against victims unknown to them and video tapes of people walking to try to understand what makes someone look like a potential victim.[17] Researchers video-taped about 60 people walking in a high-assault area of New York City, and the subjects were recorded without their knowledge. The videos were scored for motion analysis along several categories of movement related to walking to create an objective scoring of movement. A group of 12 men incarcerated for assault against strangers evaluated and discussed the video tapes, and they created a rating system for determining whether an individual seemed easy or difficult to victimize. A larger group of incarcerated men then discussed the videos and used the ranking system to rate victims.

Generally, when the walkers were divided into categories of old/young (with looking ~40 as the divider) and male/female, older men were rated as the most easily victimizable, followed by older women. Crime statistics at the time indicated that older women actually had the highest rates of victimization. What is very interesting for the purposes here is the movement types had significant correlation to victimization. While several aspects of movement were rated, those that had significant correlation to victimization were stride length, weight shift, type of walk, body movement, and movement of feet.

Some of the movement types that showed no significant correlation were tempo, energy, gaze, stride width, and whether knees were bent or straight. In holistically analyzing the movement types, the authors distinguished between "postural" and "gestural" motion, where the former is generated from the center of the body, and the latter is initiated from the limbs. It may come without surprise that postural motion was associated with subjects determined to be unlikely victims. The authors' own words provide a very clear assessment of the movement types:

> The prime difference between perceived victim and non-victim groups, therefore, seems to revolve around the "wholeness" or consistency of movement…The perceived victims are non-synchronous or anti-synchronous within themselves. Instead of body parts working to complement each other, as in a contralateral walk, the potential victim's body parts seem to move against each other, as in the non-fluidity of a unilateral body movement or the lifting rather than graceful swinging of the feet. (ref 17 Grayson & Stein, p 74)

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The postural motion described, with its inherently synchronous movement that originates from the body center, is a clear part of training and moving in aikijutsu. In my own training, I can find my limbs are in more or less the right configuration, doing basically the right things at the right time — but when these motions fail to originate from my center or if I lack the overall body coordination, my technique fails. Learning how to more fully coordinate my motion and integrate my whole body into techniques is changing how I move generally. And studies like this indicate that basic motion training is beneficial to reducing the risk of being victimized, regardless of self-defense knowledge.

More recent studies have been performed using similar methods of video-taping people while walking and then asking others to assess how easily victimizable each person seems.[18, 19] Male and female college students were unknowingly video-taped from behind while walking, and the same videos were used in both studies described below. Some of the video-taped people self-identified as having been prior victims of assault while others reported no prior victimization.

Like the previously discussed study, subjects were able to identify individuals who seemed like they would be more and less difficult to mug. Interesting additions found in recent studies include:

1. College students[18] and inmates convicted of violent crimes against strangers[19] can determine self-identified victims of assault by viewing video tapes of them walking.

2. Inmates who score high on a standard test for psychopathy are more readily able to determine relative victim vulnerability based on their walk.[19]

3. College students who have no diagnosis of psychopathy identified likely victims based on their walk.[18]

4. Both inmates[19] and college students[18] with higher interpersonal psychopathy scores judge prior victims more accurately.

While the college students displayed increasing accuracy with psychopathy scores, they did not name gait as a reason for identifying some people as more vulnerable than others. The inmates convicted of violent crimes, however, did cite gait as a factor after physical fitness, body type, and sex. Interestingly, gait was more of a factor to the inmates than age, physical attractiveness, whether the person was alone, and the surrounding environment. Furthermore, with a different system for evaluating the walking motion of the video-taped subjects, researchers correlated quality of motion while walking to prior victimization.[18]

A related study explored how interventions may affect participants' gaits and therefore their apparent vulnerability.[20] While the study was relatively small and had some conflicting results, a particularly intriguing result was found. Women were evaluated for how their walking was affected by participating in either a self-defense course or individualized gait training sessions. Video tapes were collected before the intervention, directly after the intervention, one week after, and one month after. The videos anonymized by using light points at each joint, and evaluations of vulnerability were conducted similarly to previous studies but with the anonymized video. The self-defense course was offered through the university at which

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the study was performed and was two hours per week for four weeks. The course focused on responding to attacks; however, further detail was not provided. The individualized gait training was offered for one hour per week for four weeks and involved instruction on embodying the walking styles that had been rated as less vulnerable. Analysis revealed that the self-defense course had no statistical effect on the apparent vulnerability of the women as they walked, whereas those who were trained in movement saw a significant decrease in their vulnerability. This change also persisted from immediately following training to one month after training concluded.

## Conclusions

In the long list of benefits I have felt from my training in various martial arts, I could not have anticipated how posture and coordinated movement outside of training could hold some of the most valuable outcomes. In comparison to other arts I have studied, the style of aikijutsu itself and the pedagogies used by instructors I have encountered seem to be especially focused on correct posture and coordinated movement. These physical attributes are necessary for effective technique, but scientific studies from numerous sources imply that the posture and movement ideals trained in aikijutsu may be exceptionally valuable.

Correct posture and movement are associated with decreased fatigue and risk of injury. Dominant, upright, expansive postures can increase self-confidence and improve self-perception. Interestingly, expansive postures and coordinated movement have subtle but significant effects on others. These effects could be the "edge" that results in getting a job or another competitive success — or avoiding being chosen as a potential victim. In an actual, physical confrontation, strength and perception of pain tip in favor of those who have adopted dominant postures.

Most significantly, all of these benefits are associated with "merely" training aikijutsu techniques.

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