

Fascial Rehabilitation Applications of Aquatic-based Silk-Reeling Exercise

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Introduction

- Some studies have shown little advantages of aquatic over land-based exercise in improving balance, [1,4] although a small study found decreased postural sway in arthritic women [6] and other small studies found improved balance in elders [3,5]. Interestingly, a randomized controlled trial of 50 elderly women found a 10 week program of aquatic exercise improved balance but did not decrease the fear of falling [2].
- Since it is plausible the chronically unsteady have associated fascial stiffening, it is proposed that future research examine silk-reeling (a Taiji Quan exercise) in the aquatic rehabilitation of fascia.

Background

- Silk-reeling provides a stable framework for aquatic treatment [7]. A smooth flow of momentum likely improves the signal-to-noise ratio.
- Buoyancy and drag are forces with predictable properties and novel sensations. Like gravity, they may be used by the nervous system to organize motor control.

Aquatic Bodywork

- Aquatic bodywork harnesses the third dimension.
- Buoyancy opposes the force of gravity. The spatial separation of these forces makes floatation aids imperative.
- Drag increases with velocity.

Silk-Reeling

- Taiji Quan postulates the human body ideally initiates movement from a center, termed the Dantian, located approximately two inches below the navel. Grand-Master Chen Xiaowang [8] notes the myriad movement variations in Taiji Quan “should all enforce one body mechanism,” where an accurate body alignment supports both the Dantian’s centrality and prompts the Dantian to lead the body into moving as one.
- Silk-reeling depends upon rotations; one about a spinal axis, another about an axis parallel to hips and, lastly, rotation combining these two.
- The outstretched hands are sensitively cupped; each digit quietly reaching away from its center.

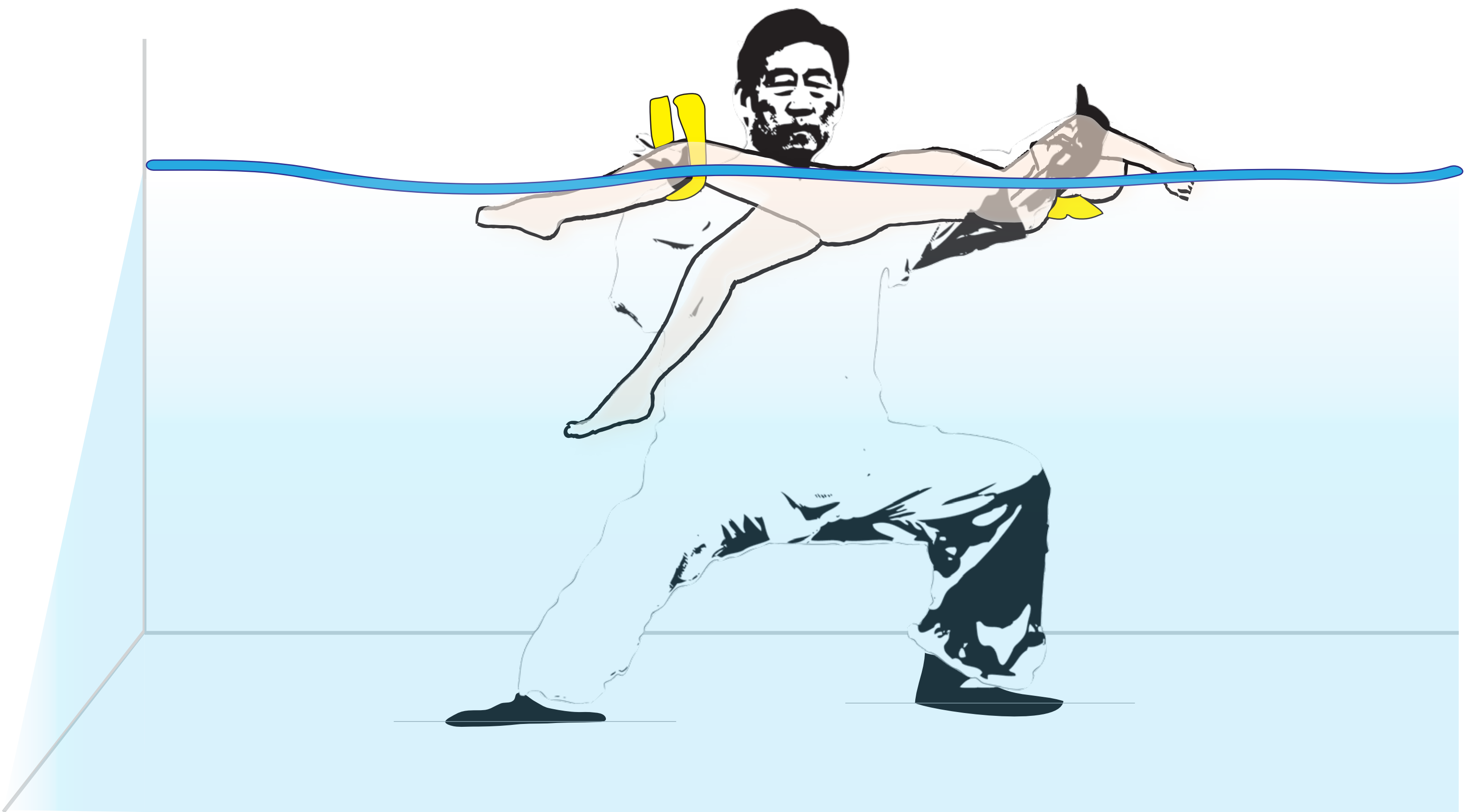


Figure 3: An example of therapy where the therapist tractions and twists the fascia while caudally towing the patient (supported by floats at neck and knee). The dangling leg increases drag which also shapes treatment forces.

Fascial Treatment

- It is proposed that aquatic manual therapy (by harnessing the third dimension) improves fascial responsiveness by expanding tissue volume rather than increasing fascial span.
- The double-hands silk-reeling posture, by minimally (but actively) elongating the therapist arms and thighs, may provide such a sheltering responsiveness. Anecdotal evidence is the patient feels therapist-contact as steady and monolithic.
- Learning aquatic silk-reeling may help patients reclaim postural confidence, since drag and buoyancy cushion falls.

Possible Benefits

- **DRAIN** lymphatic stagnation
- **TRAIN** better balance strategies
- **GLIDE** synovial joints, enthesis and tendon sheaths, MVCAS [10]
- **SLIDE & ROTATE** (heave, surge, sway & pitch, roll, yaw)

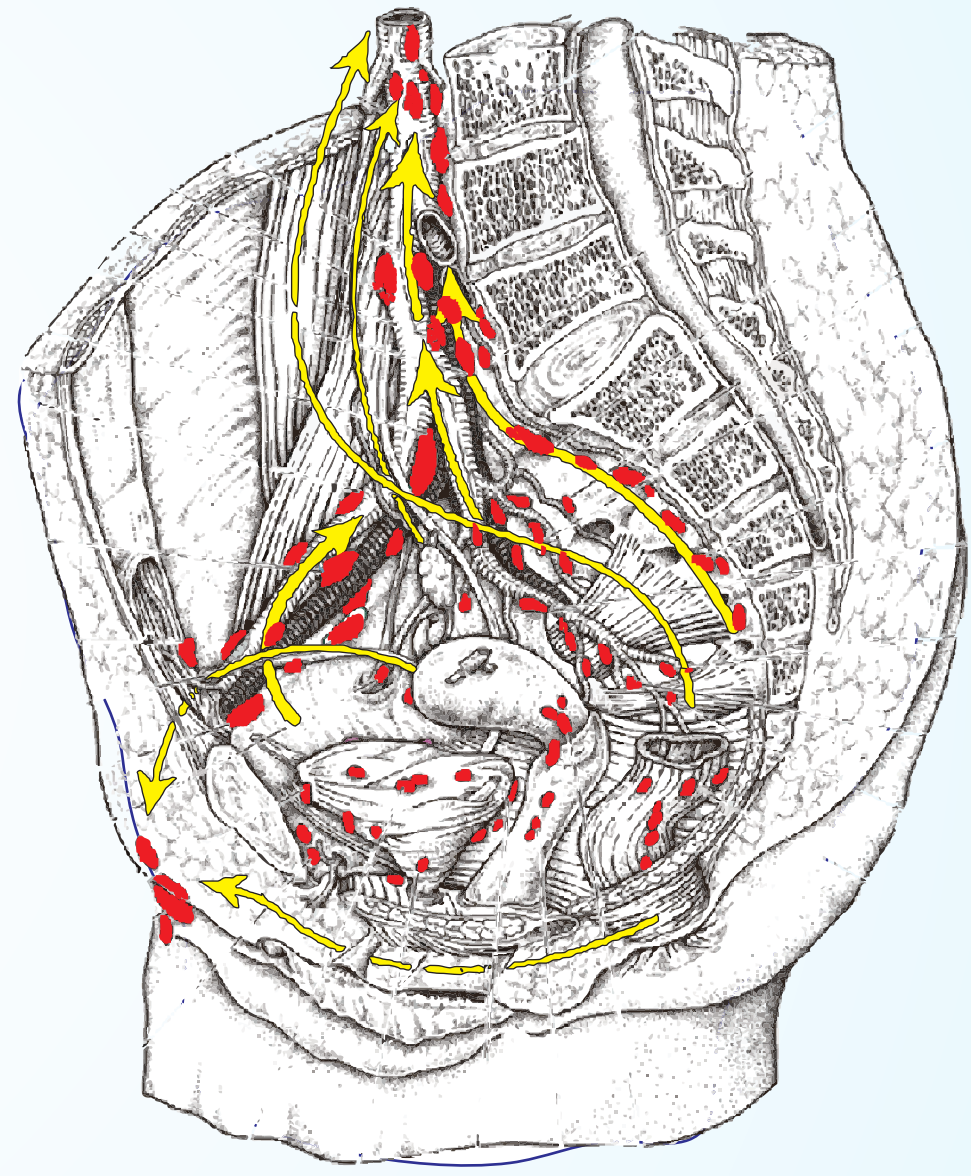


Figure 4: A pelvis schematic [9] showing lymph nodes as red and drainage paths in yellow. Given the differential between tissue specific gravities, lymph drainage may be assisted by aquatic manual therapies.

Discussion

- Aquatic bodywork deserves more research. The three-dimensional capacity for applying traction and twist in myofascial techniques may increase glide of tissue volumes not just surfaces.
- Buoyancy and the differential in specific gravities between connective tissues, muscles and organs (aided by manual therapy) may help increase fascial spaciousness deep in the body.
- Drag is increased by velocity. This (coupled with buoyancy) may be exploited to permit synovial joint gliding, lymphatic drainage, deactivation of myofascial trigger-points and tissue plane separation.
- An improved signal-to-noise ratio may be obtained by using silk-reeling's strong framework to reduce inadvertent non-therapeutic patient manual contact.
- Silk-reeling learned while immersed may improve fear of falling and improve land-based balance outcome measures more than aquatic endurance training/walking.

References

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- [9] Chen XW 2008 *The Essence of Taiji Quan*. In: *Chen Family Taiji Quan*, China Sports Publishing House, Beijing, pp.308-310.
- [10] Image adapted from Fig. 1 Lengele B, Scalliet P 2009 Anatomical bases for the radiological delineation of lymph node areas. Part III: Pelvis and lower limbs. *Radiotherapy and Oncology* 92(1):22-33.
- [10] Multimicrovacuolar collagenic absorbing system described at Dr. Guimberteau's website: <http://www.guimberteau-jc-mid.com/en/Books/strolling/accueil.htm>

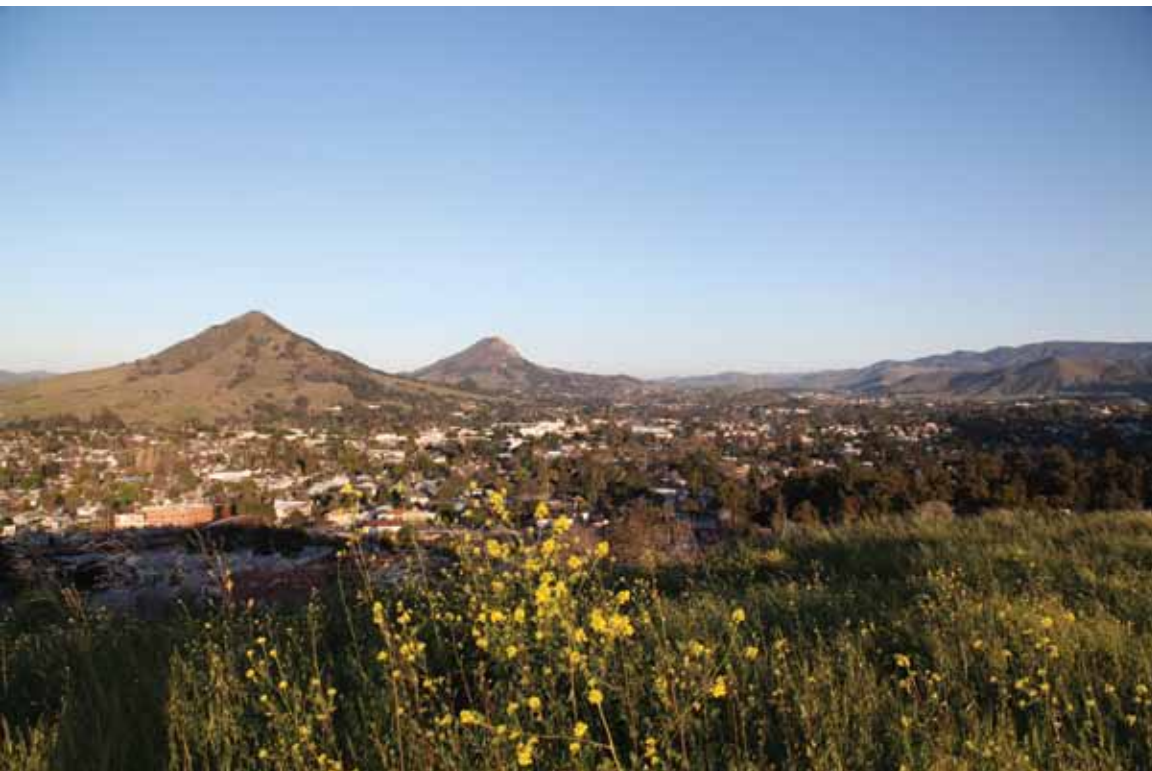


Figure 1: The left image shows the neck cradle and knee-float. The right image's arrowheads show forces: gravity, buoyancy, drag and therapist's manual forces.

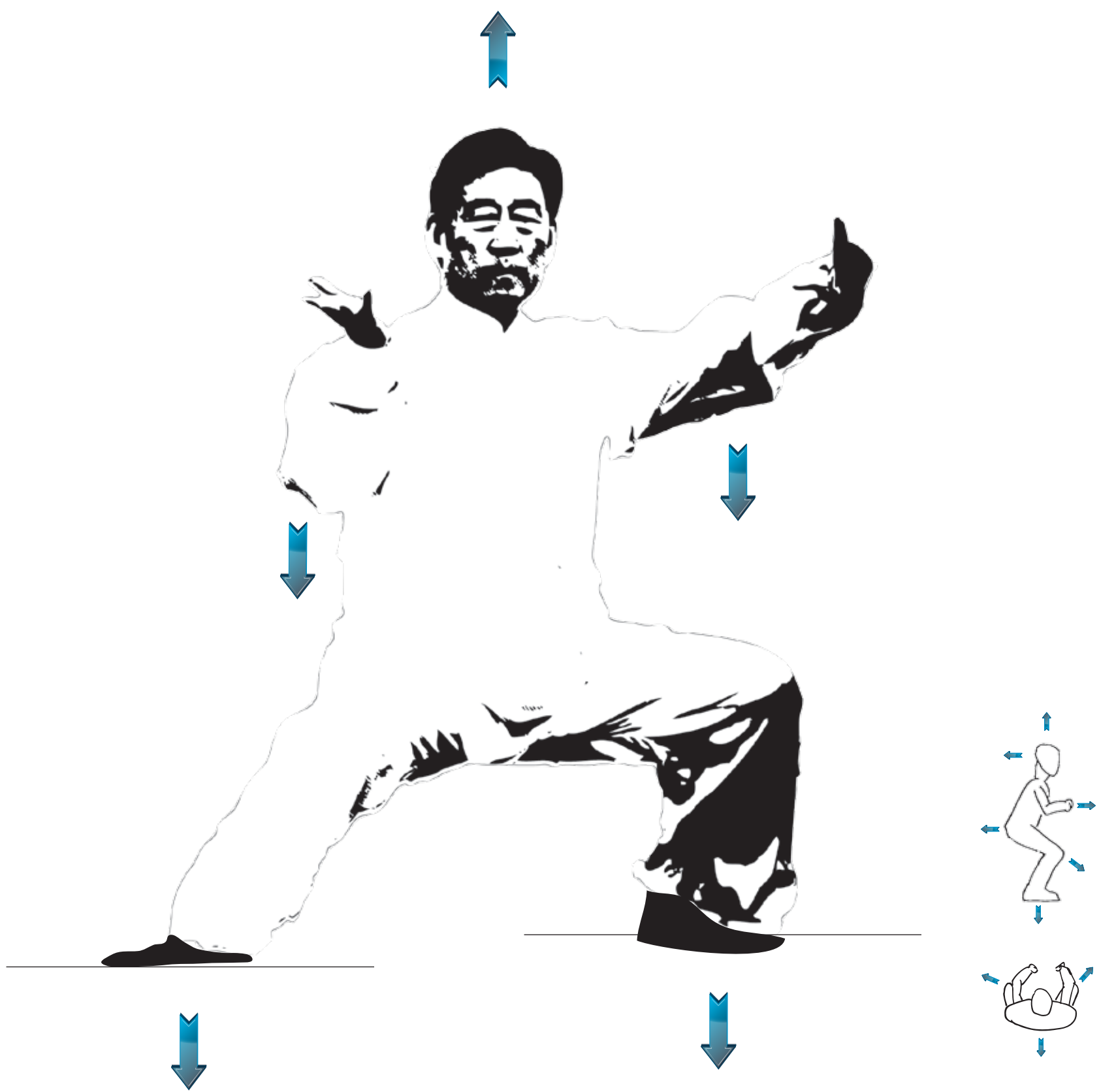
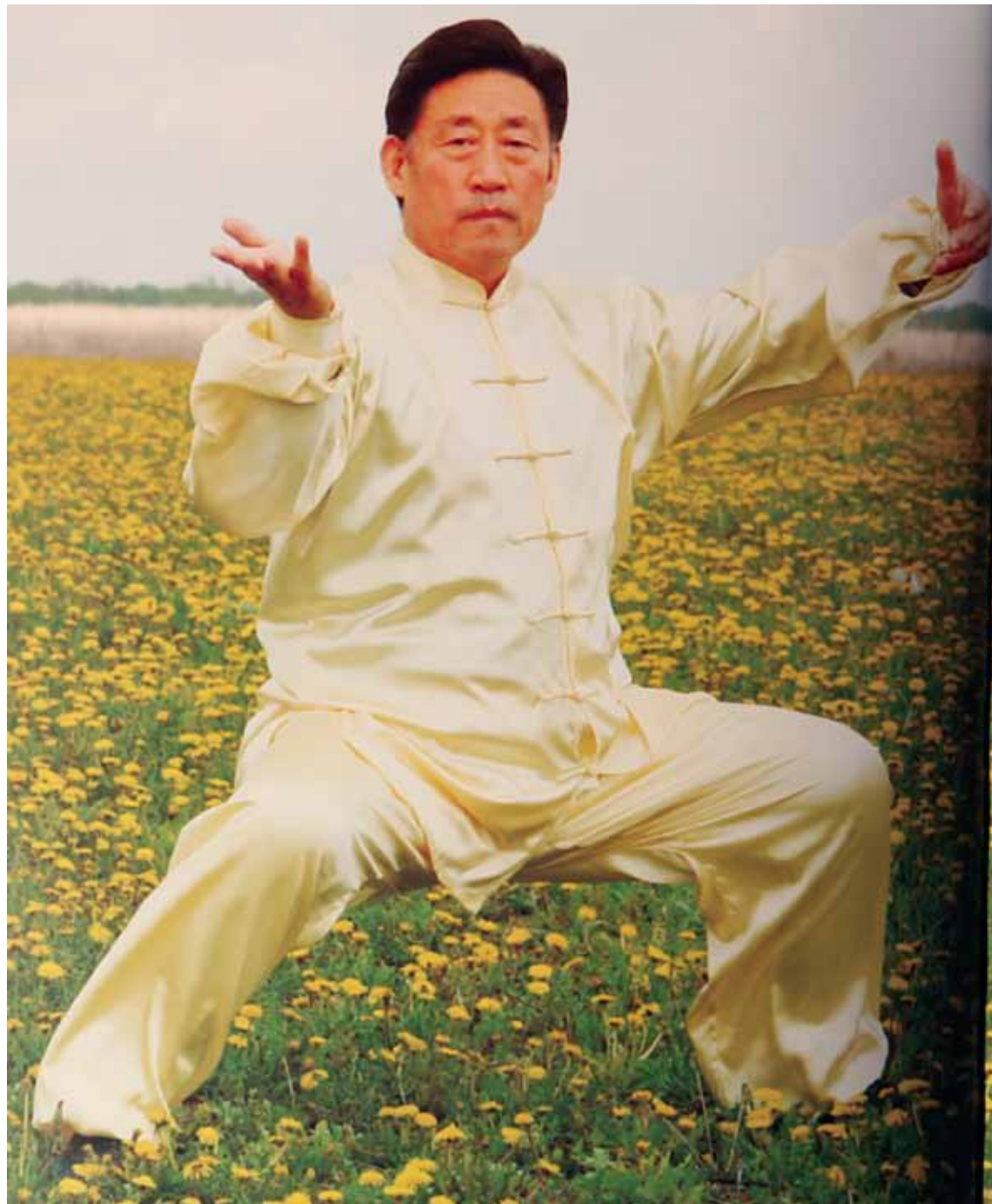


Figure 2: Chen Xiaowang demonstrates double-hands silk-reeling. Arrowheads indicate the lines of force. The exercise provides reliable support yet it itself is an unstable equilibrium.