

A woman with dark hair, wearing a colorful patterned blouse and a dark skirt with white and red geometric patterns, is seated on a wooden bench. She is operating a large wooden loom that is mounted against a white wall. The loom is made of light-colored wood and has a long, narrow frame. She is holding a wooden beam across the loom with both hands. Her feet are positioned on a wooden foot pedal that is part of the loom's mechanism. The background is a simple white wall with some wooden framing visible on the left.

# Ergonomics

## for Creativity, Harmony & Wholeness

by Karen Piegorsch

Artists in the isolated highlands of Guatemala have rediscovered the joy of weaving with help from the nonprofit organization Synergo Arts.

**A**cross cultures, generations and genders, humankind is united through a basic need for creative expression. By enhancing creative flow, ergonomics helps people express themselves fully, aiding individual and collective evolution and healing through the process of making art.

Ergonomics has to do with designing systems, work meth-

*ABOVE: Mayan women have adopted an ergonomic innovation to increase their ability to earn a living weaving, while preventing cumulative damage to their bodies and preserving their culture.*

ods, tools, and equipment to enhance human capabilities. At its most basic level, ergonomics is the natural human tendency to seek ways to make life easier. It's about paying attention to the dynamic interaction between person and environment.



It's also a science and a profession, based in engineering, medicine, and psychology. Through ergonomics, artists are better able to unite body, mind, and spirit to flow more harmoniously with their surroundings.

I founded Synergo Arts—the nonprofit resource for ergonomics consulting, education, and design—to help communities of artists and artisans around the world use ergonomics to maximize their health, income, performance, productivity, and the quality of the art or craft that they create. When artists use ergonomics to liberate themselves from painful, tiring old habits of movement and thought, many things change for the better. Life blossoms, creativity flows, and new possibilities for the future emerge.

The Synergo Arts weaving-bench program for backstrap weavers is a wonderful example of the healing potential of ergonomics. The bench combines the introduction of a piece of ergonomic equipment with the behavioral change of using new postures and movements. It is designed to be made by the indigenous people from locally available materials.

On a trip to Guatemala in 2003 I had my first chance to talk with Mayan artisans. From them I learned that kneeling on the ground to weave with the backstrap loom induces disabling symptoms of pain, numbness, swelling, stiffness, and fatigue. The symptoms limit weaving tolerance, often to less than half an hour, and are readily evident in how slowly and stiffly a weaver moves when she gets up from the ground. The Synergo Arts bench program evolved in response to the weavers' desire for a culturally, environmentally, and economically viable alternative to their traditional kneeling posture. With the help of a variety of nonprofit organizations in Guatemala, we implemented a participatory process in 2005 to research the features an ergonomic seat would need to have and to test prototypes. Typifying the reception of the community during this process, one of the participants told us with tears in her eyes, "Thank you for asking how we feel. Lots of people have visited to see how we weave and what we make, but this is the first time anyone has shown interest in how weaving affects our health."

Currently the bench is being used by over one-hundred-fifty backstrap weavers in nine communities across the highlands of rural Guatemala. Ergonomics has changed how these artisans experience their weaving. There is an increased sense of hope for the future of their families and community. They describe feeling an enhanced pride in their identity as Mayan weavers, with a renewed interest in their weaving as art!

*RIGHT, ABOVE: The traditional weaving method causes women's knees, backs, and necks to hurt, their legs and feet to go numb, and huge calluses to develop on their ankles from rubbing against the ground while they weave. RIGHT: The training for backstrap weavers includes learning how to measure their bodies to find the right height for their adjustable bench.*





The cultural and personal benefits accompany more obvious outcomes in health, productivity, and textile quality. The weavers report that pain, numbness, and fatigue are no longer limiting factors. By taking care of their bodies they are able to create more with less effort, in less time, and with higher quality. For example, those producing plain-weave items have the potential to triple their output while only doubling their weaving time. Quality improvements include straighter selvages and more evenly packed weft. These performance benefits increase the women's earning potential and ability to provide for their families.

The bench supports backstrap weaving as a cottage industry and decreases the likelihood that women will be forced to seek jobs outside their community. By encouraging young people to weave it enhances self esteem and helps the indigenous people preserve their traditions. Young women have commented, "Kneeling on the ground gets my clothes dirty, but this bench lets me stay clean." "I want a bench like my mother has now, so that my body won't get the years of abuse and pain that hers has."

While some backstrap weavers are making the most of the increased productivity and earning potential that the ergonomic bench offers, many are devoting their recovered energy and time to other activities that enhance quality of life. For example, there is more time to play with children and participate in community events. The women's increasing recognition that they have choices and that they can do something to take care of themselves is empowering and healing—for them, for their daughters, and for their community.

*TOP LEFT: The bench adjusts to fit the individual, moves with the rhythm of the body, and has an interlocking footrest for stability and leverage. LEFT: The ergonomics cycle of benefits is potentially a never-ending process. The elements apply universally, bringing all artists and artisans an evolving sense of self-confidence, a connection with their cultural heritage, and development of their unique creative gifts.*



## Weaver's Comments on the Synergo Bench

*I enjoy weaving more; it feels like art again.*

*I used to be able to weave for 30 minutes, then had to quit for the pain; now I can weave for three hours with no pain.*

*The cloth is cleaner because it's not so close to the ground while it's being woven.*


*It feels like there is more space in the day; my weaving comes out better because I can be more relaxed while I work.*

*With this bench to take care of their bodies, more young women will value our culture and continue our traditions.*



The need is great; in Guatemala alone there are an estimated half-million backstrap weavers. Synergo Arts is working to get the bench into the hands of the artisans who need it, in a way that is truly self-empowering. Currently, educational resources are being prepared to enable local communities to produce and distribute the bench with high quality at a reasonable price. The goal is to help Latin American entrepreneurs learn to do this so that they are not dependent on outside support.

To help weavers use the bench safely and with maximum benefit, Synergo Arts offers educational services. Materials include a trainer's manual written in Spanish, a poster with simple illustrations, and a DVD prepared in Spanish and Mayan languages so that the education is accessible to all. For local carpenters, a resource kit and technical support ensure that they understand and preserve the ergonomic features of the bench. This benefits the weavers, while also enhancing the skills and livelihood of local carpenters. Ultimately, Synergo Arts envisions a world in which empowered artists and artisans create their own prosperous, healthy, and self-sufficient lives through the application of ergonomic knowledge and sustainable innovations.

When a situation seems overwhelming and it's unclear where to begin, it helps to remember that the problem doesn't have to be solved all at once. Synergo Arts recognizes that the ergonomic bench isn't a panacea for the poverty, gender inequality, and racial prejudice in the backstrap weavers' lives. It's simply a place to start, a small change whose ripple effects can create a strong momentum that influences healing on multiple levels. 

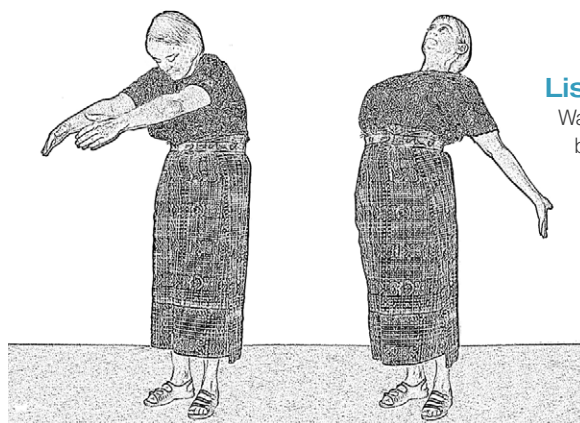
For more information about Synergo Arts, visit [www.synergoarts.org](http://www.synergoarts.org) or contact Karen Piegorsch at [karen@synergoarts.org](mailto:karen@synergoarts.org).

## Tips for being fully present while creating your fiber art:

### Align your spine

To experience the freedom of movement and creative flow that come with upright posture, make careful ergonomic choices about your seats.

For example, to align the spine and chakra energy centers it helps to sit with your hips higher than your knees and have padding under the sitting bones.



### Listen to your body

Warm-up exercises can prepare the body for making art. Taking breaks to stretch can help prevent tension, fatigue, and stiffness.

However, beware: reliance on rest breaks and exercise may signal a need to ergonomically redesign your work environment, methods, or materials.

### Make conscious decisions

An artist's comfort, endurance, and enjoyment while working are all affected by design choices such as scale, complexity, and color for each project. Think holistically when making these decisions and be deliberate.

For example, when choosing fibers and patterns consider your personal conditions such as eyesight and coordination as well as environmental factors like lighting and tools.

