

Steadicam® posture

Your posture is a dynamic response to your environment, not a fixed position or attitude. How you stand and walk with the Steadicam has a huge effect on your operating, your short-term stamina, and your long-term health.

With proper posture, your body efficiently carries the weight and torque of the sled and you can breathe fully. You also use your back as nature intended, moving with the least amount of strain and effort, and with the most control.

How do we stand well with the Steadicam?

Look at the pictures on this page. All the operators have a good posture, regardless of the position of the sled or type of vest they wear. It almost looks like they are standing without a Steadicam. Cover the Steadicam and check out the postures.



Each operator with good posture has basically moved the heaviest part of the body — the abdomen — slightly away from the sled. The back is vertical, and the legs and feet remain in a natural relationship to each other, transferring all the forces efficiently and safely. The operator's torso is erect and open, the front relaxed. Breathing capacity is maximized, and the ankles and legs are more stable. The back muscles are properly working with the vertebrae to carry the increased loads.

None of the operators is holding the sled tightly to the chest in "the timid mouse position." Instead, the arms are in a powerful yet relaxed position, ready to move the sled as needed.

Adopting bad postures

Tower of Pisa posture:

Bad for the ankles; hard to walk, inefficient.

Many operators adopt other postures that are inefficient and potentially dangerous in the long term. Often operators lean away from the rig with a straight body. This "Tower of Pisa" posture makes it hard to walk forward, and it forces the feet to be extended. In this position, the ankle is subject to increased rotational flexing and injury. Stability is reduced, as are the freedom and speed of movement in all directions.



In this photo, the operator is in what operator Chris Fawcett calls "the guitar hero" posture, with the hips thrust forward and the torso leaning back a great way to counter the weight of the sled. This posture is an attempt by the operator to regain a better walking position for his feet than the Pisa posture, but avoid working the erector muscles of the back.

Guitar hero posture:

In the short term, it feels good when those muscles aren't screaming for oxygen, but in the long term, it is potentially very bad for your back.



It is an inefficient posture, and it puts extra strain on the neck and legs. Most importantly, it relaxes the lower back muscles, allowing the lumbar vertebrae to be squeezed together, with potential damage to the disks and arthritis from all the rubbing. This posture defeats the normal and resilient load-bearing mechanics of the back and stops exercising the erector muscles (i.e., "those muscles").

Whoopie posture:

Compressed and tight. Bad for operating and bad for the back, heart, lungs, legs, etc.



This last photo shows the operator leaning forward, rounding his shoulders, and compressing his chest. This posture restricts breathing, moves the weight forward of the spine (rather than to the rear of it), stressing all the internal organs, including the heart. The lungs work as air bags to transfer weight through the diaphragm and into the abdomen. Combined with a tight waist belt, increased pressure in the abdomen will reduce blood flow returning from the legs and may result in leg cramps.

Why do operators adopt bad posture?

Many people have bad postures and/or a weak back before they ever pick up a Steadicam. When the additional load of a Steadicam is introduced, the operator tries to avoid the pain of exercising the erector muscles of the spine. He may use the Pisa or guitar hero postures to allow the weight to be transferred through the pelvis, or through the spine as if it were a stack of bricks, with the consequent compression and rubbing of disk and bone. In the short term, this is less painful than exercising "those muscles," but it is a long term recipe for problems.

In addition, in the guitar hero posture, the operators thrust the heaviest part of their bodies forward, so they must use the lighter, air filled upper torso and head to counteract the weight of the sled. This increases the bending of the back and forces the head to drop forward to see the monitor, with additional stresses on the neck vertebrae and muscles.

The rounded shoulders posture is often a result of wanting to see the monitor and/or not trusting the body to take the load of the Steadicam. Everything is kept quite close to the body, making it difficult for the Steadicam to float properly. The operator can't make the most precise moves with his arms. Walking is restricted; the legs can't move well with the upper body crunched together. Walking backward — which Steadicam operators do a lot — is extremely difficult.



Best posture

In general, the more distorted a Steadicam posture is from a normal, athletic posture, the more likely the operator is doing something wrong or dangerous.

By the way, the skeleton does not normally carry a load as if it were interconnected sticks or the spine a stack of bricks. In fact, all joints in good health do not result in the contact of bone to bone but rather in the maintenance of a general relationship to each other. Our bodies are held together and support loads by bones in compression and muscles and ligaments in tension, in what is called a *tensegrity structure*. Failing to exercise the body's muscles means that something else must take the loads, and that something else will eventually have a problem: herniated disks, damaged joints, arthritis, etc.

An in depth discussion of posture and how the back works is contained in several articles by Chris Fawcett on the Steadicam Operators Association web site: www.steadicam-ops.com.

Your vest and your posture



The Steadicam sled is restrained from dropping to the floor by the operator's body. The mechanical arm transfers the sled's weight to a vest. The vest transfers the sled's weight and torque to the operator. The operator's body transfers those forces to the floor, and the sled does not drop.

An operator in good form will look exactly the same whether in a traditional hard front vest or hard back vest, because he is doing the same work to hold the sled in place. An operator out of good form or posture will also suffer, as will the operating. Where the arm is mounted to the vest is irrelevant, as far as how the vest works and posture is concerned.

With any vest, the waistband presses into the operator's pelvis directly away from the sled, and the upper part of the vest is pulled toward the sled. As the sled is moved around, our postures should respond dynamically, keeping the sled in place and from falling to the ground.

Hard back vest

Hard back vests carry the weight differently from hard front vests, placing almost all of the weight on the hips. The rigid waistband is very tightly held to the operator's hips to control side loading and to precisely control the socket block. Almost all the forces are localized into the front half of the waistband, and into the operator's pelvis. The operator's back is held rigid by the vest's structure and inflatable bladders. The erector muscles do little work, and the torso has almost no effect on holding the Steadicam sled in place.

With a hard back vest, with its tight waistband and rigid structure, all movements of the hips are transferred to the socket block. The arm has to do more work to absorb the body's motion. Extremely slow moves require more careful control of the hips. Also, because the vest is rigid, it cannot respond dynamically to the changing forces as we move the Steadicam in relation to our bodies. The various forces are always directed locally, increasing the pressures at specific points around the pelvis.

From a health perspective, the tight waistband also reduces blood flow from the legs back to the heart and compresses the nerves to the legs. Operators must be extremely conscious of standing in place for any length of time (just as we must all be aware



Back mounted vest

This vest should really be called a "hard back" or "stiff back" vest, because the point where the extra armature meets the vest — in the back — is irrelevant to the functioning of the vest.



of sitting for long periods in any vest) and they risk cramping, numbness, and falling down when trying to take a step. Loosening the waistband, and making it bigger to spread out the loading will help.

With the hard back vest, the upper part of the rigid back pushes into a small area of the thoracic vertebrae as the operator leans back — with great leverage. While efficient, these vertebrae are not designed for this type of loading and direct pressure.

The most common bad posture seen with hard backed vests is the “Whoopee,” perhaps because there is no immediate painful consequence (other than less precise operating!). The increased localized pressure on the waistband is a concern in the short term, and the long term effects of bending your spine and not exercising your back muscles is not good.



Traditional front mount vest

With a traditional vest, the same forces from the sled are spread more globally over the body. The waistband is neither overly tight nor rigid, which transfers less of the hips' movement to the socket block and promotes proper blood flow back from the legs. The loading is shifted dynamically as you move the sled. The torque is transferred and spread out from the rigid front spar via chest and shoulder straps in tension to the entire torso. A properly designed front mount vest is as efficient at resisting the sled's torque as a back mount vest, and does it in a way that spreads the loads and does not press against your thoracic vertebrae.



The front mount vest also carries some of the load on the shoulders, and in some positions, part of the weight on the buttocks via the lumbar pad. The operator's back is free to move and flex naturally, and consequently, the erector muscles must do more work. In the short term, “those muscles” build up lactic acid and hurt, especially when the operator is new and out of good form. In the long term, the muscles are strengthened (via zero impact exercising), and good posture is encouraged. Even carrying the heaviest cameras for the longest times, the back muscles do not hurt when the operator has good posture. The butt and the legs may burn and fail, but not the back.

In general, a traditional vest encourages good posture and works dynamically with your body to carry the Steadicam. But all vests require good posture to work well for the Steadicam and for your body.