# Analog versus Digital Feedback

by Ken Hutchins, Developer of SuperSlow® and SuperStatics℠ Exercise

Two Different Approaches

Like me, you may have some feedback devices that are purely digital and some others that begin with a digital signal—all do—but terminate on a computer monitor with a fluid analog line graph. I am sometimes asked how to tell the subject to use these. The following should simplify use of these tools.

Digital Assuming the target load is known while using a purely digital device, load to a level just a little beyond the target load (blue line) and endeavor to place all the data points (force values) just above the target load. The following graph depicts this:
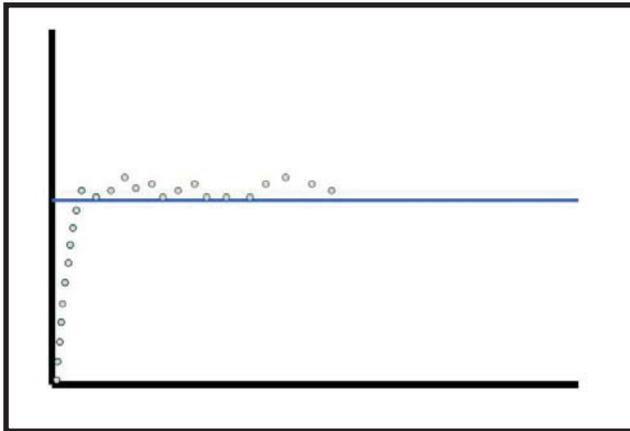
In the window of the digital meter, the subject merely sees data points jumping around. Once loaded to target, we want all these data points to place just above the stated target load. If the points are too high, then the subject will fatigue too soon as well as endanger himself. If the performance is maintained too close to the target, then he risks slipping below the target.

As we see in the above graph, the data points might be connected to provide a continuous line with an amplitude. However, we do not have that luxury with a purely digital readout nor do we have any immediate history of the preceding data points. All we see are the immediate values as they occur, not the previous ones as depicted in the above graph.

Analog With the computer, software and monitor to provide the subject with a continuous history of the exercise, the subject sees his instantaneous force level as compared to the level(s) produced immediately preceding the present. This provides a performance line not available from a purely digital readout device.

And with this line we have a real sense of amplitude. But before we discuss where to locate the amplitude, note that *amplitude,* herein, is the entire range of swing—highest to lowest—of values produced by the subject's performance. Be forewarned that *amplitude* is sometimes—differently—defined as only 1/2 of the range. In our parlance, we are referring to the entire range.

Different from the purely digital readout device, instruct the subject to load and to endeavor to maintain a load whereby the amplitude is pretty much evenly bisected by the target
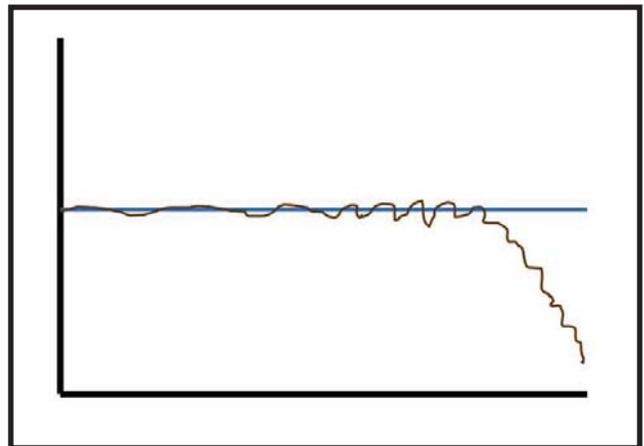
load as shown in the graph below.

Here, the subject was loaded into the exercise before the device was started and just happened to enter the software start time exactly on the target. Then he inroaded beneath the target (failed) about 80% of the way into the exercise and continued inroading.

Note that the subject—at first—keeps very close to the target load. This is admirable. Then his control becomes more erratic but still acceptable as he begins to be deeply challenge although he holds the amplitude to center on the target load for quite a while longer.

There are many variations from exercise to exercise and from subject to subject in the appearance of graphs depicting performance. We will discuss many of them in the near future. What is important now is that we instruct subjects with consistent conventions for analog and digital feedback.