

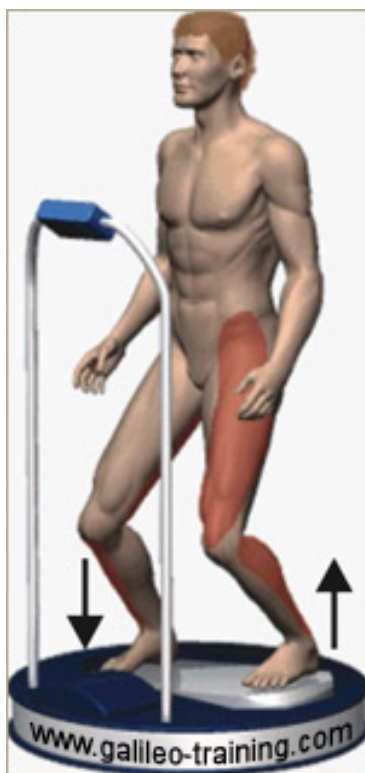
Good vibrations moving on

I thought I would give an update on new developments concerning my vibration training. In December 2009 I had to move jobs and could no longer attend my WBV sessions. This gave me the opportunity to try out different machines and re-assess the technology out there. I came across an independent review on the Galileo Fitness machine which produces side alternating vibration training (SAVT), and was highly recommended. Up to then I had only experienced uniform linear platforms and was unaware that SAVT was any more beneficial. After reading the article I investigated further and came to the opinion that SAVT could be more beneficial than the uniform training I had been attending for 8 months.

I contacted Pipedreams, (a UK Galileo supplier company) and I was informed that the closest amenity that used the Galileo was a 30 mile round trip away. They kindly arranged for me to try out the Galileo at the gym. I carried out half a session on a Galileo Sport and wow, not only was the workout unlike any session I had before, but the after effects were quite startling. You feel the muscles work in a more natural way, and with a more profound energy. My glutes were still clenching two to three days after the session, this post reaction was totally different from the uniform sessions I had previously. I started twice weekly sessions on the Galileo straight away, and I have not been disappointed.

Now for some explanation on why the Galileo is so beneficial:

The principle of Galileo is based on a natural walking movement. The platform operates like a seesaw with a variable frequency, thereby stimulating the muscles similar to the human gait. The amplitude is determined by how far your feet are apart.

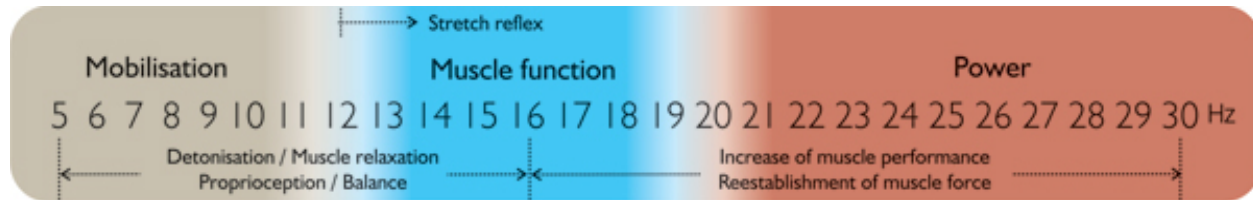


The diagrams above shows the muscles utilised as the platform rocks from side to side. The muscles are activated by a stretch (myotactic) reflex action induced by the rocking action. (This is the same stretch reflex a doctor is activating when tapping just below your knee to test your reflexes). The beauty of this is the muscles are triggered by an internal reflex rather than the brain, thus ensuring that all the muscles targeted are utilised. This overcomes the problem of the brain just utilising the strongest muscles whilst carrying out conventional exercise.

In mimicking walking, the muscles are trained in perfect co-ordination with each other, re-educating the muscles to work in union with each other. This ultimately leads to a stronger gait and better balance.

The energy waveform produced from the Galileo is slightly more advanced and slightly flatter at peak than a uniform linear machine. This works the muscles harder at a lower G force, and also you feel a more intense stretch reflex action. Basically the higher the amplitude and frequency the harder the muscles are worked.

The frequency ranges from 5Hz to 30Hz and can be split into three training modes:-



Mobilisation 5 -12 Hz - The stretch reflex is not activated at this range so balance, massage and relaxation can be carried at this level, improving mobilisation.

Muscle Function 12-20 Hz - The stretch reflex is activated in this range and the frequency is low enough to allow the muscles to tighten and totally relax on each movement, giving a physiological and physical conditioning of the muscles, tendons etc...

Power 20-30 Hz - The higher frequency only allows the muscles to partially relax, as a result, the inter and intramuscular coordination using these larger forces over a very short time span is generated, which ultimately creates an increased muscle power.

The Galileo Sport can deliver up to 20 G. The amount of G force experienced will depend on frequency and foot position used. The higher the frequency, and greater the distance between your feet, the more the force increases. This gives more opportunity to vary your workout to suit your own needs. I am currently using just below 4 G and this is quite ample at the moment.

Due to the atrophic affect Pompe disease has on our muscles, I would heed caution regarding using higher frequencies. If you feel that you need to use higher frequencies, introduce them slowly, and check there is no adverse post reaction. (Cramping or pain). The vibrations transmitted to the head are almost negligible compared to uniform machines. This is due to the tilting action rotating the hips and naturally absorbing the movement.

After a session you find you are not sweating or panting, this is due to the low burden on the cardiovascular system and is ideal for patients with heart/lung problems. It may well be best to get warmed up before you use the SAVT, but up to now I have not had any bad experiences from not warming up, and the muscles do not tend to tear due to the almost static nature of the exercise. However, I plan to experiment with using different training concepts.

Using the vibration machine like a treadmill or cross trainer would be a serious mistake. Remember when using these machines the workout is quite intense over a short time frame i.e. a training session of 3 minutes at 25 Hz causes the same number of muscle contractions as a walking distance of 4,500 steps. It may be best to start with two to three exercises and then work up. It is important to rest at least 1 minute between each 1 minute exercise. A few basic rules should be followed when using vibration machines: Firstly; keep your feet parallel throughout the workout, if you can't keep the feet from moving reduce the intensity. Secondly; always stand with a slight squat, never with straight legs. Thirdly; keep the exercises static, slow arm and hip movement can be used to change the energy paths.

Over 20 years of research has been done by Novotec GmbH in developing the Galileo machines to rehabilitate muscle/bone related diseases. Although my main concern has been rehabilitation of Pompe affected muscles, I am quite sure other neuromuscular diseases can also benefit from SAVT.

My main aim now is to try and obtain a machine for home use, since the distance I need to travel is limiting my usage and strategies. I feel that the synergy between the enzyme replacement treatment (ERT) and SAVT is greater than the individual parts, and I would encourage the drug companies to embrace this technology. It seems crazy that all this vibration technology is sitting right there in front of us with medical approvals, and still the medical fraternities seem to be oblivious to the beneficial results these machines could achieve.

I have only had 15 sessions on the Galileo Sport to date and the benefits are already showing. I have more instinctive and assured control when walking, and increased strength. It will be interesting if the improvements will begin to plateau in the future, and if there is limit to the amount of G force/frequency that the body is able to take without damaging the muscles. I will be very interested in my CK values from my next blood test, as I use this test as an indication whether the training is being beneficial and not destructive. My weaker muscles (hamstrings, glutes etc.) feel like they are tingling especially when at rest. The muscles do get a little tight and I would stress a good stretching routine be done daily when using SAVT. The tingling feeling has reduced as the number of sessions increase.

I am currently training on the Galileo Sport which is top of the range and for the commercial market. The Sport can deliver up to 20G and has a robust frame and costs in the region of £8-9K. However, the Galileo range starts from a basic plate costly around £3.4K, delivers up to 12G, has no stand and the frequency limit is reduced 27Hz. So long as you can walk steadily the basic model should be quite adequate for your needs, walls and sturdy furniture could be used for support if required.

In conclusion the uniform linear machines do have a muscular beneficial effect and seems to increase your metabolism, however, the SAVT the Galileo machines generates not only strengthens the muscles, but also re-educate the body to coordinate the muscles to improve mobility even further. The Galileo was used in a Canadian study last year with very encouraging results. I have listed below several web sites for further information.

Kevin Annesley

[note: the links below no longer work but are left in for historical reference]

References:

http://www.vibrationtrainingdevice.com/GALILEO_FITNESS.htm

<http://www.galileo-training.com/de-english/products/galileo-training-devices/vibration-training.html>

<http://downloads.hindawi.com/journals/crm/2009/741087.pdf>

My thanks go to Pipedreams Ltd for the use of their illustrations for this article.