

## Visual Skills Training

### A Comparison of Dynavision D2 and Flat Screen Technologies

and a commentary on the Current State of the Business of Vision Skills Training

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The time has come. The sporting world has opened its eyes to the fact that vision skills are highly trainable and can only help in achieving peak performance in any activity, from the weekend warrior to the highly trained athlete, to the elite tactical force member. It's the final frontier in high performance **training** and **measurement** of the mental side of high performance! And with this realization comes the opportunity for new entrants into the market to try and cash in. We've seen the advent of several new pieces of equipment that all make the same mistake (in the name of profit?) that was made 20 years ago when we first introduced the Dynavision 2000™. We can only assume that the introduction of several competitors employing a flat screen technology with a smaller visual field, allows for a product that can be manufactured cheaply and possibly (?) moved to foreign producers when volumes dictate. The simple fact is that in taking a couple of shortcuts these devices shortchange their high performance clients.

What are these shortcuts?

#### Shortcut #1

Flat Screen - if you look at many of the videos showing training on these flat screen devices and monitors, you will see athletes moving their eyes to each light then pressing the activated light with one finger and moving on to the next one. Because the flat screen does not allow for easy visibility of the targets in the extreme outer areas of the peripheral visual field, the athletes ultimately end up chasing targets that are directly in front of their visual field and making the simple visual to motor connection which is no more challenge than 2 finger typing and has no lasting training effect whatsoever. By having dedicated raised lights which act as a target the user gets a real life experience not unlike the object of the sport such as a football, baseball or puck. Not to learn to cheat by sliding hands over targets but to actually have to define something and hit it! But don't take it from me. Here's a quote from Major Zupan, USAF Academy,

"..I like the *raised* target buttons / lights', rather than a flat / smooth board... where the user can just 'slide' their hands over the light and 'slide' their hand from light to light."

#### Shortcut #2

Size and shape of visual field - because of current industry standards video monitor screens cannot build product in a configuration that supports outer peripheral training in the lower portion of the visual field. You will notice that all competing products are designed in a rectangular shape which cuts out the

importance (and necessity) of training the lower peripheral field. Again, what is the reason for this? We can only assume - profit - from reduction of manufacturing costs. Therefore the athlete/tactical member is presented with a device that allows for a work out, that while showing some great software analysis in some cases (and not even that in others) has no training effect whatsoever - it's no wonder that members of the old guard in coaching/sports science thought that this training was so much hocus pocus.

Does the user feel the effects of the training and stay inspired to stay with it? For the answer to this we might look at the AcuVision device that entered the market at the same time as the Dynavision 2000 over 20 years ago. AcuVision was mothballed many years ago while the **Dynavision™** endured with over 700 units in over 23 countries. So when analyzing the new devices on the market it is important that all the facts are presented for consideration.

So if you are considering purchasing a device for your high performance athletes or tactical force members make sure that you understand the vital importance of training the full peripheral field, and the ability to see the targets in the outer areas of the visual peripheral field. Otherwise your clients will not be stimulated, will feel no training effects such as increased awareness, and will ultimately stop using the equipment.

### **Why the Dynavision D2™**

There are a couple of additional points that should be considered when making a decision to start up or enter a vision training program.

The Dynavision was invented by a professional athlete (in consultation with Ophthalmologists and other experts) who actually trained on the original prototype of the device, and while having the opportunity to change it to a flat screen monitor type device such as the Acuvision and its present day knockoffs, turned down the opportunity simply because - no one could see the outer lights! But what does this matter. Is it important? Absolutely!! Studies have shown that under stress the peripheral visual field shrinks and the term "tunnel vision" becomes a factor. Everyone that feels stress, nervousness etc., wishes that they could perform without this feeling. So imagine training to a point that under rising levels of stress your peripheral field stays alert and does not shrink and you think clearly and feel totally alert. Here's a study showing these types of observations;

Hirokouji, Kawaramachi, Kamigyo-ku, Kyoto, 602-0857, JAPAN;

<http://www.wseas.us/e-library/conferences/2010/Cambridge/MABIPH/MABIPH-30.pdf> Cut and paste this to your browser for a very interesting study done in Japan (also Kyoto University) showing that **exercise at high workloads has detrimental effects on the ability to respond to peripheral visual stimuli** unless oxygen availability is increased. While its application is not identical, it does demonstrate that the peripheral field does shrink under intense workouts and that it can be maintained with oxygenation. We maintain that the D2 with its tracking software, shows that scores increase (thus reaction times quicken) in the periphery **through training**. As the cognitive load is increased, and new levels of ability to maintain these score improvements, the rising scores validate the theory. If your score indicates that

you are **processing more information** it is because you are in fact **processing more information**. Of course there is much more study required and of course the D2 is an obvious tool with which to do this research.

But how does D2™ training work? How do we achieve this feeling of alertness and calm while under rising levels of stress? And what is the term “cognitive load.” The answer lies in Dynavision™ training while using the Tachistoscope or Flash. It is the only device that has measureable cognitive load and excellent ability to control very gradual rising cognitive challenge. The integration of this central focal challenge of processing various mental tasks combined with the peripheral gross motor demand is yet another powerful way in which the D2™ is set apart from all others.

This T-Scope is a built in video system which has the user performing cognitive tasks such as calling out flashing numbers in their central focal area while also working their periphery with a full visual field. The effects on the high performance user are felt instantaneously as a greatly increased level of stress is introduced. This is when the D2 reaches its “wow, that’s amazing!!” level. The D2 is built to gradually increase this load by increasing the number of digits flashed (for example), and/or the speed of the flash. Thus the user is always challenged to higher cognitive processing levels. Also the results are measured by reaction time in quadrants, and by inner to outer rings, so as to track the history and make observations as to individual progress and allow for on-going training in defined weaker areas. But does it work? The answer lies in the scores that are tracked and displayed. After the user completes their learning curve on the device, the on-going training shows gradually increasing Dynavision D2™ scores and which also reflect improving reaction times. The software graphically demonstrates the theory that on-going training with challenging Dynavision D2™ cognitive stimulation combined with gross motor physical movements enhances peripheral awareness through increasing levels of stress.

As an aside, it is for this reason that the concussion return to play industry is increasingly looking to Dynavision D2™ to integrate with their computer programs to track cognitive processing changes in post concussion and how it integrates with gross motor movement. No cheating is possible here – but that’s another story entirely!

Athletes will reveal their mental abilities to process information and react under fire and trainers and intuitive coaches will be able to observe how their physical movements change - for better or worse under stressful conditions. Is it vital information for a coach to know who is better able to concentrate and remain calm at the end of the game, when cooler heads must prevail, or that those who aren’t quite as good can actually train themselves to get to these higher levels of concentration and calm while under duress.

In conclusion, when it is time to enroll in the final frontier of athletic development, make sure you give your high level performers the opportunity to train on the only device that is built for the all the right reasons -the Dynavision D2™. Use it to evaluate, measure and train the visual skills required to take in information in both the central focal and peripheral areas in a highly challenging, stimulating and competitive environment. All other technologies that we’ve seen are those whose concepts are solely profit motivated, and have been rejected by users and the market previously, and most certainly will

prove this to be the case once again. Check in with us from time to time. We'll keep you posted on all the latest trends and keep track of the ever growing story of Vision Skills/Reaction training.