

THE SCIENCE BEHIND MOTIONLABHD

Recreating an extraordinary multisensory experimental simulation for science exploration and sport.

RESEARCHERS

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ABSTRACT

It is bitterly cold and pitch dark and hostile outside, and you need to exercise two hours a day. You are isolated in a small room devoid of natural surroundings except for a treadmill or cycle trainer. Sensory deprivation has profound negative physical and mental effects on individual performance for athletes training indoors for prolonged periods of time.

Now let's put your exercise bike at an altitude of 346km, where you dare not go outside because the temperature is -157C and there is no oxygen. So you are confined in a container traveling at 27,685 km/h at zero G for six months or longer. This would leave most folks dreaming of the Holodeck from the fictional Star Trek universe.

Watch video clip of custom version of MotionlabHD on the International Space Station:

<http://www.youtube.com/watch?v=ktY6yT91bCQ>

So what can we do in the meantime? The MotionLabHD project recreates an extraordinary multisensory real-life simulation, in the spirit of the Holodeck, as a physiological and psychological countermeasure to sensory deprived environments, and for use in exploration, high-performance sports training and testing.

Watch video clip of Earth version of MotionlabHD:

<http://www.youtube.com/watch?v=v6eLHFDJ43k>

The hypothesis is that more senses we can engage at a greater depth in fidelity, the more immersive, realistic and therapeutic the effect. In this environment it may also be possible to develop skills through bio-motor imprinting and shape behavior using autogenic training techniques from sports psychology.

Visit the web page for commercial version of MotionLabHD for use on Earth:

<http://www.xczone.com/newmotionlab.htm>

BACKGROUND

The Holodeck is a facility where a virtual but hyper-realistic environment is created. Objects and people are simulated by a combination of replicated matter, tractor beams, and shaped force fields onto which holographic images are projected. Sounds and smells are simulated by ultra-hi-fidelity speakers and fragranced fluid atomizers, respectively. The resolution of imagery is equivalent to the capabilities of the human eye or about 324 megapixels. The freedom of a expansive environment is simulated by suspending the viewer on force fields that move with their feet, keeping them from reaching the walls of the room like a 360 degree treadmill. The purpose of a Holodeck was as a psychological countermeasure for the crew during deep space missions on a Starship.

PROBLEM STATEMENT

Prolonged sensory deprivation has profound negative physical and mental effects on

individual performance in space exploration, isolated stations, theatres of war, submarines, prisons, or athletes training indoors.

THE PROJECT- MOTIONLABHD

MotionLabHD is a special DVD that you watch while you are on your treadmill, exercise bicycle, or rowing machine. But this is an oversimplification.

MotionLabHD represents a profound scientific breakthrough in mental, physical and technical conditioning, using rich inspirational media and sophisticated autogenic training techniques.

"Embodying qualities nature, athleticism, and artistry."

Coaches know that students learn skills best from being mentored by experts; by following athletes and imprinting perfect movement over time. MotionLabHD is a rapid means to improve technique in a given sport.

Choose from a wide selection of workouts, spectacular locations and sport modes:

- Run the West Coast trail in the Pacific Rim National park, through old growth forest;
- Trek along the sea cliffs of Gross Morne park in Newfoundland;
- Try snow-shoeing and Nordic skiing in the Laurentians;
- Attend a group trail run in Gatineau hills or a solo run in the leaves during fall colours;
- Experience a marathon with 10,000 runners;
- Mountain-bike the national-championship race-course with competitors;
- Kayak lakes and rivers;
- Pre-visualize in an Olympic cross country ski race;
- Ride through the countryside on your bicycle;
- Hike to the top of a volcano;
- Traverse a Rocky Mountain glacial pass;
- Stroll the boardwalks over paradise meadows, or
- Traverse an endless beach at sunset.

Filmed in high-definition in first and third person perspectives using trademark steadicam techniques, and Recorded in Dolby Digital 5.1 surround sound, for a controlled positive virtual reality experience more life-like than you could have imagined it.

"The experience will leave you breathless."

It is what Astronauts are using now on the International space station, as a vital physical and mental countermeasure for long-term missions, and Olympic athletes choose to fine-tune their conditioning in human kinetic labs.

MotionLab is supported by: Renowned adventurers; Military special-forces; Sports medicine physicians; Neuro-scientists; Exercise physiologists; Winning coaches and athletes...

"Tested by the super-human for the simply-human."

INSIDE MotionLabHD

Foremost, MotionLabHD is an extraordinary training system that tightly-couples both physical, mental and technical dimensions to fitness conditioning, into a highly-engaging mode of entertainment. MotionLabHD has seen mainstream use by sports enthusiasts, fitness aficionados, and high-performance athletes. It is an effective countermeasure to sensory

deprived environments like the space program, long-term expeditions, and submarines. It has seen clinic use in physiotherapy and recovery from injury or cancer treatment. If you are working-out indoors and wish you were outdoors, then this is going to help.

The way that the footage is filmed is unique, and deliberately engineered to achieve the most realistic, and ascetically pleasing visual composition possible. This required a profound understanding of both kinesthetic awareness, motor-skill development and art of motion-cinematography. The imagery integrates the notion of healing gardens with the science of Ecopsychology and Biophilia which have shown profound therapeutic effects of natural scenes on the human condition. The audio track layers yet another dimension to the system - that of autogenic training. One that is grounded in science; leading-edge sports psychology and clinic psychiatry. The way we do this is rather clever...

The professional narrative script uses neuro-linguistic programming to provide an induction sequence which invokes a meditative and optimal receptive state. This is the same one Olympic athletes may use to practice relaxation, visualization, and activation and to deliver positive affirmations to improve performance.

Additional surround audio channels complete the experience using music and sound effects to facilitate brainwave entrainment and breathwork. Stuff that eastern philosophies of yoga and martial arts have known for thousands of years.

Many of the routes have GPS telemetry (position, altitude, speed, heart rate) recorded. These data files can be downloaded to most programmable exercise machines which will adjust resistance according to the terrain.

MotionLabHD MODULES

MotionLabHD offers a growing number of modules that provide a mind-boggling array of choices of between sports, locations, and seasons.

- Trail running (with elite trail runners aficionados and enthusiasts)
- Pacific Rim rainforest and beach
- Rocky mountains Banff and lake Louise
- Gatineau Park multiple trails of varying difficulty, steams, mountains climbs, steep descents, boardwalks, caves, single track, solo and with group. The oldest trail system in Canada.
- Paradise Meadows Vancouver Island
- Gross Morne Park Newfoundland Sea Cliffs and Ancient Geology

- Cathedral Grove Old Growth Forest

MODES

- Ultra-running - Chelsea Quebec (with Worlds greatest ultra runner)
- Adventure Racing -Laurentians
- Hike - Strathcona Park Mountains
- Road Bike - Gatineau Parkway
- Mountain Bike - Camp Fortune, National Championship Race Course (with pro-elite racers)
- Nordic Skiing - Gatineau Park, Canadian Ski Marathon, Gatineau Loppet, Whistler 2010 Olympic Course, Mount Washington. (with elite Olympic racers)
- Roller Ski - Gatineau Park (with Olympian and World Cup Medalist)
- Snow Shoe - Gatineau Park, Quebec (with 2009 National Champion)
- Rowing - Meech Lake (with Olympic Gold Medalist)
- Alpine Skiing, Free Style and Snow Boarding - Camp Fortune and Mont Ste Marie (with National team)
- Canoeing - Meech Lake
- Paddle - Gatineau River (with paddelfit)
- Triathlon - Meech lake tri - the oldest tri in Canada
- Running - National Capital Marathon with 30,000 runners
- Flying, Caving, Open-water swimming

REASONS

The primary reasons for a MotionLabHD simulation product is a physiological/psychological countermeasure and as a means to enhance athletic performance.

But why not just run outdoors? Good question. The answer is that sometimes it is just not possible if you find yourself in a submarine, space capsule, war zone or ice storm. Perhaps you are injured or a competitive athlete in need of tuning.

APPLICATIONS

There are a number of core applications for MotionLabHD:

- Long-term space missions require astronauts to maintain physical and mental fitness.
- This tool can provide Military and first responders accurate simulations. For soldiers deployed to war zones, exercising while immersed in a safe natural state can help counter Post Traumatic Stress Syndrome.

- Postings to remote scientific stations or submarines are likely candidates for this application.
- Laboratory Fitness testing is a sterile setting. Special virtual reality programs can simulate VO₂max testing protocol which gradually increase level of difficulty/speeds in stages.
- High performance tuning of elite athletes require a realistic but controlled environment where coaches and sport scientists can observe and correct the athlete.
- A combination of factors and stimuli facilitate physiological entrainment and mental training for sports.
- The simulation can be used for recovery and therapeutic where the patient wants to exercise outdoors but cannot. Balance and coordination is also improved with realistic visual cues.
- Athletes learn by following better athletes; mimicking, mentoring and imprinting. Mentors are not always easy to find in real life, so MotionLabHD is a means of bringing expert models to the developing athlete.
- Sport for life. It is envisioned that this application will a significant instrument in Long Term Athlete Development (LTAD) to promote technical competency, physical literacy and mental fitness amongst children to adults.

COMPONENTS OF MOTIONLABHD

“It is much more than just staring at a screen.”

If we deconstruct MotionLabHD, we can categorize components as either being overt or covert in design. The proportionality of these effects remains to be seen, but experience and shown positive results from the individual components. It is reasonable to expect emergent effects from a combination of those techniques.

SYNERGISTIC EFFECTS

So, what are the effects if you combine:

- Hyper realistic extraordinary multisensory experience delivery system;
- Telemetry (power, speed, resistance)
- Biophilia Effect;
- Neuro-Linguistic Programming (NLP);
- Eco-psychology;
- Subliminal suggestion;

- Brainwave entrainment;
- Sports psychology autogenic training neuro-motor imagery;
- Technique mentoring and imprinting;
- Artistic composition and advanced editing;
- Ritual; and
- Exercise.

TECHNOLOGY AND THE DELIVERY SYSTEM

How far can we go in building a hyper-realistic extraordinary multisensory experience delivery system?

The common setup of MotionLabHD consists of a large screen (30'-55') high-definition LCD/LED screen, place in the sight-line of a programmable treadmill or exercise bike. The audio is delivered by Dolby digital 7.1 surround sound. A quite fan blows air onto the runner.

An enhanced version of the system would use telemetry (speed, altitude, GPS, heart rate, power) captured from MotionLabHD to program speed, resistance and angle of the treadmill or bike. A separate screen could also plot position on a map, even race against other competitors.

The advanced system uses Aardvark Applications as delivery system www.aardvarkapps.com to create an even more realistic simulation by adding programmable wind, vibration, time released smells and better graphics.

Future versions of MotionLabHD will deliver imagery in super HD (28K) in 3D.

METHOD OF FILMING

The most overt (noticeable) component or effect of MotionLabHD is the 1st person point-of-view (PoV) cinematography. But even here, there is a lot that does not meet the eye. The tradecraft is nontrivial.

First you need to find interesting trails and beautiful places to film. Then you have to carry a professional cinema HD camera and steadicam rig over varied-terrain (sometimes exceptionally rough) at the speeds of elite athletes for an hour at a time, without cutaways; one continuous uninterrupted shot. We found that just enough dampening or stabilization is required to recreate the most realistic shots. Too rough and the footage is unwatchable. Completely stable and the viewer is disembodied from the action as if they were floating through the woods. A wide-angle lens provided more realistic field of view and depth-of-field.

Locations with interesting landscapes in the background with trees, water and rock formations in the foreground established a more 3D like simulations. Well-defined trails that changed directions kept the realism and provided intrigue for the viewer.

Placing (following) an athlete in the frame had a number of benefits:

- it provided proportional frame of reference so the viewer can correct for speed and balance;
- it created an illusion of enhanced stability in the picture;
- it guided the viewers focus; and
- it provided a subject to imprint off of.

GEOMETRY IN COMPOSITION

Geometric composition underpins how we perceive art, photography and filmmaking. The MotionLab project frames the landscape, subject and action in a fashion that optimizes geometry and composition. Here we will explain some of the techniques that are used in some detail.

Good visual composition is inherently more pleasurable. Induces a positive frame of mind and susceptibility to enhanced creativity. Geometrical primitives serve an auxiliary role, which pull the picture together.

Some general rules of cinematographic, which are used in MotionLabHD are:

Simplicity, removes unnecessary clutter from the frame and allows the viewer to concentrate on the important. The ratio of trees and sky is important is establishing good balance and frames of reference.

The *Phony Subject* adds something the picture to make it more interesting; like the stump, other people in the group running, animals etc.

The *leading line* draws the eye from one part of the picture to another. Either from the foreground to the background, or off secondary objects towards the main subject. The leading line induces motion to a static image and logically ties elements together. These are not always straight. Diagonals, arcs and s-curves make good leading lines. The boardwalks are perfect for this.

A *spatial divider* divides the picture into discrete areas, to build the composition such as: the sky, ground, trail, and lead runner.

A *framing element* is used to focus attention towards the primary subject. The framing

element is given interesting characteristics of its own including: color, texture, or shape. Bold, geometric shapes can work very well as framing elements: triangles or arcs work especially well. Usually, framing elements should be subliminal and more muted than the main subject: they are not meant to distract, but to subconsciously focus. Perspective of the trail and edges of the trees lining the trail train the eyes in the right direction.

The asymmetric arc can force a dynamic and interesting composition. The S curve is just about the only geometrical shape that can stand alone as a main subject, but it can also be used as a leading line, framing element, or just about anything else. Interesting. In MotionLab, the S curve in road in the roller skiing, sequence, path in trail running and ski trail are deliberate examples.

Why is some composition more pleasing than others. The theory of *sacred geometry* is that geometry and mathematical ratios, harmonics and proportion are found in music, light, cosmology and nature. There may be a connection between the biophilia effect and sacred geometry that we can leverage in MotionLabHD.

Cosmology postulates a theory that certain geometry underpins the cosmos at micro and macro scales. Kepler explored the ratios of the planetary orbits, at first in two dimensions. Kepler's Platonic solid model of the Solar system from *Mysterium Cosmographicum* (1596)

Familiar geometry persists all around us in nature. Science sees such phenomena as the logical outcome of natural principles. Humans are predisposed to recognize patterns, and build in natural form.

One interesting geometry is the Golden ratio. The golden section is a line segment sectioned into two according to the golden ratio. The total length $a + b$ is to the longer segment a as a is to the shorter segment b . In mathematics and the arts, two quantities are in the golden ratio if the ratio between the sum of those quantities and the larger one is the same as the ratio between the larger one and the smaller. The golden ratio is an irrational mathematical constant, approximately 1.6180339887.

The Cinematic ratios and Aspect ratio (that MotionLab uses is deliberately chosen along with focal lengths.

The most common aspect ratios used today in the presentation of films in movie theaters are 1.85:1 and 2.39 or 16:9 (1.78:1) for high-definition television. While 1.78:1 was initially

selected as a compromise format, the popularity of HDTV broadcast has solidified 1.78:1 as perhaps the most important video aspect ratio for the future.

Artists and architects since the renaissance have proportioned their works to approximate the golden ratio especially in the form of the golden rectangle. Mathematicians have studied the golden ratio because of its unique and interesting properties.

A body of literature on the aesthetics of the golden ratio has developed. Architects, artists, book designers, and others have been encouraged to use the golden ratio in the dimensional relationships of their works. Though it is often said that Pacioli advocated the golden ratio's application to yield pleasing, harmonious proportions

Leonardo da Vinci's illustrations in *De Divina Proportione* (On the Divine Proportion) and his views that some bodily proportions exhibit the golden ratio have led some scholars to speculate that he incorporated the golden ratio in his own paintings. Some suggest that his *Mona Lisa*, for example, employs the golden ratio in its geometric equivalents.

Psychologists have performed studies that appear to support the idea that the golden ratio plays a role in human perception of beauty.

The golden ratio expressed in the arrangement of branches along the stems of plants and of veins in leaves. He extended his research to the skeletons of animals and the branchings of their veins and nerves, to the proportions of chemical compounds and the geometry of crystals, even to the use of proportion in artistic endeavors. In these phenomena he saw the golden ratio operating as a universal law.

Some hypothesis that the Golden Ratio is a universal law, that is formative in determining beauty and completeness in the realms of both nature and art, and which permeates, as a paramount spiritual ideal, all structures, forms and proportions, whether cosmic or individual, organic or inorganic, acoustic or optical; which finds its fullest realization, however, in the human form.

Now let's discuss principles of organization. The filmmaker determines what the center of interest (focus) of the frame will be, and composes the elements accordingly. The gaze of the viewer will then tend to linger over these points of interest.

The position of the viewer can strongly influence the aesthetics of an image, even if the subject is entirely imaginary and viewed "within the mind's

eye". Not only does it influence the elements within the picture, but it also influences the viewer's interpretation of the subject.

A subject can be rendered more dramatic when it fills the frame such as the runner in MotionLab. There exists a tendency to perceive things as larger than they actually are, and filling the frame fulfills this psychological mechanism. This can be used to eliminate distractions from the background.

There are numerous approaches or "compositional techniques" to achieving a sense of unity within an artwork, depending on the goals of the filmmaker. A scene is said to be aesthetically pleasing to the eye if the elements within the work are arranged in a balanced compositional way.

The rule of thirds is a guideline commonly followed by visual artists. The objective is to stop the subject(s) and areas of interest (such as the horizon) from bisecting the image, by placing them near one of the lines that would divide the image into three equal columns and rows, ideally near the intersection of those lines. The *Rule of Thirds* established the most aesthetically balanced position for the subject. We also break this rule on purpose when we place the trail front an centre for a more natural feel. The Background composition however is often framed with this rule in mind.

The rule of odds states that by displaying an odd number of objects, there is always one in the middle that is "framed" by the surrounding objects. This adds comfort to the artwork and is used in advertising quite often. We normally have either 1 or 3 athletes in frame.

The rule of space applies the illusion of movement, or - which is supposed to create a contextual bubble in the viewer's mind. This can be achieved by leaving more space in front of a runner/skier that behind. They appear to be moving into the space.

MotionlabHD considers the principle of simplification. Images with clutter can distract from the main elements within the picture and make it difficult to identify the subject. By decreasing the extraneous content, the viewer is more likely to focus on the primary objects. Clutter can also be reduced through the use of lighting, as the brighter areas of the image tend to draw the eye, as do lines, squares and colour. We use vignetting and wide angle lens. One approach to achieving simplification is to use a wide aperture when shooting to limit the depth of field. When used properly in the right setting, this technique can place everything that is not the subject of the photograph out of focus.

DEEPER COVERT EFFECTS IN MOTIONLAB

Now let's discuss the science behind the covert (subliminal) components which enhance the effect of MotionLabHD.

BIOPHILIA HYPOTHESIS

The biophilia hypothesis implies a strong bond between human beings and other living systems as engineered through millions of years of evolution. Note that Philias are the attractions and positive feelings that people have toward certain habitats, activities, and objects in their natural surroundings. The term "biophilia" means "love of life or living systems." It was first used by Erich Fromm to describe a psychological orientation of being attracted to all that is alive and vital. Edward O. Wilson popularized the hypothesis in his book entitled Biophilia.

In other words, all humans harbor deep affiliations with nature that are rooted in our biology. Our senses and neurology and predisposed or optimized in a natural way. For example, our eyes contain far more 'cones' that are sensitive to the colour green. This is why digital cameras devote more real estate on CCD chips to resolving green. We also react to non-linear motion differently than to linear motion owing to what would appear to be natural motion. Certain visual composition intrinsically appeals to us and captures our attention in the same way that a windy path intrigues the viewer more than a straight road. Artists have known this for hundreds of years. People grow flower gardens for therapeutic effect and are soothed by the sound of running water. Human preferences toward things in nature, while refined through experience and culture, are the product of biological evolution. The natural love for life thus helps sustain life. We have attempted to capture these phenomena in MotionLabHD by focusing on green vegetation, safe scenes and non-linear motion paths.

Evolutionary biologists theorize that humans that an individual's genetic quality is a function of their ability to not only look after himself, but others as well. We are genetically coded to recognize biodiversity on a subliminal level, as a necessity for our own perpetuation. The biophilia hypothesis has been synthesized with theories of evolutionary psychology to help explain common human responses to the perceptions of nature, or conversely nature deficit disorder and seasonal illnesses.

Humans placed in sensory deprived environments (anti-gravity, sunlight, flora, fauna) particularly where natural stimulus's have been removed, suffer profound physical and psychological negative effects. Astronauts sent deep space missions, remote expeditions, soldiers in war, patients and prisoners are highly susceptible to sensory deprivation as discussed earlier.

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ECOPSYCHOLOGY

Ecopsychology synthesizes psychology and ecology. Similarly psychoecology, ecotherapy, environmental psychology, green psychology, global therapy, green therapy, Earth-centered therapy, reearthring, nature-based psychotherapy, shamanic counseling, and sylvan therapy share the same core concepts.

Ecopsychology theorizes that although the human mind is shaped by the modern world, it can be positively influenced by the wider natural world owing to evolution. The philosophy teaches that mental health is not confined to treating ailments originating from intrapsychic phenomena or social relations. Rather, therapy must also consider the relationship humans have to the ecosystems. This relationship has a profound evolutionary history, which has constructed the human brain to create a natural affinity and psychic significance to ecology.

Psychotherapy is possibly more effective outdoors for this reason. A run in the woods, is refreshing, because that's what humans have over thousands of years evolved to do, more than any other animal. Subjects shown pictures of natural settings registered increased brain wave activity and experienced more positive effects than subject shown pictures of urban settings. Steps taken to accept and notice nature can sharpen the senses and cultivate new skills. The theory is, the more natural surroundings that we can infuse within the cinematography of motionlab, the better therapeutic effects it will have when combined with exercise.

Furthermore, the brain is often seen as complicated and governed by inherited mind modules, rather than being a simple organ. Engaging more of these modules coherently, using multiple-natural stimulus's is theorized to have emergent effects. Thus, the more overt and covert stimuli that we can provide in MotionLabHD, the better.

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BRAINWAVE ENTRAINMENT

In 2003 Weiss and Weiss came on a background of psychometric data and theoretical considerations to the conclusion that the golden ratio underlies the clock cycle of brain waves. In 2008 this has been empirically confirmed by a group of neurobiologists. The soundscape of MotionLabHD was constructed to take advantage of brainwave entrainment as a layered effect to achieving an immersive experience. The relative degree to which this enhances the overall experience is being tested in the laboratory.

The hypothesis begins by considering that our brain produces electrical pulses that are modulated to a number of key frequencies. The dominant brainwave frequency indicates our state of mind in each moment.

Brainwave Entrainment is a process in which our senses are stimulated at a frequency corresponding to one of the primary brain wave frequencies to provoke a state-of-mind. In MotionLabHD, we use sound (music, heart beats, breathing, footsteps, birds, waves etc) as well as frame rates and visual effects. It is generally accepted that sound (music) creates mood.

An interesting effect is that one sound source can influence another to create a synchronized frequency. For example, striking a tuning fork will make a second tuning fork resonate at the same frequency. In a similar way, the brain entrainment phenomena can be used to synchronize a brain to specific frequencies.

BETA Waves oscillate between 14 to 30 Hz. Beta waves, are commonly found during our waking state, are associated with outward

awareness, the engaging mind, perception and the evaluation of data through the senses.

ALPHA Waves oscillate between 8 to 14 Hz. Alpha waves are associated with the non-drowsy but relaxed, tranquil state of consciousness, the less engaging mind, pleasant inward awareness, body/mind integration. The alpha waves are present during meditation and states of relaxation and are considered important to creativity.

THETA waves oscillate between 4 to 8 Hz. Theta waves are associated with increased recall, creativity, imagery and visualization, free-flowing thought, future planning and inspiration. Theta waves are present during dreaming and REM states.

DELTA waves oscillate between 0.5 to 4 Hz. Delta waves are associated with deep dreamless sleep, are present during non-REM sleep. The deep trance state causes pituitary release of growth hormone and self-healing.

The binaural beat effect can be heard when tones at slightly different pitches are played separately into each ear. The left hemisphere in the brain processes the sounds that come from the right ear, and the right hemisphere processes the sounds that come from the left ear. As the brain tries to "gap" the pitch difference between both ears, synchronization of the hemispheres in the brain occurs. Whereas, the monaural beat sound pulses with exactly matched frequency in both ears. Isochronic tones will sound more like pulses and may have stronger influence. The mix of breathing, footsteps, drum beats, and heart beats create binaural effects. Breathwork is key to linking autonomic and voluntary responses. We can consciously trigger profound changes in psychological and physiological states. For centuries, breathwork has been an essential part of Yoga and other traditional practices, such as Tai Chi and Chi Kung. The breathing patterns in MotionLabHD are designed to establish correct responses to exercise.

Natural sounds are important too. The sound of running water or waves has a profound and deep relaxing effect. It masks out external and internal distractions. Water itself is often associated with peace and tranquility. It is receiving, open, and accepting. The 3D echoing sound of birds adds to the realism to the soundscape.

A musical track is yet another sound dimension that can establish the right atmosphere and mood.

In MotionLabHD, we are able to make positive suggestions or affirmations while the listener is in a state of deep relaxation or hypnosis.

NEURO-LINGUISTIC PROGRAMMING

The narrative script to MotionLabHD is carefully constructed to establish the most receptive state of mind for mental training. The induction script is based upon principles of Neuro-Linguistic Programming [NLP], hypnotherapy and sports psychology.

Neuro-linguistic programming (NLP) is defined in the Oxford English Dictionary as "a model of interpersonal communication chiefly concerned with the relationship between successful patterns of behavior and the subjective experiences underlying them" and "a system of alternative therapy based on this which seeks to educate people in self-awareness and effective communication, and to change their patterns of mental and emotional behavior." NLP was originally promoted by its founders, Bandler and Grinder, in the 1970s.

The basic assumption of NLP is that internal mental processes such as problem solving, memory, and language consist of visual, auditory, kinesthetic, (and possibly olfactory and gustatory) representations (often shortened to VAK or VAKOG) that are engaged when people think about problems, tasks, or activities, or engage in them. Internal sensory representations are constantly being formed and activated. Whether making conversation, talking about a problem, reading a book, playing a game, or running, internal representations have an impact on performance.

NLP techniques generally aim to change behavior through modifying the internal representations, examining the way a person represents a problem, and building desirable representations of alternative outcomes or goals. Introducing a runner in the frame of the video provides a reference subject to imprint off of.

Submodalities are the fine details of sensory representational systems or modalities. Increasing the brightness, changing the color or location of an internal imagery, intensity of their state also increased. They observed similar patterns in different sensory modalities (e.g. Auditorial and Kinesthetic systems) in other people and changes depending on context. Motionlab tries to establish the right conditions for Kinesthetic empathy by using subjects to follow.

NLP proposed a number of simple techniques involving matching, pacing and leading for

establishing rapport with people. There are a number of techniques explored in NLP that are supposed to be beneficial in building and maintaining rapport such as: matching and pacing non-verbal behavior like body rhythms of others (breathing, pulse, and so forth).

Anchoring is the process by which a particular state or response is associated (anchored) with a unique anchor. An anchor is most often a gesture, voice tone or touch but could be any unique visual, auditory, kinesthetic, olfactory or gustatory stimulus. A psychotherapist or narrator in the case of MotionLab would anchor positive states like calmness and relaxation, or confidence in enhanced performance. Proponents state that anchors are capable of being formed and reinforced by repeated ritual stimuli, and thus are analogous to classical conditioning. Many of the positive affirmations in MotionLab are repeated multiple times and subliminally written on the screen.

Ecology in NLP deals with the relationships between a client and their natural, social and created environments.

Hypnosis is a mental state (state theory) or set of attitudes (nonstate theory) usually induced by a procedure known as a hypnotic induction, which is commonly composed of a series of preliminary instructions and suggestions. Hypnotic suggestions (affirmations) are delivered by the narrative script in motionlab.

The words 'hypnosis' and 'hypnotism' both derive from the term "neuro-hypnotism" (nervous sleep) coined by the Scottish physician and surgeon James Braid around 1841 to distinguish his theory and practice from those developed by Franz Anton Mesmer and his followers "Mesmerism."

Hypnosis is normally preceded by a "hypnotic induction" technique. There are an enormous variety of different induction techniques used in hypnotism. However, by far the most influential method was the original "eye-fixation" technique of Braid, also known as "Braidism". Many variations of the eye-fixation approach exist, including the induction used in the Stanford Hypnotic Susceptibility Scale (SHSS), the most widely-used research tool in the field of hypnotism. Braid's original description of his induction is as follows:

James Braid's Original Eye-Fixation Hypnotic Induction Method. Take any bright object and enable the subject to maintain a steady fixed stare at the object. In motionlab we begin with a dark sky and moon.

When Braid first introduced hypnotism, he did not use the term "suggestion" but referred

instead to the act of focusing the conscious mind of the subject upon a single dominant idea. Braid's main therapeutic strategy involved stimulating or reducing physiological functioning in different regions of the body. In his later works, however, Braid placed increasing emphasis upon the use of a variety of different verbal and non-verbal forms of suggestion, including the use of "waking suggestion" and self-hypnosis.

Some hypnotists conceive of suggestions as being a form of communication directed primarily to the subject's conscious mind, whereas others view suggestion as a means of communicating with the "unconscious" or "subconscious" mind.

Ideo-dynamic reflex. The first neuro-psychological theory of hypnotic suggestion was introduced early on by James Braid who adopted his friend and colleague William Carpenter's theory of the ideomotor reflex response to account for the phenomena of hypnotism. Carpenter had observed from close examination of everyday experience that under certain circumstances the mere idea of a muscular movement could be sufficient to produce a reflexive, or automatic, contraction or movement of the muscles involved, albeit in a very small degree. Braid extended Carpenter's theory to encompass the observation that a wide variety of bodily responses, other than muscular movement, can be thus affected, e.g., the idea of sucking a lemon can automatically stimulate salivation, a secretory response. Braid therefore adopted the term "ideo-dynamic", meaning "by the power of an idea" to explain a broad range of "psycho-physiological" (mind-body) phenomena. Braid coined the term "mono-ideodynamic" to refer to the theory that hypnotism operates by concentrating attention on a single idea in order to amplify the ideodynamic reflex response. Variations of the basic ideomotor or ideodynamic theory of suggestion have continued to hold considerable influence over subsequent theories of hypnotism, including those of Clark L. Hull, Hans Eysenck, and Ernest Rossi. It should be noted that in Victorian psychology, the word "idea" encompasses any mental representation, e.g., including mental imagery, or memories, etc.

Self-hypnosis happens when a person hypnotizes himself or herself, commonly involving the use of autosuggestion. The technique is often used to increase motivation for sport etc. Hypnotism has also been used in forensics, sports, education, physical therapy and rehabilitation.

SPORT PSYCHOLOGY

Sport psychology is the scientific study of people and their behaviors in sport contexts and its practical application. Some of the most important skills taught are goal setting, relaxation, visualization, self-talk, awareness and control, concentration, confidence, using rituals, and attribution training.

Psychological skills training refers to consistent practice of mental or psychological skills. Coaches and athletes know that physical skills need to be regularly practiced to become better. Similar to physical skills, psychological skills such as maintaining concentration and regulating activation levels also need to be practiced. In motionlab, we bring the participant from deep states of relaxation to concentration, visualization and activation.

Motor imagery is a mental process by which an individual rehearses or simulates a given action. It is widely used in sport training neurological rehabilitation, and has also been employed as a research model in cognitive neuroscience and cognitive psychology to investigate the content and the structure of covert processes or unconscious that precede the execution of action.

Motor imagery can be defined as a dynamic state during which an individual mentally simulates a given action. This type of phenomenal experience implies that the subject feels themselves performing the action. It corresponds to the so called internal imagery in first person perspective. Motionlab enhances visualization and positive affirmation.

Converging empirical evidence indicates a functional equivalence between action execution and motor imagery. The treadmill, high definition images and realistic soundscape provides a powerful feedback loop.

Motor imagery has been studied using the classical methods of introspection and mental chronometry. These methods have revealed that motor images retain many of the properties, in terms of temporal regularities, programming rules and biomechanical constraints, which are observed in the corresponding real action when it comes to execution. The next stage of testing of MotionLab will be to measure brain responses.

Activation in the motor cortex during motor imagery amounts about 30% of the level observed during actual performance; Roth et al., 1996.

A large number of functional neuroimaging studies have demonstrated that motor imagery is associated with the specific activation of the neural circuits involved in the early stage of

motor control (i.e., motor programming). This circuit includes the supplementary motor area, the primary motor cortex, the inferior parietal cortex, the basal ganglia, and the cerebellum. Such physiological data gives strong support about common neural mechanisms of imagery and motor preparation.

Measurements of cardiac and respiratory activity during motor imagery and during actual motor performance revealed a covariation of heart rate and pulmonary ventilation with the degree of imagined effort. Motor imagery activates motor pathways. Muscular activity often increases with respect to rest, during motor imagery. When this is the case, EMG activity is limited to those muscles that participate in the simulated action and tends to be proportional to the amount of imagined effort.

Motor imagery is now widely used as a technique to enhance motor learning and to improve neurological rehabilitation in patients after stroke. Its effectiveness has been proven in musicians and elite athletes. Motor imagery is an accepted procedure in the preparation of athletes. Such practice usually covers a warming up period, relaxation and concentration, and then mental simulation of the specific movement.

Mental simulation may also be a representational tool to understand the self and others - kinesthetic empathy. One critical aspect of the simulation theory of mind is the idea that in trying to impute mental states to others, an attributor has to set aside their own current mental states, and substitutes those of the target within the program.

SKILL DEVELOPMENT APPLICATION

Corrections and adjustments to an athletes form or mental state made during the course of ritual or repetitive motion are far more effective rather than the traditional stop/think restart means of coaching, which arrests rapid development of motor skills. MotionlabHD facilitates rapid learning by imprinting.

Too often coaches talk their athletes into skiing, running or swimming instead of letting them follow and coach them through a complex motion through perfect imagery and empathy. Constant movement and tuning allows for the chaining of drills and simple movements into complex ones. Latent learning and motor skill development of the neuro-pathways continues to occur subconsciously between training sessions.

Athletic training is the frequent, and repetitive series of actions directed towards achieving certain movements. The motor-skills are a coordinated system of conditioned reflex connections between the sensory organs, central nervous system, muscular apparatus and internal organs. These connections are not formed immediately, but must be developed deliberately.

Although it is helpful for athletes and coaches to understand the underlying concepts, much of the motor learning is best acquired through other means such as imitation.

Ironically, automated motor skills exercised under uniform ideal conditions can easily become manual if these conditions suddenly change. To prevent this an athlete must vary the manner of training by expanding technique to cover extremes in speeds, conditions and terrain.

Technique should be emphasized early in an athlete's development. Relearning is more difficult than learning. The more consciously a skill is formed involving all the senses, the more strongly it will be consolidated. Major technique work and modifications should be done in the first half of the season.

To master a technique, an athlete must have knowledge and a clear concept of how it is to be performed. Actions must be done correctly and repeated. One must focus a high degree of attention and quality to the action rather than sloppy quantity. Imprinting the feeling of proper motion through mentoring is the most effective means of learning a skill. Too often coaches try to talk their athletes into becoming good instead of leading them. MotionLabHD allows you to follow elite athletes for prolonged periods where it would not necessarily be possible to stay with them in real life.

Motor skills are a result of conditioned reflex and connections in the central nervous system, creating equilibrium of basic nerve processes. Training restructures physiology as a consequence of the body's adaptation to work. Functional restructuring of the central nervous system perfects muscle activities and instills muscle memory, and is possible only when training is regular and sufficiently intensive.

Plasticity of cortex describes the capacity to form new connections faster through training. An athlete should vary the exercises to increase the ability to subsequently master new motions more quickly and to improve the accomplishment of those skills already known. MotionLabHD deliberately changes modes of exercise and terrain and speeds to provide the variation necessary to accelerate training.

The first phase of skills development involves conditioning reflex connections. It is a stage of generalization of movement and response with a wide and inefficient use of muscle groups.

The second phase can be achieved after movements have been repeated many times. The recruitment of unnecessary muscles is now inhibited by processes in the brain. Stimuli is concentrated and motor actions perform more optimally.

The third stage in skill formation is characterized by automation of movements and intuition. Consciously directed attention is not generally required and motor skills allow one to accomplish several tasks simultaneously, whilst concentrating on one primary task.

TEST ENVIRONMENT

In addition to public use, MotionLabHD is currently being trialed in a number of unique environments including:

- The Antarctica Station;
- Alert (North Pole Station);
- The International Space Station;
- Hospitals;
- High Performance Athletic Centres;
- Afghanistan [Kandahar Base] with Canadian and US troops; and
- Select Gyms.

PRELIMINARY OBSERVATIONS

We have been able to make some preliminary conclusions based upon initial test results.

- People really enjoy working out with the product over no stimulus, music or TV. So much so that participants in the gyms are spending four (4) times longer running on the treadmill than they would normally.
- The visuals are far more engaging than first predicted. Spectators (not even on the treadmill) are entranced and will end up watching someone run for an hour at a time.
- Having a runner in frame (on screen) provides a useful point-of-reference and balance.
- Novice and experts have different reactions to the appearance technical terrain. Experts tend to run a straight line where as novices tend to avoid obstacles on screen by adjusting their position on the treadmill.

- Running the treadmill at the precise speed that the footage was filmed induced a much more realistic effect on the participants.
- Countermeasure results from space are pending, but feedback is very good.

FUTURE

So what does the future bring? MotionLab was filmed in High Definition video at 1080p (2K resolution). The next step is to shoot at much higher resolution and play back on bigger screens at resolutions greater than 1080p. The most powerful cameras on the planet capture moving images at 33 megapixels at 60fps. A one (1) Giga pixel still camera currently exists. Realistically, super HD 3D 28K film cameras will exist in 2010 with frame rates up to 150fps. At these resolutions, we may begin to fool the participant into thinking they are seeing the real world from behind a pair of sports glasses. LCD/LED screens above 1080p do not currently exist but multiple screens may be used.

Augmented reality (AR) is a term for a live direct or indirect view of a physical real-world environment whose elements are merged with (or augmented by) virtual computer-generated imagery - creating a mixed reality. The augmentation is conventionally in real-time and in semantic context with environmental elements. Advanced AR technology the information about the surrounding real world of the user becomes interactive. Artificial information about the environment and the objects in it can be stored and retrieved as an information layer on top of the real world view. The telemetry such as map displays, heart rate, speed and altitude captured in motionlab can be displayed with the picture.

Haptic technology refers to technology that interfaces to the user via the sense of touch by applying forces, vibrations, or motions to the user. This mechanical stimulation may be used to assist in realistic feedback loop. Wind, treadmill resistance climb attitude and speed in motionlab contributes to this effect.

A Cave Automatic Virtual Environment (better known by the recursive acronym CAVE) is an immersive virtual reality environment where projectors are directed around a full 360 degrees. The name is also a reference to the allegory of the Cave in Plato's Republic where a philosopher contemplates perception, reality and illusion. The Ardvark applications technology has a wrap around screen.

An omni directional treadmill, is a device that allows a person to perform locomotive motion in any direction. Omni directional treadmills are

employed in immersive virtual environment implementations to allow unencumbered movement within the virtual space through user self-motion.

A volumetric display device is a graphical display device that forms a visual representation of an object in three physical dimensions, as opposed to the planar image of traditional screens that simulate depth through a number of different visual effects. One definition offered by pioneers in the field is that volumetric displays create 3-D imagery via the emission, scattering, or relaying of illumination from well-defined regions in [x,y,z] space.

ABOUT THE RESEARCHERS

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Xczone.tv are pioneers in Clean Oxygen Fed Sport Cinematography and a trusted source for instructional and motivational sports multimedia, bring you, the some of the most evolved, and innovative products in the market space, and new kind of action which defines the natural fitness popular culture with talent bordering on the paranormal. The producers behind these DVD are athletes, coaches and scientists. Between them, they have raced 2 Olympic Games and 200 World Cups; winning 7 medals, including four (4) Gold. Each of them holds past National Champion titles. Lise is a sports physiologist and educator and David is a professional engineer. Together, they have mentored thousands of people to ski to their potential - including Olympics dreams. Xczone.tv is one of the most trusted sources of sport and fitness.

Look us up in Who's Who in Canadian Sport, Volume 3 1999 by Bob Ferguson ISBN 1-894282-00-0. Lise's journey.

XCZONE.TV - CORPORATE EXPERIENCE

We know how to film sport and motion...

Sample the Creative Professional profile of XCZONE.TV by Apple Computer
<http://www.apple.com/pro/profiles/impossible2possible/index2.html>

XCZONE.TV is an independent Canadian film company that specializes in Clean Oxygen Fed Sport High Definition [HD] Cinematography, bringing into focus the human body-in-motion. We are renown for our trademark visually compelling point-of-view (PoV) perspective using high-speed steadicam technique. We use this to capture a new kind of action; defining the natural fitness popular culture with athletic

talent bordering on the paranormal. The material always fresh, positive, highly engaging and entertaining – suitable for all ages. The film-making of XCZONE.TV experiments with contracting styles of cinéma vérité and escapism to develop tension, stylized rhythm, and inertia. It employs a unique skill-set; combining athleticism and artistry by placing the camera in the same hands as those personally engaged in the experience. The in-action tracking point-of view (PoV) cinematography makes clear the distinction between involvement and commitment for the film-making. XCZONE specializes in natural fitness, outdoor and Olympic sports with characteristics of high action and dynamic range-in-motion such as: nordic skiing, trail running, mountain biking, triathlon, adventure racing, canoe, kayak and snowshoeing, etc. The message promotes fitness and a sustainable healthy 'green' lifestyle with the fresh air experience. We have direct access to dozens of Olympic athletes in as many sports.

RESULTS

XCZONE.TV has been a most-trusted source of instructional, motivational multimedia and innovative products in this space for over a decade. Producing, directing and managing small Indie productions to multimillion dollar projects:

- Over one-million people will see xczone.tv productions every year in theatres, HDTV Broadcast or on DVD.
- We have produced/filmed national sporting championships for prime time TV
- Our short films were thrice selected for the Best of the Banff Mountain Film festival World Tour.
- XCZONE.TV was the first company to release a commercial DVD in Canada.
- Since then we have produced 12 films. Ten (10) have achieved best-seller status. All have been commercial successes. Six 6 more titles are in production.
- Are products was chosen by the Canadian Space Agency to train astronauts currently playing on international space station
- ParticipAction is currently playing our "Fit for Space" Public Service Announcements on Television
- Our technical products are used by National Sports Organizations for training athletes in preparation for 2010.

COACHING – NATURAL FITNESS LAB

www.naturalfitnesslab.com

"Living and coaching natural fitness through clean oxygen fed sport."

Providing expert-lead coaching for: fitness, cross-training and high-performance streams.

Supported by: best-selling instructional and motivational products for fitness training, technique and sports psychology. The personal training programs that are: Intelligent, sophisticated, comprehensive, pragmatic and 100% successful. The technical instruction that is always: leading-edge, progressive, visionary and proven effective. Materials are produced by an award-winning studio for sport-cinematography.

ANNEX – NARRATIVE SCRIPT FOR MOTIONLABHD

START (blackness)

Welcome to magic of MotionLab HD
A sensory experience of this World

Clear your mind.

In the beginning there was empty space.

Focus on the singularity of light

Smile

Breathe

Relax

(cave dripping sound)

LAKE/RIVER

You are floating upon a fresh body of water.

Listen to the sound of your paddle dipping into the water and propelling you forward with no resistance.

Your boat is designed for speed and easily glides over the surface

Perceive the hypnotic and comforting rhythm of your strokes

Just go with the flow.

Enjoy exploring nature from waters edge.

GARDEN

This is your healing garden

A sanctuary in centre of the wilderness for meditation and restoration

It is somewhere you feel safe, nurtured, comforted and in harmony with your environment

You are keenly aware of the hidden life within this ecosystem

Everything is alive, including you.

Delight in your natural surroundings

RANGE OF MOTION

Gently rotate your body through a full-range-of-motion around each joint, one at a time.

Shake-out your arms and legs.

Warm-up with a walk.

FLIGHT

You are flying effortlessly over forests, rivers and lakes - like in a dream.

Your body is weightless

The airflow passes over your entire body, supporting you in flight.

At high altitude you gain perspective ...

The mountains, rocks, mud and roots pass quickly and easily beneath you

You know that you can overcome all—terrain efficiently.

Healthy outdoor activity awaits as you descend to Earth

Touching down in 3-2-1

FOREST

You are in the centre of an ancient old-growth forest

Lush with vegetation and teeming with life

Visually soak-up the deep green colours and earthy textures

Hear the expansive sound of birds echoing through the canopy

Listen to the streams and brooks flowing underneath

A sweet smell of trees permeates the oxygen rich air with the evaporation of the morning dew.
Let yourself imagination that everything is possible.
An alluring path leads deeper into the woods.

BEGIN THE WORKOUT

Follow the path
Lengthen your stride and let's start the adventure

BREATHING

Breathe
Be aware of your breathing.
Breath consciously and deeply.
Inhale clean pure oxygen
Exhale
Inhale through your nose and mouth
Exhale under control. Feel the air fill your cheeks and blow it out.
Feel the path that the air takes as it exits
Now, reverse the air-flow
Inhale by letting your chest expand, drawing clean fresh oxygen deeply into your core.
Shape the flow of air with every breath
Allow your breathing lead your motion.
Kinetically link your breathing with your stride
Tune-in
Let the strength of each breath empower you.
Your diaphragm is a powerful muscle
Feel the force of your breathing propel you forward with each stride
Breathing is at your very centre.
Feel the power in your engine
It fills your entire body and oxygenates your blood with every breath.
You are creating natural fitness.
The forest all around you produces a rich source of oxygen
The air is infused with sweet sent of plant life, wild flowers, trees, and earth.
Take the time to smell the air.
Let the atmosphere permeate and spread through your body.
Focus on the rhythm of your breathing as you become more aware of your body.

HEART RATE

Shift your attention deeper inside yourself.
Listen to your heart beating.
Feel your heart thumping strongly in your chest
Imagine the blood pulsating through your body.
Improving circulation.
Know that your heart is getting stronger with every beat.
Tune-into the vibration
Your stamina, endurance and cardiovascular fitness are being naturally enhanced.
Listen to the synchronized rhythm of heartbeats, breathing and cadence.

OCEAN

You are now by the ocean
Listen to the rhythmic sound of the waves rolling onto shore.
Feel the cool texture and purifying nature of water.
Sense the warm sun and ocean breeze on your face
Can you hear the sound of sea birds playing in the wind and water.
You are present within a healthy natural environment
Visualize the fluid nature of water in the way it fills empty space.
Embody this property as relaxed momentum in your stride.

FOOTSTEPS

Focus on the cadence and tempo of your footsteps.
Listen to the organic texture of the sound your soul makes with the earth
Feel quick and light.
Seek quiet and subtle qualities in your step.
Your stride will respond.

SYNERGY

Widen your focus to achieve an overall awareness of breathing, heart-beats and your footsteps.
Integrate the sounds in harmony.
Tune the sounds and sensations to achieve one feeling.
Perceive all your thoughts, sensations and experiences as a whole.
Create a gestalt of all sights, sounds, and movement.
Feel the synergistic effect and power of combining these internal life forces and the natural elements all around you.

[[affirmations]]

AFFIRMATIONS AND QUOTES

An athlete must tune the **Body and Mind** through training. Their physiological state will affect your clarity of thought and emotions, whereas their state-of-mind creates the necessary fluidity and preconditions for optimum physical performance.

FOCUS

Smile and Breath
Feel the power of your engine.
Tune in

RITUAL

Use positive ritual in your training and race preparation

PROCESS

It is not a race to the podium, it is a process.

Train like you would race, and race as you have trained.

Training should be hyper-realistic; tougher than an actual race.

To race well, just play back your best training session.

Racing is easy.

Defer activation for race. Put in place a process of race preparation that works.

HOPE

Hope for what do you desire.

BELIEF

Achievement starts with belief.

KNOWING

Know that you are fast and know how fast you are. Remove all uncertainty by measuring this in training and then you can be confident in your performance in races.

HAPPINESS

You can be happy and tired. In fact, being happy while fatigued is a prerequisite in sport. Embrace fatigue like a comfortable familiar blanket.

POTENTIAL

Remember, all that needs to be done to win, has already been done in training, before you get to the start line. Your potential performance is already pre-ordained.

FAILURE

Take the fear out of failure by practicing it often. Plan failure into your training. This is the fastest way to improve.

CHALLENGE

Suffering, adversity and challenge are the greatest catalysts for positive change. Without pressure, there cannot be natural evolution and self-improvement.

LIMITS

Know your real limits, so you can better them.

PERFECT PRACTICE

Practice perfect makes perfect practice. Always maintain good form under all conditions. Practice perfect technique between intervals and through obstacles.

LIFESTYLE

You are an athlete. Enjoy the exciting lifestyle of an athlete. Embrace the full sense of that identity.

Become a student of the sport.

ENJOYMENT

Exercise is fascinating and fulfilling.

TRUST

Trust your training program.

Trust your coach.

Trust your equipment.

Trust your body.

Trust yourself.

If you think that you are fast, you will perform differently.

PLAN

Do a training plan

Do a race plan

Practice your race plan in training

Replay that plan in a race

Plan for contingencies

Practice coping strategies

Analyze performances objectively and honestly.

FOCUS

Move from outcome focused to process focus. Do all the things necessary to win and don't think about winning.

PRE-VISUALIZATION

Run your own time trials in training and mentally.

Visualize that everything is going to plan, even the unexpected.

Watch great athletes and imagine yourself there.

ACT THE PART

Act the part of a winner.

To succeed, you must first act as if you already have.

SIMULATION

Create the most realistic environment in which to train to race.

WINNING

Winning is the natural outcome and simple process of good effort and consistency in training.

No one wins without training.

Conversely, everyone who trains well will win in time.

SELF-FULFILLMENT

Pretend to smile. Laugh at nothing. Act happy, and soon you will be for real.

ULTRA-DISTANCE

Life is an ultra-distance multi-stage event. Those who are persistent and consistent in their desire and effort will have more success.

EXTERNALIZE

Let negative energy out of the bottle.
Exhale the bad and inhale the good.
Recycle.

SPACE

Take your own space.

RELAXATION

Find relaxing states in the movement, between strides.

CONFIDENCE

Gain confidence in the process of becoming a champion.

SELF-COACH

Practice talking yourself around the course.
What would you tell yourself now.

FIXATE-FOCUS-FAST

"Do or do not, there is no try" – Yoda, Jedi Master

SUB-CONSCIOUS

Back of your mind. Use your sub-conscious to problem solve in the background.

POSITIVISM PROMOTES PERFORMANCE

Whether you think you can, or think you can't - either way you are right.

ADVICE

Listen to others but keep your own counsel.
Do what feels good.

MANTRAS

I choose how to feel and what to think.

I am confidence in my training.

Success is how I measure it.

I have done everything necessary to succeed, so now I just need to let it happen.

I love being an athlete.

I love running.

I love training.

Persist. Perfection.

I can. I will.

If it is going to be, it is up to me.

Gravity gives me the power to move.

BREATHING

Breathing is central to my body and mind

Breathing leads motion and effort.

Breathing focuses and engages your core.

Feed on clean oxygen

Become one with your environment. Pervasive. Draw in the energy.

Synchronize breathing with your stride and motion.

Enjoy breathing deeply.

Trust your breathing to propel you through any obstacle.

EMOTIVE WORDS (Triggers)

Smooth

Strong

Light

Fast

Free

Happy

Smile

Breath

Powerful

Energy

Warmth

Centre

Relax

Focus

Passionate

Love

Enjoy

Wonder

Calm

Trust

Belief

Peace

Tune

Natural

Clean

Pure

Oxygen

Sunshine

Earth

Organics

Purity

Holistic

Free space

Harmony

Healthy

Tactile

Embrace

Receive

Accept

Fix

Tune

Perceive,

Feel,

Sense

Texture
Aware
Quality
Contentment
Exhilaration
Delight

EMOTIVE WORDS (technical)

Apply weight
Lean
Use gravity
Momentum
Tempo
Core
Reach
Stride-out
Quick and light
Forward
Fluid

QUOTES

Ultra-running is 90 per cent mental, and the rest is in your head.
Ray Zabab after running 7500km across the Sahara.

Do or do not, there is no try.
Yoda, Jedi Master

Only those who risk going too far can possibly find out how far they can go.
T.S. Eliott

Sports do not build character. They reveal it.
Heywood Broun (1888 - 1939)

Most folks are about as happy as they make up their minds to be.
Abraham Lincoln (1809 - 1865)

Happiness depends upon ourselves.
Aristotle (384 BC - 322 BC)

Man is the artificer of his own happiness.
Henry David Thoreau (1817 - 1862)

Very little is needed to make a happy life.
Marcus Aurelius Antoninus (121 AD - 180 AD)

If you are distressed by anything external, the pain is not due to the thing itself, but to your estimate of it; and this you have the power to revoke at any moment.
Marcus Aurelius Antoninus

You don't need to see the whole mountain to take the first step.

Success consists of going from failure to failure without loss of enthusiasm.
Sir. Winston Churchill

There is a source of strength inside you which will always spring up if you look for it.
Marcus Aurelius Antoninus

Experience is the name everyone gives to their mistakes.
Oscar Wilde

There is a proper dignity and proportion to be observed in the performance of every act of life.

Marcus Aurelius Antoninus

The time is always right, to do the right thing.
Dr. Martin Luther King

The happiness of your life depends upon the quality of your thoughts, therefore guard accordingly; and take care that you entertain no notions unsuitable to virtue, and reasonable nature.
Marcus Aurelius Antoninus

Life is either a daring adventure, or nothing.
Helen Keller

A tranquil mind is a mind well ordered.
Marcus Aurelius Antoninus, Meditations

One must dare to lose in order to win.

Nothing happens to any thing which that thing is not made by nature to bear.
Marcus Aurelius Antoninus, Meditations

The universe is change; our life is what our thoughts make it.
Marcus Aurelius Antoninus, Meditations

A happy life consists in tranquility of mind.
Cicero

If you aspire to the highest place, it is no disgrace to stop at the second, or even the third, place.
Cicero

In so far as the mind is stronger than the body, so are the ills contracted by the mind more severe than those contracted by the body.
Cicero

It is a great thing to know our vices.
Cicero

Let your desires be ruled by reason.
[Appetitus Rationi Pareat]
Cicero

Fitness - If it came in a bottle, everybody would have a great body.
Cher (1946 -)

You should eat to live; not live to eat.
Socrates

Nothing's better than the wind to your back, the sun in front of you, and your friends beside you.
Aaron Douglas Trimble

Exercise alone provides psychological and physical benefits. However, if you also adopt a strategy that engages your mind while you exercise, you can get a whole host of psychological benefits fairly quickly.
James Rippe, M.D.

Habituate yourself to walk very far.
Thomas Jefferson (1743 - 1826)

In all things of nature there is something of the marvelous.
Aristotle (384 BC - 322 BC), Parts of Animals

Nature does nothing uselessly.
Aristotle (384 BC - 322 BC), Politics

Adapt or perish, now as ever, is nature's inexorable imperative.

H. G. Wells (1866 - 1946)

Nature is wont to hide herself.
Heraclitus (540 BC - 480 BC), On the Universe

The goal of life is living in agreement with nature.
Zeno (335 BC - 264 BC), from Diogenes Laertius, Lives of Eminent Philosophers

Abundance of knowledge does not teach men to be wise.
Heraclitus

Nothing endures but change.
Heraclitus, from Diogenes Laertius, Lives of Eminent Philosophers

Much learning does not teach understanding.
Heraclitus, On the Universe

Force without wisdom falls of its own weight.
Horace, Odes

He who loves the world as his body may be entrusted with the empire.
Lao-tzu, The Way of Lao-tzu

A journey of a thousand miles begins with a single step.
Lao-tzu, The Way of Lao-tzu

The softest things in the world overcome the hardest things in the world.
Lao-tzu, The Way of Lao-tzu

To be worn out is to be renewed.
Lao-tzu, The Way of Lao-tzu

STRIDE AND TECHNIQUE
(from trail running)

STRETCHING
Finish as you have begun.
Relax and breathe
Exercise has left you invigorated
Take the time to enjoy gentle stretching