

reactivate

PUTTING
ACTIVITY
BACK INTO
YOUR LIFE

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Quarterly PHYSIOSOUTH Newsletter

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Mark Watson/www.highlux.co.nz

Pure pleasure: mountain biking on The Edge track, Craigieburn.

PUTTING ACTIVITY INTO YOUR LIFE

Physical Activity: Over 170 studies show that exercise is **the real benefit of exercise**

beneficial to those suffering depression, as effective as medication in many of these. Yet exercise is less expensive and has little or no side effects. It seems to last longer than drugs. Physical activity reduces anxiety and stress; protects us from dying in general (heart disease and cancer in particular), reduces the risk of numerous diseases (diabetes, colon cancer, hypertension, builds bones, muscles, and joints; increases quality of life, improves sleep, protects against cognitive impairments as we age and controls weight. In sedentary older adults a very low-intensity exercise program reduces depression, increases confidence and maintains improvement for an astonishing five years. Studies show that exercise may very well be the most effective instant happiness booster of all. Is that enough to get you going?

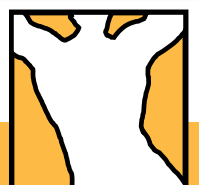
—Sonja Lyubomirsky, from 'The How of Happiness'.

The above excerpt from Positive Psychologist Sonja Lyubomirsky typifies some of the new evidence for exercise therapy. Reading between the lines and taking into consideration the new work presented by psychiatrist John Ratey in his new book *Spark* it seems the real benefit we derive from exercise is in the brain.



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www.physiosouth.co.nz



PHYSIOSOUTH
PUTTING ACTIVITY BACK INTO YOUR LIFE

EXERCISE AND YOUR MIND

making the connection

We all know exercise makes us feel better, but most of us have no idea why. We assume it's burning off stress or boosting endorphins – however the reason we feel so good when we get our blood pumping is that it makes the brain function at its best, and that's the real benefit of exercise. Building muscle, conditioning the heart and lungs etc are really important, but are essentially side effects. The real point of exercise is to build and condition the brain.

In today's technology driven world, it's easy to forget we humans are born to move. In the past we had to survive as hunter-gatherers. The relationship between food, physical activity and learning is therefore hardwired into our brain's circuitry. But we no longer hunt and gather – and that's a problem. The sedentary character of modern life is a threat to our nature, and poses one of the biggest threats to our continued survival. The evidence is everywhere: 65% of US adults are overweight or obese, 10% of the population has type 2 diabetes, and depression is now the biggest cause of sick days. What's even more disturbing and what few people recognize is that we are killing our brains – physically shrinking them.

To keep our brains at full performance we need to work hard; physical activity is crucial to the way we think and feel. Exercise cues building blocks of learning in the brain, improving mood, reducing anxiety and increasing attention. It guards against stress and reverses some of the effects of aging in the brain. In women it can reduce the effect of hormonal changes. These are evidence based comments.

'Physical activity is crucial to the way we think and feel. Exercise cues building blocks of learning in the brain, improving mood, reducing anxiety and increasing attention.'

It is known that exercise increases levels of serotonin, norepinephrine and dopamine – important neurotransmitters that traffic your thoughts and emotions. A lack of serotonin is associated with depression. Stress alone causes toxic levels of hormones which erode the connections of billions of nerve cells and chronic depression shrinks certain areas of the brain. Conversely, exercise unleashes a cascade of neurochemicals and growth factors that can reverse this process, physically bolstering the brain's infrastructure. In fact the brain responds like muscle; it grows with use and shrinks with disuse, withering with inactivity. The neurons in the brain connect on tree-like branches, exercise causes those branches to grow and bloom with new buds, thus enhancing brain function at a fundamental level. Scientists have now found that moving our muscles produces proteins that travel through the blood stream and into the brain, where they play pivotal roles in the mechanisms of our highest thought processes. They bear names such as insulin-like growth factor (ILGF), and vascular endothelial growth factor (VEGF).

Your life changes when you have a working knowledge of your brain. People tend to picture their brain as a commander, mysteriously issuing orders from the ivory tower, untouchable from the outside. This is not true, exercise breaks down those barriers. If you understand the role physical activity has on your brain function you will be motivated to include it in your life in a positive way (things do not work the same when you are forced to exercise, it's voluntary exercise that really counts).

An outstanding example is a school in Napperville, Illinois. Their exercise programme has turned their students into the fittest in the country, only 3% are overweight compared to the national average of 30%. What's more the Naperville's 8th graders were judged top in the world for maths and sixth for science. This is unprecedented in the USA, who consistently fall behind Asian countries.

Left: Physical activity has a big effect on brain function – tramping in the Upper Waitaha Valley, West Coast. Mark Watson/www.highlux.co.nz

If we cannot help you, we will send you someone who can

People come to us, or are referred to us, for many reasons. The vast majority responding well to rehabilitation and movement type therapies, combined with positivity and the setting of realistic patient centered goals. However there are a small percentage who are not going to respond. Which we assess in one of two ways:

1. At the time of the initial assessment we identify pathology that will not respond within the expected time frames.

2. As a result of a reasonable period of good quality rehabilitation that does not work (failure to respond and achieve the goal).

Our promise to you as a patient or to you as a referrer is to identify this at the first possible instance and refer back to the provider or to another provider who is better suited to manage this patient. This is a promise we are very serious about. We have two pathways for this:

1. Internal referral: referral to one of our college-approved Advanced Practitioners; Graeme Nuttridge (Sports and Orthopaedics) or Dr Mark Laslett (Spinal). Ideally patients who require advanced physiotherapy management will do better with internal referrals.

2. External referral: referral back to GP (with a recommendation) or to a suitably qualified provider (often for more investigations or surgical opinions).

Providing the patient with certainty is an important part of our patient management strategy. Relax and commit to the program and if we cannot get you better we will send you to someone who can.

What are the Risk Factors for Groin Strain Injury in Sport? A Systemic Review of the Literature

By L. Maffey and C. Emery. Published in *Sports Med* 2007; 37 (10) 881-894

Groin injury is common in many sports (especially, cricket, gymnastics, hockey, soccer and squash). As usual there are very few published studies examining risk factors for the groin. The authors found an association with the following individual risk factors:

- Previous injury (this rule applies universally).
- Greater abductor to adductor strength (weak adductors!).
- Poor sports-specific training and pre-season sports specific training.

It was also found that poor core muscle strength/activation may increase the risk of groin strain. Studies were not of a high quality and certainly this list has the potential to increase. In clinical practice risk factors are divided into intrinsic vs. extrinsic and modifiable vs. non modifiable. The patient examination and history does allow some individualisation of theorised risk factors which should be taken into account when designing a rehabilitation/return to sport program. However from this study first and foremost the evidence-based approach must emphasise:

- The role of previous history as a predictor of future injury.
- Strengthening the adductors (bias towards eccentric strength).
- A sports specific return to sport rehabilitation programme.
- As well other best practice management.

Research Update

Currently at **PHYSIOSOUTH** we are undertaking four research projects at various stages:

1. The biggest is the Shoulder Study, which is a PhD project for Angela Cadogan, with Dr Mark Laslett as supervisor. This study is very significant and is evaluating the reliability and validity of various clinical assessments of the shoulder. This research is in conjunction with the Auckland University of Technology (AUT).

2. A study is underway with lateral elbow pain and response to testing regimes.

3. We are in the early stages of evaluating the effect of rest in the first two weeks verses a more active approach following ACL reconstruction. This research is in conjunction with the AUT.

4. We are assisting with data collection in a hamstring repair study.

We are committed to good quality, clinically relevant research and are interested in partnering with any other providers who are interested.



New PHYSIOSOUTH Clinic Open

A brand new **PHYSIOSOUTH** clinic has opened at Pioneer Leisure Centre.

The new clinic is downstairs, adjacent to the newly developed gym and will increase the physio treatment rooms from three to four. The new clinic (pictured above) is modern and looks great.

The Pioneer Gym developments are coming along well with the gym expanding to take up the space previously occupied by the squash courts. The gym will soon bolster 42 new pieces of equipment which will be excellent for **PHYSIOSOUTH** clients requiring rehabilitation.

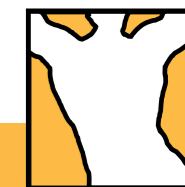
The new **PHYSIOSOUTH@Pioneer** clinic is up and running and the gym developments will be complete in October this year.

PHYSIOSOUTH at Le Tour

Back in July **PHYSIOSOUTH** founders and directors Graeme and Marie Nuttridge popped over to France to sample some of the roads and cols traversed by the biggest bike race in the world.

The pair rode some of the tour's legendary climbs, including the Col du Tourmalet, Col du Aspin and Hautacam, as well as getting inspired by watching the big names of this year's tour battling for the maillot jaune among the alps of France.

Since returning to NZ Graeme has been putting in lots of miles on the roads of Canterbury with the aim of competing in the Five Passes road tour at the end of October.



CORE STABILITY exercise principles

Akuthota V, Ferreiro A, Moore T, and Fredericson. Published in *Current Sports Medicine. Volume 7. 1 2008*

Core stability is essential for proper load balance within the spine, pelvis, and kinetic chain. The so-called core is the group of trunk muscles that surround the spine and abdominal viscera. Abdominal, gluteal, hip girdle, paraspinal and other muscles work in concert to provide trunk stability. Core stability and its motor control have been shown to be imperative for initiation of functional limb movements, as needed in athletes. Physiotherapists use core strengthening techniques to improve performance and prevent or treat injury.

Beginning a core programme

- Warm up with gentle movement (e.g. cat and camel).
- Learn to activate the abdominal wall musculature (not easy if you have had pain), there are a couple of strategies for this; we prefer the more simple 'brace'.

- Using the 'big three' (ref. McGill)

1. Bird dog

2. Side plank

3. Curl up (see at right).

Initially exercises are done supine (tummy up) and quadruped (on all fours) – always emphasising the lordosis or the natural curve in your back (position of strength and low load on the spine).

Progressions can be made to sitting, standing and more functional positions, as well as a variety of modifications aimed to increase muscle recruitment without overloading the spine (maximal muscle activity with minimal spine load).

Further progressions can be made functionally and in more work/sports specific postures with a multitude of variables to enhance effect. This includes strength, power and especially endurance.

Practices to avoid

Some traditional exercises maximise load through the spine, increasing risk of injury. These include:

- Heavy resistance exercises of the back extensors
- Roman chair exercises
- Traditional sit-ups
- Full flexion and rotational exercises
- Exercises done early after waking

Who should have core strengthening?

Studies have shown certain groups are more likely to respond to core exercises. Some indicators are:

- Younger age (<40)
- Greater flexibility (hamstring length > 90)
- Positive prone stability test
- Presence of aberrant movement (catching)
- Positive posterior pelvic pain tests
- Positive active straight leg raise test
- Positive pain provocation tests (ref, Dr M Laslett who works at Physiosouth)
 - Positive Trendelenburg test

Efficacy of core strengthening

There is ample evidence that individuals with chronic LBP or SIJ pain lack proper recruitment of core muscles and exhibit weakness. There is also evidence of increased fatigue, decreased cross section, and fatty infiltration of paraspinal muscles in patients with chronic LBP. Even athletes show weakness of the core and female athletes especially may be prone to ACL rupture



if core weakness is found. Core exercises have a strong theoretic basis for treatment and prevention of spinal disorders.

Good evidence support is mixed; there have been five randomized controlled studies on LBP which support core exercises, but methodology could have been better in these studies. Systemic reviews have found core exercises are helpful for spinal conditions but may not be superior to other therapeutic exercises regimes.

Summary

Core exercise has strong theoretical support; it makes sense to reactivate those muscles that have been turned off due to pain or pathology. It also makes sense that these muscles if reactivated may have a preventative effect. When combined with other effective treatments (such as the McKenzie system we use at **PHYSIOSOUTH**), they may have even more effect. They are active, they get people moving, they brace the spine to protect it, people can understand the theory, they are progressive and allow patients control over their own destiny – and it must not be forgotten that we all really want a flat tummy that looks great.

