

## **Chair based Yoga Benefits – Solva Care, Friday Club.**

### **Review of Outcomes, benefits and progress from 2019 sessions.**

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#### Introduction and Overview

This report is a generalisation of the group's overall progress and does not reflect individuals' needs or abilities and their unique development along their own developmental path. Every one of the individuals in the yoga group has had their own challenges, abilities and starting point. Some achievements have been emotional, experiential and sensational. Others have been more measurable, physical and visible.

This document is an overview of what the group have achieved during approximately 4 months of 1 x weekly session, lasting from 20 – 40 minutes in length. Once weekly sessions are the minimum recommended amount with 3x weekly being the gold standard number of sessions per week. Consistency and frequency has a direct correlation on progress; development versus the time it takes to see an improvement. Sessions must also be practiced regularly for maintenance of progress made.

Participating in planned movement is beneficial to developing and maintaining the body map, the somatosensory cortex, the motor cortex, cognitive functions, and the process of planning and executing movements, it quietens overactive brain structures commonly associated with prolonged stress, depression and anxiety and brings about greater neural activity and connectivity to brain structures associated with health and mental wellbeing.

All exercises involved moving with the breath, this helps to bring a certain focus for the brain and hence focuses the mind, more explanations of the benefits of this to follow below.

It was evident with most of the clients that the sessions brought about a sense of confidence. Confidence continued to build through the whole term, most noticeably when doing the standing poses and balances, with a number of individual victories. Some of the clients were quite challenged by the balances and their confidence grew as they achieved what seemed impossible to them in the first instance. Over the term confidence grew and the group grew in physical strength. This meant that more repetitions of movements were possible. Clients were also able to participate in more complicated postures as their confidence and ability grew.

Perhaps the greatest benefit, which was also reported by the participants, was stress reduction. All of the participants were considerably and visibly relaxed during the sessions and especially at the end. This type of benefit is difficult to measure.

Some of the benefits of having the weekly sessions meant that participants could have a little psycho-education about the benefits of some of the exercises. Clients also received recommendations for some of the most beneficial exercises that they could do at home.

Since practicing weekly sessions there have been noticeable benefits and developments in the group's ability, explained below.

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#### Shoulders

At the very start of the term clients found it difficult and some found it impossible to affect movement at the shoulders at all. With repetition and a consistent and gradual approach most in the group managed to locate their shoulders accurately and with ease (with the exception of those who have had stroke affecting mobilisation of limbs). Please see fig 1&2 on the exercise sheet for an example of the type of movements delivered to the group.

Why has this been a problem and why has it improved?

-Neural pathways not being exercised: In this instance clients consistently practiced movements from, fig 1&2, receiving input from verbal and visual instruction, received by the brain and turned into an action by the motor cortex in the brain. Over time and with consistent effort the neural pathways became more effective.

-Flexibility in the wrist, elbow and shoulder joint preventing full execution of the movement/s. Building on the ability of the neural pathway development, clients were then able to develop greater fluidity and range of motion at the shoulder joints. This has also meant that over time, individuals could practice more repetitions because they had developed strength in the shoulder and with associated muscles required for movement.

#### Legs and Feet

The calf muscle is actually comprised of two muscles which 'hug' deep veins that assist with the return of de-oxygenated blood back to the lungs and heart for re-oxygenation and re-circulation to the tissues in the extremities. Chronic sitting, where the lower limbs are immobile for long periods of time may lead to poor venous return, depriving tissues of vital nutrients especially oxygen, thus slowing cellular repair. There is a possibility that these types of exercises practiced in fig, 3, 4, & 5, may lessen the risk of leg ulcers in the long term, however it is important to remember that other lifestyle factors and health conditions will affect the potential for leg ulcerations as well. But the exercises certainly encourage venous return in all participants.

Mobilising the foot affects the ankle joints range of movement and over time, with consistent effort might support ankle stability by effecting motor control. There is the potential to slow the decline of ankle mobility and prevent the risk of falls.

(Effectiveness of Foot and Ankle Exercise Programs on Reducing the Risk of Falling in Older Adults. November/December 2013 Vol 103 No 6 Journal of the American Podiatric Medical Association)

Fig 6: Lateral spinal flexions will improve spinal mobility supporting daily activities such as reaching for objects from the floor beside an arm chair for example. This type of movement can loosen the muscles of the lumbar region and mobilise the muscles that support the spinal column. The option to elevate the arm might support any over-head reaching movements required on a day to day basis.

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Arm elevation or shoulder flexion involves exercising and movement of the muscles of the chest and shoulder; biceps and pectoralis, to name a few!

Fig 7: Hip rotations may help to increase blood flow, which is generally lower in the joints of the body. In turn, this supports to lubricate the synovial fluid in the hip joint, stimulating the flow nutrients for repair and, aids the eradication of by-products and waste materials resulting from cellular repair (sometimes known as free radicals). Movement is a key factor in reducing sensations of stiffness and pain in most arthritic conditions and will help to combat the effects of immobility in general. Hip rotations may help to maintain and improve range of motion which can aid efficient locomotion. Rotating the hip may involve muscles that are rarely or under-used.

#### The Torso

Fig 8: Spinal rotations are very helpful in assisting with the activities of daily living (ADL). Very often one needs to twist in order to reach something. One may need to twist around to see whilst reversing a car or twist to reach to get the seat belt. Maintaining this movement with exercise keeps the associated muscles supple, lowering the potential of injury when twisting movement is required. Twisting the trunk maintains and develops the range of movement to a more balanced functional level. Twists provide benefits to the muscles of the trunk, chest and spine muscles and aid in the mobility of the spine.

Fig 9: Spinal flexion, scapula adduction and shoulder extension. This movement counter poses the propensity to round the upper back, known as kyphosis, commonly associated with periods of sitting and looking down or forward. These movements can strengthen the Trapezius muscle, which is one of the major back muscles which keep the shoulders and spine in a balanced alignment. This movement encourages healthy function of the shoulders due to the activity and exercising of other muscles which are engaged during the action. It is important to mention that this type of movement encourages the muscles at the front of the chest, which are attached to the ribs, clavicle and sternum, are of great importance to the act of respiration. If underused or damaged, these muscles can become tight and ineffective in supporting the chest bones and soft tissue in order to breath easily. The exercise is very effective in freeing up the muscles of breathing; it allows the diaphragm to operate more fully so that the gaseous exchange can occur in the lungs more efficiently. There is a direct correlation between diaphragmatic operation and the effect on the nervous system; slow, steady, deep breathing (which happens at the bottom on the lungs) will activate the parasympathetic nervous system, which is associated with calm and peaceful states mentally and physiologically. PNS activation supports a reduction in stress hormones such as cortisol and adrenalin. In contrast short irregular breathing patterns tend to stimulate the sympathetic nervous system, which is associated with physiological and psychological states of stress.

#### Fig 9: Head and Neck

Two neck movements in Fig 10&11, lend themselves to supporting ADLs and maintaining range of movement. Neck muscles feed into the support of the upper torso and the muscles and bones

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structure for respiration. It is important to mention that the head is very heavy and requires support from balanced muscles also.

#### Standing and balance

These exercises are not on the sheet and for many members of the yoga group, should only be done with supervision and guidance from an experienced instructor.

Heel raises: Using a chair for light to full support as required, clients raised their heels off the ground and back down again. Over time the group were able to practice more repetitions and use the chair with lighter support progressing to one hand resting on the chair and even one finger or nothing at all. Clients practiced Tree pose, a famous yoga pose, which challenges balance. Again with the use of a chair as required, working towards longer holds and more challenging versions in many cases were performed. The benefits of the pumping action on the venous return are also effective here.

Balance is a complicated process; Input of information via various senses to the brain and appropriate, timely, cerebral output to the body and the body position, legs, feet and ankles to prevent falling, tripping and navigation of uneven surfaces whilst in motion. I will not go into details here and will just say that, weight bearing balancing exercises is the most effective way to maintain and develop the processes involved in balance and walking.

#### Co-ordination exercises

Working opposite sides of the body: opposite arm/leg raises, touching shoulder with same hand then moving that hand to opposite hip, building to repeat on both sides, these exercises all build and maintain healthy brain to body connections. One hemisphere of the brain controls the opposite side of the body. These types of practices balance the hemispheres of the brain and may support neural connectivity. Coordination movements such as these exercise the mind-body neural pathways and exercise the somatosensory cortex....after all if you don't use it, you lose it!

#### Breathing Practices

Breathing practices developed along a steady 4 month trajectory. In the beginning clients had little control or breath awareness. Initially the breathing practice was simply to bring the breath down and all the way back out again. Then we practiced directional breathing using the hands on various parts of the ribs, back and abdomen to guide the breath into specific areas. This helped clients to use the diaphragm muscle and lung space more fully, whilst building awareness to these areas. By the end of the year clients were practicing full lung breathing. The groups breathing became better controlled, longer and smoother, which was reflected in their ability to practice the 'Pranyama prana mudra' or invocation to energy breath. Breathing practice has great benefits for stress reduction/relief via major nerves, briefly touched on previously. Breathing practices can also affect the individual similar to that of a meditation, the focal point being the breath. Focusing on breathing down-regulates over active brain structures involved in states of stress and up-regulates brain structures associated with balance and well-being, such as the ability to regulate emotions better.

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There is a huge body of supportive evidence for the practice of mindfulness based interventions and the benefits of meditation is firmly evidence based.

#### Relaxation

Similar to the above practices, awareness is drawn to various body parts and instructions to allow the body to rest fully and, most importantly, consciously. The impact on the brain is similar in that structures dominant in stressed brains are down-regulated when attention is drawn to the various body parts.

#### Kirtan Kryia

This is a very specific practice with a strong body of evidence supporting its efficacy in helping prevent Alzheimer's Disease. The exercise involves joining thumb with index finger, middle finger, ring finger and finally little finger and going back again, reciting a chant of very short sounds as you come to each finger: Sa, Ta, Na, Ma. There is another visualisation element to this practice, which provides another meditative element, which was not delivered to the group this time around due to time constraints. The practice has been shown to slow cognitive decline and increases brain activity in the hippocampus, a brain structure which is associated with short term memory. There is a lot to say about this practice. To gain the full benefit the group should probably be practicing this on every session.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3423469/>

<https://www.anti-aging-articles.com/Kirtan-Kriya-Brain.html>