

Whiplash

Structural Yoga Therapy Course

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1 - Case study

“Saskia” is a 31 year-old financial administration assistant with a chronic whiplash condition. I met her at the health center where I teach yoga. When I first examined her – seven months after a car accident – she had very limited neck mobility and poor neck strength. Shoulder flexion was limited. Saskia was in constant pain, especially at the trapezius origins, and moving her neck exacerbated this pain. She had stopped working because of whiplash-associated disorders.

We worked together for three and a half months. During the first seven weeks, we gradually introduced the joint freeing series. As a result, Saskia’s neck mobility improved significantly and the upper trapezius regained its strength. Saskia could now move to end of neck ROM without increasing her pain. We then started with neck strengthening exercises. At this point, there was a relapse into severe lower back pain, most likely caused by osteopathic spine manipulation. When this pain subsided, Saskia resumed the full JFS series. About eight weeks later, shoulder flexion became normal. Currently, neck mobility is close to or beyond normal. However, the sternocleidomastoids are still weak.

Saskia’s overall pain level (4/10) has not changed from the beginning of yoga therapy, but there are fewer days when her pain peaks to 8/10. Saskia has taken up volunteer work that matches her current condition (a few hours a week).

a – Initial intake - review of symptoms, subjective pain level, their self-assessment and goals

Saskia is a 31 year-old, single financial administration assistant. Her sun sign is Taurus and she has a pitta-kapha constitution¹. Saskia has a friendly nature and is involved in energy healing (Shamballa) as well as making jewelry and encaustic art (colored beeswax on photographic paper). During our first interview, she mentioned several times that she “pushes herself too hard”, a comment typical for her pitta nature.

Saskia used to practice cardio-fitness (exercise machines, weight lifting) twice a week for 1,5 hours. This helped her to reduce weight. She stopped exercising because of a gall-bladder operation in July 2006. Saskia has a workout machine at home but this is difficult for her at present. She prefers to cycle, choosing smooth roads to avoid pain.

In October 2006, just after recovery from gall-bladder surgery, Saskia had a car accident that caused whiplash injury. She was a front-seat passenger in a car that was struck from behind by a heavy SUV². Saskia was taken to hospital after the accident and examined by a neurologist. Neither X-rays nor a CT scan revealed any damage. No further medical follow-up was given. She resumed work (part-time) within a week of the accident but had to stop after a few months because of whiplash – neck pain, headaches, fatigue, and loss of concentration. Her boss did not accept her slow pace and the mistakes she was making.

Her pain is concentrated at specific points - at the base of her skull on both left and right sides (trapezius origins), along the cervical spine, along the top of her shoulders, along the

¹ Saskia did the prakruti questionnaire on www.holistic-online.com and came up with vata 19%, pitta 48 %, kapha 33%.

²). Saskia’s head position – off-center and far away from her headrest – contributes to her trauma. Before the accident, her head was bent left forward while reaching for a drink. Her head then moved forward as her own car braked. Then her head moved backwards as her car was struck from behind and finally her head moved forward as her own car struck a car in front.

length of her thoracic spine (deep erector spinae, roughly T2 – T10) and in the lower back (near L3). The pain feels like pressure, sometimes like stabbing. She rates her pain at 4/10, both before and after ROM/MT testing³. If she pushes herself too hard, Saskia suffers from headaches, lack of concentration and even fainting (up to 8 weeks ago). She mentions that fainting may be a result of her low blood pressure (120/60). She scores 26 (out of 50) points on the Neck Disability Index {Vernon, 1991}. This classifies as a severe disability.

Saskia has seen a chiropractor for some time. He adjusted her cervical and spinal joints. She currently visits an osteopath and has massage treatments, both every other week. The osteopath does neck stretching, but usually no manipulation of the vertebrae⁴. The massage therapist also gives dietary advice. Her neurologist has suggested a multidisciplinary approach in a rehabilitation center. Saskia has refused this so far because she feels that the center will pressure her into working with her disabilities rather than healing her pain.

Saskia's goal is to become free of pain and to resume a normal working life.

b – Physical assessment and posture body reading

Saskia weighs 80 kg at 1,60 m height (176 lbs, 5 ft 3in), which makes her obese⁵. Body reading reveals a forward head, but no other anomalies. Her neck looks straight in the frontal plane. Saskia's weight is mostly concentrated around the waist and abdomen. This makes it impossible to test for SI joint movement. The scoliometer reveals a straight spine (< 1° deviations).

ROM measurements of knees and hips are normal. Her ankles are somewhat stiff. Saskia damaged both ankles by dancing competitions in her late teens.

All neck movements are limited by pain. The trapezius origins are the most painful, but the other points will increase to that pain level when moving her neck. Further details are given in the notes below the ROM table on the next page. Because of the pain, neck MT is done by counting breaths with Saskia lying down and holding the position (3 breaths, which scores as 2). Shoulder flexion is limited by pain along the top of the shoulders.

³ The visual analogue scale (VAS) is often used as an instrument to measure pain. A horizontal 100 mm long line is drawn with descriptors at both ends. The left hand side says "no pain" and the right hand side says "very severe pain". The client is asked to draw a vertical line indicating the pain level. It is important to stipulate which time frame is used – e.g. current pain level, daily average, weekly average {Waterfield, 1996}.

⁴ The osteopath did do spinal vertebrae manipulation once on June 27, 2007 with very adverse effects (relapse into severe lower back pain lasting several weeks). The massage therapist has been mildly adjusting vertebrae since May 29, 2007 using Dorn spinal therapy.

⁵ Her Body mass index BMI = weight (kg) /height² (m) = 31.

Range of Motion Assessments							
Joint Action	ROM	May 14	May 14	July 3	July 3	Aug 29	Aug 29
	Norm°	Left	Right	Left	Right	Left	Right
NECK							
Extension	55°	46 *		61		69	
Flexion	45°	23 *		54		56	
Lateral Flexion	45°	35 *	35 *	45	42	44 **	42 **
Rotation	70°	38 *	43 *	61	62	64 **	67 **
SHOULDER							
Abduction	40°	28	26	30	35	29	31
Adduction	130°	130	115				
External Rotation	90°	96	98				
Internal Rotation	80°	78	80				
Flexion	180°	145 *	145 *	145 *	145 *	180	180
Extension	50°	45	46				

(*) ROM limited by pain at specific points: flexion (trapezius origins on occiput), extension and lateral flexion (spine near T2), left rotation (trapezius origin, dizziness), right rotation (trapezius origin and lateral base of neck, dizziness), shoulder flexion: trapezius on top of shoulders.

(**) Passive lateral flexion is accompanied by a slight increase in pain (spine near T2). Rotations cause slight dizziness when held long enough for a goniometer reading.

Muscle Testing Assessments						
Joint Action	May 14	May 14	July 3	July 3	Aug 29	Aug 29
	Left, 1-5	Right, 1-5	Left, 1-5	Right, 1-5	Left, 1-5	Right, 1-5
NECK						
Extension	2		5		4	
Flexion	2		2		2	
Lateral Flexion	2	2	2	2	2	2
Rotation	2	2	2	2	2	2
SHOULDER						
Flexion	5	5				

c – Summary of findings

What is tight?	What is weak?	What needs to be released?
Upper trapezius	Upper trapezius	Upper trapezius
SCM (forward head)	SCM	
Erector spinae (cervical)	Erector spinae (cervical)	

SCM = sternocleidomastoid

Saskia 's neck ROM is limited by pain. Her shoulder ROM is normal except for shoulder abduction and shoulder flexion. Shoulder flexion is limited by pain when the trapezius engages towards the end of ROM. Saskia's neck muscles are weak (upper trapezius, SCM). She has strong arm and shoulder muscles because of her weights training.

d – Recommendations for loss of tone and flexibility

We focused on balancing vata first. During the first seven weeks, we gradually introduced the joint freeing series (for pain reduction and flexibility). Shoulder movements were done with the arms below horizontal to stay out of pain. Each session ended with abdominal breathing in savasana (vata balance). We also practiced sending prana to the painful areas (for pain reduction). When flexibility had improved, we introduced neck-strengthening exercises. A temporary relapse shifted the focus to prone relaxation, sphinx pose, and JFS neck movements only. Several weeks later, we resumed the full JFS series and this will be the prime recommendation for the coming months.

May 14, 2007 (intake)

I recommend seated twist (JFS #18, for pain in thoracic spine) and neck movements (JFS #19 - JFS #21 for neck flexibility). I suggest 3 – 6 repetitions with breath coordination and finishing with 5 min savasana (to balance vata). The emphasis is on mindfulness, breath, and prana. The exercises need to be done in an effortless way, free of target setting, and without increasing pain. Not at all like cardio-fitness!

May 21, 2007

Saskia reports seeing double images during a car drive last weekend. Fortunately, she was in the passenger seat. When working at her computer at home, Saskia adjusts chair, desk and screen in a proper way, as advised during her last job. Saskia goals remain unchanged – to become free of pain and to resume normal working life. However, she is worried that a future job will tax her too much (making mistakes because of poor concentration).

In addition to the previous exercises, I recommend a supine spinal extension (roll under shoulder blades for 3 – 5 min, feeling extension). This provides for a gentle stretch of nerve ends. I include gentle pelvic rocking for spine mobility (Appendix 1). I also add cat/cow (JFS # 6) because Saskia mentions lower back pain.

June 7, 2007

Saskia says she is doing fine, in spite of her constant pain. She points to the same points as before, but pain in the thoracic spine has disappeared. She looks a bit tired. She slept poorly last night. Generally, she falls asleep easily, but she will awaken in a strange neck position with pain. She then finds it hard to get back to sleep. I recommend abdominal breathing to get back to sleep at night.

We discuss the difficulties she has been experiencing with the medical doctors of the national health insurance scheme (WAO) and with the insurance company that is handling her claim. The doctors have been pressuring her to return to work. Fortunately, her family GP supports her need for more time to recover. I suggest that she take a friend or advisor with her on future visits. I advise her not to let these matters get in the way of her health, however difficult that may be. We discuss volunteer work as a stepping-stone to employment. I also mention that

Mukunda successfully treated a client suffering from four consecutive whiplash accidents. He found that ROM improves, strength increases and pain diminishes, in precisely this order.

We discuss Saskia's practice and scrap the supine spinal extension because it was painful (between the shoulders). We go through the entire JFS series together. Saskia really looks as if she has been practicing – her movements are more smooth and coordinated than before. This is very noticeable in the seated twist. Neck movements are still limited by pain in specific points: flexion (trapezius origins on skull), lateral flexion (near T2), left rotation (trapezius origin), and right rotation (trapezius origin and a point at the base of the neck).

Recommendation:

- Supine relaxation (3 min for vata balance),
- Pelvic rocking (gentle spine mobilization described in Appendix 1)
- Entire JFS series (for vata balance, pain reduction and ROM improvement)
- End with at least 5 min savasana with abdominal breathing (for pain reduction, vata balance)

Shoulder movements (JFS #13/14) are modified – done with low extended arms - because they caused trapezius pain in the normal position. Shoulder flexion (JFS #15) is done sideways for the same reason; neck movements are done to capacity (currently 3 – 4 reps). We practice relaxation at endpoint ROM together for all neck movements - breathing into the most prominent sensation and relaxing there (for pain reduction). This reduces the pain within a couple of breaths.

June 18, 2007

Saskia keeps a pain diary and this reveals that that massage treatment alleviates pain and that osteopathy has little effect.

I test neck ROM and again find significant improvements. Neck extension and flexion are beyond normal range. Lateral flexion is as good as normal. Neck rotations, especially left rotation, are higher but still limited by pain and some dizziness when holding the position long enough for a goniometer reading.

We go through the series together. Saskia has difficulty with ankle eversion (JFS #2), hip abduction-adduction (JFS #8), and elbow flexion (JFS #12). For hip movements I recommend limiting the range and keeping a natural lumbar curve (head up). For elbow flexion, I recommend low shoulders, which still causes trapezius pain, so we decide on keeping arms 45° below horizontal. For JFS #16 I introduce the concept of scapula abduction and adduction, which I had not stressed previously. For pain reduction, we practice relaxation at endpoint ROM for all neck movements while breathing into the most prominent sensation and relaxing there. This brings relief within a few breaths.

I compliment Saskia on her dedication to JFS and on her ROM improvements. I advise continuing with the program defined on June 7, 2007.

July 3, 2007

We spend a whole hour exploring Saskia's pain at all levels. On the physical level, Saskia most severe pain is located at the base of her skull (currently level 5/10; it varies between 3/10 and 8/10). Other painful points are: near T2 (4/10), between the shoulder blades (2/10) and near L3 (2/10). Her pain has recently increased after osteopathic manipulation of the vertebrae and after tripping while walking. I suggest that she discuss her increased pain levels with the osteopath. Normally, he does not adjust her vertebrae and then she reports no pain after seeing him.

When asked about her emotions, Saskia does not report strong emotions other than feeling rebellious about her pain. She denies feeling anger, but she admits to occasional sadness about her whiplash injury. Saskia soothes her physical pain and the rebellious feeling with meditation. Her mental picture is that pain prevents her from doing the things she "must" do, e.g. cleaning her house, making jewelry, working on the computer, and following a massage course. She reports that cleaning more than one room or working more than one and a half hours increases her pain to the point that she must stop. I urge her to respect her feelings and her current limitations, moving away from "I must" (superego) to "I want to".

We do a short breathing exercise, focusing on the pain at the back of her head. She relaxes into the exercise but also reports a shooting pain. I encourage her to maintain a yogic "witness" position, observing without being carried away. This applies to physical pain and a rebellious feeling alike.

Saskia will start to do volunteer work, something I suggested before. I encourage her but do remind her of her limits (1½ hours at a stretch). I insist upon proper ergonomics for her workstation: supported lumbar curve and a retracted head. Proper posture decreases pain. I mention that gradually resuming work will distract her from pain sensations.

I palpate the upper trapezius during neck movements. It feels somewhat tight over the entire range. I will ask her massage therapist to release this. I measure neck ROM and MT and add the following to Saskia's program:

- McKenzie head retraction in sitting (Appendix 1) after JFS # 19 and at one other moment daily (to correct forward head and for SCM toning). Gradually increase from three to six repetitions.
- First part of cobra with arms along the torso (for the upper erector spinae), three times.
- SCM toning (Chapter 18, {Stiles, 2000}) supine with arm sideways and elbows bent: Lift the head on an exhale and relax on an inhale. Do this while looking straight up and while looking at the left and right elbows. Gradually increase the repetitions from two to six.

Note that we are now including strengthening exercises in the program. Toning should not increase pain and I ask Saskia to contact me if she runs into problems.

July 12, 2007 (e-mail correspondence)

Saskia reports severe lower back pain (10/10). Her pain has not gone down since she visited the osteopath. Saskia is taking painkillers. I recommend rest for three to four days and gradual resumption of JFS to capacity. The strengthening exercises (cobra, SCM toning) should not be done for the time being.

July 17, 2007

Saskia clearly suffers from a relapse. She rates her back pain (near L3) as a 7/10, which masks her pain at the trapezius origins, rated at 6/10. Her lower back pain makes it difficult for her to get down on the mat. She also suffers from tingling sensations in her feet. These neurological symptoms were present after her car accident but disappeared long ago. A straight-leg raise increases the tingling. The lower back problems may be a result of her visit to the osteopath, tripping while walking, or by practicing a variation of cobra pose. Even recent improvements in neck mobility in combination with an impending visit to the insurance doctor could be a factor. When asked whether neck mobility improvements play a role, Saskia states that this is not the case. Our best guess is that osteopathic manipulation of the lumbar spine is the culprit. This was the first time that the osteopath manipulated her spine. Saskia has asked him to refrain from this in the future.

We do some gentle restorative yoga for the lower back and lots of breathing into the pain (pain pranayama). Her neck mobility is still good and there is no more pain along the top of her shoulders. I encourage her to gradually resume the former personal program. She should only do what she can at fewer repetitions and never move into painful ROM. At this high pain level, it is difficult for Saskia to discern where movements become painful. We make two modifications to the program because of her lower back pain: prone relaxation instead of supine relaxation and sphinx instead of cobra. Her whole program now looks like this:

- Prone relaxation (for lower back pain and vata balance)
- Sphinx pose (for lower back pain)
- Pelvic rocking (gentle spine mobilization described in Appendix 1)
- Entire JFS series including head retraction described in Appendix 1 (for vata balance and pain reduction)
- SCM toning as described by Mukunda Stiles {Stiles, 2000, chapter 18}
- At least 5 min savasana with abdominal breathing (for pain reduction, vata balance)

Saskia leaves happier and in a little less pain. She shows me a set of oracle cards ready for publication. She has also taken up volunteer work.

August 7, 2007

Saskia looks much more cheerful. Her pain has returned to 'normal' levels (4/10 for both trapezius origins and lower back). She cannot do the full series because sitting on the floor becomes painful for her lower back. We look at the neck and shoulder movements together. Saskia can perform all neck movements without increasing her pain. I advise her to keep her shoulders back and down and to relax neck muscles. SCM strength is still low (three breaths holding only), but she has not practiced this much. Saskia's shoulder muscles are strong, as before. I practice a relaxation technique - gently pressing trapezius origins on the exhale and releasing the pressure on the inhale. My recommendation is to continue with the current program. Saskia could do neck and shoulder movements in a chair when her back hurts. The insurance doctor (WAO) was impressed by Saskia's obvious back pain three weeks ago. She has relaxed the pressure and has stated that she takes Saskia's pain seriously. The car insurance company will pay for three hours of housekeeping assistance a week.

When asked about yoga therapy, Saskia states that it has increased her neck mobility. It has also decreased the peaks in her pain. Her pain used to shoot up to level 7/10 – 8/10 on some days. She says that she takes better note of her condition (pain) than before.

August 29, 2007

Saskia looks pale due to lack of sleep. She says that she has suffered from headaches, insomnia and fatigue these last few days. She has lost her car keys. She tripped while walking and this has increased her pain level (currently at level 4/10 – 5/10 on occiput, base of neck, and between the shoulder blades). She mentions that these points act like trigger points – when pressed the pain will radiate to other parts of her body. Her lower back is no longer painful, only a bit stiff. Neck ROM is normal or beyond normal. Shoulder flexion has increased to normal. Trapezius strength is good, but the SCM is still weak. Saskia can only hold neck flexion for 3 – 4 breaths with much trembling.

We do Saskia's individual program together. She can do the whole series now. This was impossible during the relapse six weeks ago. I just need to accentuate rhythm, breath coordination and gentle movements (for vata balance). We finish off with a long, guided meditation in savasana. Saskia's pain drops to 2/10 – 3/10 after JFS and relaxation.

I recommend continuing the present program. Shoulder flexion (JFS # 15) can now be done in the normal way. A regular lifestyle and daily JFS followed by a long savasana will balance vata. In the meantime, Saskia is learning how to live with her limitations, even though this is difficult for a pitta predominant person!

e – Results of your recommendations

Over the first seven weeks, neck mobility improved significantly. Saskia could now move to end of neck ROM without increasing her pain. The upper trapezius regained its strength. At this point, there was a relapse into severe lower back pain, most likely due to osteopathic spine manipulation. When this pain subsided, Saskia could resume the full JFS series. About eight weeks later, shoulder flexion became normal. Currently, neck lateral flexion and rotation are close to normal. Neck flexion and extension are 25% beyond normal. Saskia mentioned that she had higher than normal neck mobility before her accident, but this cannot be verified. Saskia's sternocleidomastoids are still weak.

Saskia's overall pain level (4/10) has not changed from the beginning of yoga therapy, but there are fewer days when her pain peaks to 8/10. Saskia has taken up volunteer work that matches her current condition (a few hours a week).

May 21, 2007 (one week after intake)

Saskia has done her small JFS series daily, sometimes twice daily. On some days she is limited to 3 – 4 repetitions; on others 6 are possible. She moves much more smoothly than last week. Neck flexion has increased by 5°.

June 7, 2007

Saskia has been doing her small JFS series daily, sometimes twice daily. Saskia limits neck movements to 3 – 4 repetitions to stay comfortable. There have been spectacular improvements

in ROM in only three weeks. In fact, neck extension and flexion are now normal. Lateral flexion and rotation show an increase by 5° and ~ 12°, respectively.

June 18, 2007

Saskia has been doing the full JFS series on a daily basis. She hardly misses a day. She does 6 repetitions for most movements, but limits neck movements to 3 – 4 repetitions. Saskia's pain level is unchanged, but there are further improvements in ROM over the last ten days. Neck extension and flexion are beyond normal. Lateral flexion is normal. Left neck rotation is higher, but right rotation remains unchanged. There are gains in shoulder abduction (to above 30°) and flexion (temporarily 156°).

Saskia has slept well during the past week. The week before, she successfully used abdominal breathing to get back to sleep.

July 3, 2007 (ROM/MT)

Saskia is a daily yoga practitioner, except for the last few days when her osteopath increased her pain level. Her osteopath manipulated her vertebrae. Normally, he does not adjust her vertebrae and then Saskia reports no pain after seeing him. Seven weeks into the yoga therapy program, Saskia's neck flexibility has improved considerably (less than 15% below normal). Flexion and extension are above normal. Saskia can move to end of neck ROM without increasing her pain level. Only shoulder flexion does that. Saskia's overall pain level remains unchanged (currently 5/10). Upper trapezius strength has increased dramatically (from 2 to 5). SCM strength is still poor, but we have not worked on this yet.

July 17, 2007

As recommended by e-mail, Saskia has temporarily stopped exercising because of extreme lower back pain (7/10). In spite of this relapse, neck mobility is still good. Saskia has started volunteer work.

August 7, 2007

Saskia's pain has decreased over the last three weeks (to 4/10 for trapezius origins and lower back). She can still do all neck movements to end of ROM without increasing the pain level. This is also true for the modified shoulder movements. SCM strength is unchanged and low. Volunteer work (2 hours once a week) is a bit fatiguing but does not noticeably increase pain.

August 29, 2007 (ROM/MT)

Saskia's pain level is around level 4/10 – 5/10. Saskia can do the whole JFS series again. For neck flexion and extension, ROM is 25% beyond normal. Saskia mentions that she had higher than normal joint mobility before her accident, but this cannot be verified. Perhaps neck extension will decrease when SCM strength improves in the future. Other neck ranges of motion are less than 10% below normal. During passive tests, only lateral flexion triggers pain between the shoulder blades. Holding neck rotation long enough for a goniometer reading induces some dizziness. Shoulder flexion has increased to normal (180°), so that she can do JFS # 15 in the normal way. It no longer requires modification to a sideways movement. A yoga therapy session can drop the pain by two points.

2 a – Name and description of the condition

Whiplash is an acceleration-deceleration mechanism of energy transfer to the neck. It often occurs during car accidents. The rapid neck movement typically results in damage to ligaments and muscles. Although rear-end and side-impact car accidents are the most common cause, similar injuries may result from roller coaster rides, diving, rugby, or by being hit or shaken.

Usually whiplash injury causes damage to the soft tissue of the spine (ligaments, muscles and tendons). It is often accompanied by neck pain, headaches, reduced neck mobility, and dizziness. These symptoms may last for a couple of days and often subside in three to six weeks. In other cases, whiplash symptoms will persist for months or years. More severe damage is also possible and this involves neurological symptoms or even fractures. There are several grades of whiplash injury:

Quebec classification of whiplash associated disorders {Spitzer, 1995}	
Grade 0	No complaints or physical signs
Grade 1	Complaints of neck pain, stiffness or tenderness only but no physical signs are noted by the examining physician
Grade 2	Neck complaints and the examining physician finds decreased range of motion and point tenderness in the neck
Grade 3	Decreased range of motion plus neurological signs such as decreased deep tendon reflexes, weakness, insomnia and sensory deficits
Grade 4	Neck complaints and fracture or dislocation, or injury to the spinal cord
Symptoms and disorders than can be manifest in all grades include deafness, dizziness, tinnitus, headache, memory loss, dysphagia (difficulty swallowing), temporomandibular (jaw) joint pain.	

b – Gross and subtle body common symptoms

A whiplash victim will often be in acute neck pain during the first four days. When this subsides, a wide range of other symptoms remains (table on next page).

The symptoms include neck and back pain and reduced neck mobility. The whiplash motion may also affect the head – even without impact – and this accounts for symptoms like sensitivity to light, diminished or blurred eyesight, tinnitus, difficulties in swallowing, pain in the jaw joint, memory loss and concentration problems. Dizziness occurs when the nervous system receives conflicting information from different parts of the body’s balance system (eyes, inner ears, the body’s sense of where it is in space). In the case of whiplash, sensory receptors in damaged cervical facet joints may relay incorrect information. Damage to the cervical discs can put pressure on the nerve roots, which then causes pain in the arms and tingling sensations in the hands. All of these symptoms may occur straightaway or with a delay of up to three days. Concentration problems, fatigue, anxiety, depression, and sleeping problems often accompany whiplash injury.

When symptoms persist for more than six months, whiplash has become chronic. There are conflicting data on this. The estimated proportion of people who report pain and disability after six months varies between 19% and 60% {Spitzer, 1995}. The percentage of people who are still absent from work after six months varies between 9% and 26% {Stovner, 1996}. Some whiplash victims (guestimate 10% – 45 %) will have symptoms for more than two years.

Whiplash symptoms {Stovner, 1996}		
Symptoms reported	< 4 weeks after the	6 months later
Neck pain	90 – 100 %	10 – 45 %
Reduced neck mobility	40 – 95 %	14%
Headache	50 – 90%	8 – 30%
Sensitive to light	30 – 80%	
Pain in shoulder or arm	40 – 70%	5 – 25%
Dizziness	20 – 70%	3 – 20%
Problems concentrating	20 – 60%	5 – 21%
Fatigue	60%	
Anxiety	45 – 50%	5 – 12 %
Diminished eyesight	20 – 45%	3 %
Depressive complaints	45 %	5 – 10 %
Back ache	35 %	
Sleeping problems	35 %	
Irritability	20 %	9 – 14 %
Tingling sensations in the hand	10 – 15%	
Loss of libido		7 %

c – Related challenges – lifestyle, diet, limitations on activities

Whiplash injury can have a significant impact on a client’s family, social, and working life. Some will be limited in their daily activities (child care, housekeeping), others have to give up favorite activities (tennis, rugby), and some will not be able to work for a long time. The disorders that accompany whiplash injury, such as concentration problems, fatigue, anxiety, depression, sleeping problems and irritability - are serious enough by themselves.

Saskia - my case study client - had to stop working because of her whiplash symptoms (headaches, lack of concentration). She finds it difficult to clean her house and can no longer participate in her favorite sports (diving, fitness). Ten months after the accident, she has still not resumed work.

3 – Ayurvedic assessment and Ayurvedic based yoga recommendations

The first few days after whiplash injury there may be some inflammation and swelling due to torn ligaments. The inflammation is a pitta imbalance, which can be treated with ice. Put ice in a towel (to avoid direct contact with the skin) and apply this for 15 minutes three to four times daily. Alternate this with a hot towel once a day to soothe soreness.

Subsequent whiplash symptoms like neck pain, limited mobility, headaches, fatigue, and loss of concentration are indicative of a vata imbalance. Pain reduction is achieved by rest (during the first few days) and by gradually resuming a normal daily rhythm afterwards. Relaxation (e.g. supine abdominal breathing) will balance vata. So will the joint freeing series. Gently moving the joints in coordination with the breath is the best strategy.

A stiff neck is a sign of kapha imbalance. Gentle massage will help to relax tight muscles. Gradually resuming normal daily life will keep the neck mobile and prevent tightening of scar tissue from causing further neck stiffness.

4 – Common body reading

Body reading will generally reveal a stiff and painful neck. Neck and shoulder ROM will be below normal. The primary neck movers (SCM, trapezius) may be weak.

Whiplash injury can happen to anyone. Chronic whiplash conditions are more common for women, the elderly, and clients with previous head trauma {Bekkering, 2005}.

5 – Contraindicated yoga practices and general activities to modify or eliminate

During the first four days after injury, all but the least afflicted clients should rest. Certainly no work, yoga postures or sports activities should be undertaken.

During the first weeks after the injury, most activities should be modified. Avoid prolonged static postures because they stress the cervical spine (e.g. reading, personal computer, watching TV, painting a ceiling). All contact sports (e.g. football, rugby) and sports involving explosive force or overhead arm movements should be avoided (e.g. basketball, tennis, golf).

If severe pain does not subside within ten days after the accident, the client should return to the doctor. The client may be referred to a neurologist who will use diagnostic tools like X-ray and MRI scanning. The most severe cases of whiplash involve serious neurological symptoms and even bone fractures. Structural yoga therapy should not commence until these complications have been ruled out. Pranayama for pain management is always an option, though.

Some whiplash clients showing up for yoga therapy may be in severe pain. The SYT exam should not exacerbate their condition. The therapist should make clear to the client that the ROM tests should not increase the existing pain level. Keep communicating with the client and watch his facial expression to ensure that is so. Alternatively, the client could move into the neck and shoulder test position by himself (seated position). For muscle testing, the client moves into the position and holds it while counting breaths. A count of 12 breaths corresponds to strength of 5 {Stiles, 2000, chapter 18}.

Asanas that involve the neck, shoulders and upper back may initially do more harm than good. Avoid all poses that involve either toning or stretching of the sternocleidomastoid (SCM) and upper trapezius. This includes the following SYT asanas: extended triangle, downward dog, bridge pose, supported shoulder stand, abdominal twist, spinal twist, cobra, camel pose, face of light. Poses in which the arms are raised above shoulder level are likely to be painful and should be modified. E.g., perform warrior poses with hands on hips and the tree pose with hands in namasté. Poses that use the neck as a weight-bearing element (fish, headstand, plow, shoulderstand) are strictly forbidden.

Postural improvements will reduce neck pain {McKenzie, 2001):

- When seated, always maintain a lumbar curve by using a chair with a lumbar roll. This is a prerequisite for maintaining a proper neck position: Always maintain a retracted head. Retract the head as far as it will go and then release the last 10% of this movement. There are many references giving ideal ergonomics for the office workstation (feet on the

floor, thighs horizontal, lumbar spine supported, straight upper arms, horizontal fore-arms, head looks down ~20° at the screen, use a book holder and a telephone headset).

- Modify working routines to have frequent breaks. Never sit for more than an hour without retracting the head and extending it five or six times. This applies especially to computer work and to long-distance driving.
- Sleep on a firm mattress and do not sleep on the stomach. Use a pillow that gives proper support to both head and neck. The pillow should fill in the natural hollow between the head and neck whilst keeping the head in a neutral position. Feather pillows are best, followed by fillings of chips made of rubber or foam plastic.
- Never slouch or protrude the head after vigorous activity. Thoroughly exercised spinal joints may distort if they are overstretched due to poor posture.

Whiplash injuries can be prevented to some degree by adjusting the car's seat. Obviously, the headrest should be at the proper height – top of the headrest level with the top of the head. In the driving position, the headrest should never be more than 6 cm (2,5") away from the back of the head. For most of us this means that we should adjust the backrest forward {Stemper, 2006}.

6 – General recommendations for the condition

a – Therapeutic/free of pain

The first four days after a whiplash injury are focused on dealing with acute pain and inflammation. The GP may prescribe anti-inflammatory pain medication (e.g. Ibuprofen). Most clients should rest, except for those with mild (grade 1) injuries. Ice packs may be used for reduction of swelling. No yoga is to be practiced, except for relaxation in savasana and gentle pranayama to combat pain, e.g. abdominal breathing. Clients should be informed about the nature of whiplash injury and the recovery process. They may benefit from the knowledge that the long-term outlook is inherently unpredictable and that a gradual resumption of normal activities promotes recovery. Wearing a neck collar is no longer recommended for grades 1 – 2 whiplash {Bekkering, 2005}.

Rough time indication ⁶	Objective	Yoga methods
First 4 days	Acute pain reduction	Ice, rest, pranayama for pain reduction
3 – 6 weeks	Pain reduction and neck mobility	Pain pranayama Very gentle joint freeing series (with modified shoulder movements)
6 weeks – 6 months	Flexibility and strength	Joint freeing series Exercises for toning neck and upper back
6 months – 1 year	Strength and flexibility	Asanas for neck and upper back

Over the next three to six weeks soft tissue healing takes place. During this period, the client should gradually resume normal activities. This is the prime recommendation made by Dutch

⁶ The time frame is given only to show that there are different phases to the recovery process. Yoga therapy should always adapt to the individual and to the huge variability in whiplash symptoms.

physiotherapists, whose association states that the effects of massage and neck mobilization have not been sufficiently researched or their effectiveness has not been demonstrated {Bekkering, 2005}. These physiotherapists limit themselves to providing information on the whiplash condition and helping their clients to improve their coping style. However, structural yoga therapy could be applied in an attempt to reduce pain and to restore neck mobility. If a gradual and gentle approach is taken, the potential benefits of yoga may outweigh any risks and the time investment made by the client. The effectiveness of yoga therapy should be judged on a case-by-case basis, and this will become clear within a few sessions.

Whiplash pain is a vata disturbance. Therefore, the prime yoga therapy recommendation is the joint freeing series (JFS) coordinated with the breath. While it is important to work on the neck, it is advisable to practice the entire JFS series. The movements should not increase pain. Reduce the range and/or the number of repetitions if this is so. Shoulder movements should be modified to stay out of pain: Elbow flexion, shoulder rotation and shoulder abduction are done with extended arms below horizontal. Shoulder flexion is best done sideways. These modifications minimize the use of an injured upper trapezius.

As a refinement, the therapist may encourage the client to hold neck JFS positions at the end of ROM, asking the client what he feels and deliberately relax into the position with the breath. The therapist could also do some gentle bodywork at the end of the session. In a supine position, move the client's head into lateral flexion (or rotation) and ask him to relax into your hands. Both are pain reduction techniques.

In fact, pain reduction techniques should always be included in the program. Mukunda Stiles teaches several methods. He recommends the use of more than one technique because pain has vata qualities and changes all the time.

- Breathe into the painful area. First describe the pain and then breathe into the pain consistently for ten breaths. Allow your body to exhale, but keep the prana there. Focus your attention on the pain and watch what happens. Mukunda Stiles says: "The breath is the bow, awareness is the arrow and the center of pain is the bull's-eye."
- Direct the breath below the navel consistently for two to three minutes while supine with the hands on the abdomen.
- Feel the endpoints of the breath – the upper breath, the lower breath. Put your hands on the endpoints of the breath and observe.
- Do the joint freeing series coordinated with the breath (ujjayi samavritti pranayama).

Have the client describe the physical feeling, the emotions, and the mental image of the pain. Use the breath to calm a possible emotional release. See if the description provides leads for improving on life conditions. Decreasing stressors will reduce pain.

When pain has reduced and some of the stiffness has gone, proceed with strengthening exercises. It is best to wait at least six weeks after the accident before muscle toning. This gives soft tissue a chance to heal, although it should be noted that soft tissue might need six months or more to regain its full strength. Therefore, use a gradual and risk-free approach. Simple exercises are generally safer than the more complex asanas. A general principle of yoga therapy is to strengthen weakened muscles, especially those below the pain area. For whiplash,

neck, upper and middle back muscles need to be strengthened. Muscles on the opposite – chest – side may need to be stretched.

Depending on the outcome of the muscle tests, make a selection of the exercises in the following table. Have the client move in and out of the poses on the rhythm of the breath. Gradually increase the number of repetitions over time. Always avoid pain, vibration, and muscle spasm.

Weak muscles	Recommendation
SCM	Supine SCM toning {Stiles, 2000}, ch.18
SCM	Supine twist with feet on the floor and knees together
Upper trapezius, levator scapulae, erector spinae	Cobra movement with arms extended backwards and back of hands on the floor
Upper trapezius, levator scapulae, erector spinae	Sphinx, lift and lower head in the pose
Middle & lower trapezius	Cat: focus on the upper back – squeeze shoulder blades on the inhale and broaden them on the exhale
Middle & lower trapezius, posterior deltoid, teres major, triceps, latissimus	Yoga mudra arms – kneeling position with hands behind back and fingers interlaced. Squeeze shoulder blades; reach down with knuckles, then lift arms towards ceiling.
Middle & lower trapezius, triceps	Cat bows with elbows close to torso

Refer the client to a body-worker. Gentle neck and shoulder massage may be beneficial and this should be established in practice.

Avoid contact sports and activities with long static neck postures (section 5).

Focus on proper sitting and sleeping posture (section 5).

Encourage the client to keep an activity diary for a week. The diary should include activities, their duration, and the effect on pain. There should be about ten entries per day. The diary can be used to identify activities that increase pain. These activities should be modified, shortened, or eliminated. The client may need help in accepting the limitations imposed by whiplash.

Encourage the client to talk about the car accident. Do this in detail to help the client to detraumatize. If necessary, ask a psychologist to help your client. A technique like EDMR (eye movement desensitization and reprocessing) may be effective: only three two-hour sessions are required to treat trauma {Karsten, 1998}.

Encourage the client to develop active coping mechanisms. Generally, clients who seek distraction and strive for an active life will suffer from less pain. Yoga therapy is beneficial because it gives clients a degree of control over their own health. Support the client in resuming normal activities. Both overloading and underloading can be detrimental to recovery. It is best to gradually resume activities with sufficient time for breaks and rest. Lend a listening ear when insurance doctors and lawyers make life difficult. Litigation can obstruct the path to health.

A multidisciplinary approach is often recommended for whiplash conditions lasting for more than three to six months. A rehabilitation doctor will take charge of the client with the aid of a psychologist, physiotherapist, ergonomics expert and a social worker.

b – Stabilize situation including lifestyle recommendations

Six weeks after the accident, soft tissue will have healed to a large degree. However, it may take six months or more than a year for it to regain its former strength. Once ROM and strength have improved, pain will generally be reduced. At this point, it is possible to resume asana practice. Be gradual and gentle when introducing asanas that tone or stretch the neck muscles (listed in section 5).

The following asanas are recommended {Stiles, 2000}:

Sternocleidomastoid (SCM)	Strengthen	Spinal Twist, Extended Triangle, Camel
	Stretch	Twisting poses
Upper trapezius	Strengthen	Camel, Cobra, Locust
	Stretch	Bridge

Do not practice asanas that put weight on the neck (fish, headstand, plow, shoulderstand). Avoid contact sports and maintain proper sitting and sleeping posture as described in section 5.

c – Maintenance and long-term considerations

Continue with proper sitting and sleeping posture.

Continue with some form of neck exercise, e.g. JFS movements with breath coordination. The frequency depends on what is needed to stay out of pain (from several times a day to once a week).

7 – Questions and answers on Yoga Therapy from www.yogaforums.com

For general information on neck pain, please consult the SYT papers by Kathleen Andersen (2006) and Arden Pierce (2004). There were no prior references on the forum regarding whiplash. When asked about whiplash, Mukunda Stiles kindly provided the following information:

Forum on 05-10-2007 06:48 PM:

I will be interviewing two potential case study candidates within the next few days. One lady has double lumbar hernia and is in pain (she had to lie down on the floor during a meeting I attended last week). The other lady suffers from neck whiplash following a car accident that is causing fatigue and inability to work. She can move her neck a little bit. Seems serious. My main question right now is:

Q. Is it allowable to do ROM and MT tests on these cases? (Cautiously).

A. You must do exam; but it is to be modified for all clients in pain. It can be a visual of JFS with you using tool. That is permitted if they are in too much pain. MT can be done by holding the point in isolation and seeing how many comfortable breaths they can take before stress is felt. Either one would be challenging clients and need commitment. Fortunately we have papers done on both these topics so that can give you much reference already.

I have nothing to go on for whiplash. No SYT paper and no personal experience.

A. I can give you more details in person soon but for now see Arden Pierce and Kathy Anderson papers on neck pain.

Q. How do you feel about supine relaxation position with pad under shoulders to get slight extension of upper back?

A. It is fine and safe

Q. Are JFS movements for neck and shoulders okay to do?

A. Absolutely. Just limit the ROM if there is pain. It is repetition of motions with breathing coordination that creates prana; that is what gives freedom from pain. ROM increasing results from that; it does not arise from trying to move farther in the JFS or asana practice.

Q&A, London SYT course on June 1, 2007

During the London course, Mukunda Stiles provided additional information, which I have paraphrased here: Because whiplash is a vata condition, the emphasis of SYT treatment should be on pain reduction and increasing ROM first. Toning comes later. The best approach is to use the JFS series with breath coordination, provided that it does not increase pain. For inflammation (pitta), decrease the number of repetitions. For vata pain, decrease the ROM. While it is important to work on the neck, it is advisable to practice the entire JFS series. If need be, shoulder movements can be modified to stay out of pain (e.g. shoulder flexion done sideways and shoulder abduction below horizontal with extended arms). Generally, clients will first improve ROM, then improve in strength and finally become free of pain, in this order. Mukunda Stiles successfully treated a client who had suffered from four consecutive whiplash accidents!

In addition to working on the JFS series, the therapist may encourage the client to hold at end of ROM, asking her what she feels and to deliberately relax into the position with the breath. The therapist could also do some gentle bodywork at the end of the session. In a supine position, move the client's head into lateral flexion (rotation) and ask her to relax into your hands. Toning can be done later on. Ask the subject to move to end of ROM and hold there while counting breaths.

It is important to talk about the accident that caused whiplash. Do this in great detail to encourage the client to re-experience the accident. At the same time, distract her from time to time with a weird question (e.g. you experienced pain in your neck. What did your foot feel like?). This will help the client to detraumatize. Was there any life stress at that time? Has this stress lessened? If life gets better, pain will go down. How is the client coping with pain and her life situation? Discover how the mind is involved in holding the pattern of pain. The client should be encouraged to verbalize the conclusions. Do not make assumptions for her! Remember that whiplash will prevent her from thinking clearly. If there is litigation, inquire if this is an important factor. Is it influencing the healing process?

8 – References and websites

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9 – Appendix

Pelvic rocking the Feldenkrais way {Feldenkrais 1972}: Lay down supine, lift both knees and put your feet on the ground at a comfortable distance from your pelvis. Imagine that there is a clock on the back of your pelvis. Its center is located at the point where you feel the most weight. The 6 is at the tailbone and the 12 towards the head. Slowly and smoothly, shift your weight between the 6 and the 12 positions. Repeat 10 times and rest with extended legs.

Return to the supine position with knees lifted and feet on the ground. Relax your entire spine. Imagine that there is a smaller clock on the back of your head. The 6 is near your neck and the 12 closer to the crown of your head. Return to the clock on your pelvis. As you shift your weight between 6 and 12 on the pelvis, do you note that similar movements are happening at your head clock? Both clocks will be 6 simultaneously and both at 12. Repeat 10 times and relax.

McKenzie head retraction in sitting – chicken tuck {McKenzie, 2001}: Sit in a comfortable position. Look straight ahead. Keep looking straight ahead for the duration of the exercise. Allow yourself to relax completely and note that your head will protrude a little. Slowly move your head backwards as far as it will go. Keep your chin tucked down and in; in other words do not look down or look up. When your head is pulled back as far as it will go, this is the retracted head position. Maintain this position for a few seconds and then relax. This will automatically allow your head to protrude. Inhale while retracting the head and exhale while relaxing. Include this exercise after neck flexion/extension (JFS #19). McKenzie recommends 10 repetitions per session and 6 – 8 sessions per day (once every two hours) to alleviate neck pain. For yoga therapy purposes, once or twice a day should be enough. Chickens do this exercise all the time!

10 – Biography

Willem was born in The Netherlands but has lived in many other countries as well. He was trained as a chemical engineer and as a hatha yoga teacher (4 years, 600 contact hours). He finds his inspiration in Zen meditation and in classical yoga. He loves helping others to resolve their health issues with yoga.