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How can acupuncture help to reduce jet lag complaints?



Thesis
Total Health,
Acupuncture

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Photo title page by Dennis Heil

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1. Preface

1.1 Motivation

The main question writing this thesis was: “How can acupuncture help reducing chronic / social jet lag”

Due to my marriage to my husband Dennis, a KLM flight attendant I have the privilege to travel a lot.

Because of his work I got a great insight in how “people who fly” live, what they do enroute and how they try to recover at home. It seems there is a pattern; when people start to work in the airline business, they are mesmerized by the glamour of it, fly to exotic and exciting places, stay there for a day or more, and go back home. The first couple of years, there is jetlag but it’s due able, they are tired but recover relatively quick. However, after a couple of years you see signs of insomnia, chronic fatigue and episodes of dejection and even depression. When they fly longer and still on an 80%-100% average, you see a higher rate of chronic insomnia, burn-out like complaints, or real burn out, physical discomfort and worse.

Due to my work in the health, yoga and fitness industry I was already searching for a “cure” to this jet lag problem. Healthy food and supplements, exercise on a regular base, doing all kinds of things to create better sleep patterns and to reset the biological clock. Even though you see improvement, it still doesn’t seem sufficient.

This was my motivation to study acupuncture, because I know acupuncture could be the key to help people to reset, and change their circadian clock faster, overcome jet lag in a faster and better way. It was obvious that I would write my thesis about chronic and social jet lag. During my research I found out that within our society social jet lag is even a bigger problem and is one of the sources of many modern diseases.

1.2 Word of thanks

I would like to thank the following persons who helped me, guided me, and supported me during this process.

First, thank you Kelly Koks, for being my supervisor and guiding me through this process especially in the process before I started to write!

Thank you Dennis Heil for supporting me in so many ways and above all in this for being my Guinee pig!

Thank you, Claudia Telkamp and Ann Vansteenkiste, for being such great clients, coming straight from a long flight to the studio for treatments and for giving me updates and feedback.

Thank you, Nanda Leenders and John Taylor, for always letting me use the studio for my treatments.

Thank you so much Nico Kaandorp and Mikel Hengeveld for letting me study in your Amsterdam house, and in Portugal and for taking care of me and feeding and me!

Thank you, Ehud Neuhaus, for helping with the graphics and design.

Much thanks to my other teachers Carstien Nijeboer, Darwin Rangkuti, Frank Rooze and Laura van Loon for taking the time to answer my questions related to my thesis. And a final thanks to my fellow students who are always a support in the whole process of studying.

1.3 Preparation

For my research I read many books, articles, and websites about the western view on sleep, sleep disorders and how to change your lifestyle. As well I read books about the same subject seen from a TCM (Traditional Chinese Medicine) perspective. Jet lag and social jet lag are mentioned in most books, articles, and websites I've read. The Bibliography you can find on page: 28

For my clinical research, I treated 3 flight attendants from KLM a couple of times, mostly directly after an intercontinental flight. Or after a European flight where they had to wake up very early. I treated them in the classical Chinese acupuncture way using Zangfu; resetting the Qi flow and the meridian clock; and with the Dr. Tan balance method. The report you find on page: 24

I set out an easy survey, not to get a "result" but to get insight in what in my opinion are the most triggered meridians when suffering from Jet lag, and if people in the flying industry, already do something during work themselves to overcome jetlag. The results of this survey you find on page: 27

what is Jet lag and how does this cause fatigue?

2. Why do we sleep?

2.1 what is sleep from a western perspective

Sleep is a naturally recurring state of mind and body, characterized by altered consciousness, relatively inhibited sensory activity, reduced muscle activity and inhibition of nearly all voluntary muscles during rapid eye movement (REM) sleep, and reduced interactions with surroundings. It is distinguished from wakefulness by a decreased ability to react to stimuli, but more reactive than a coma or disorders of consciousness, with sleep displaying different, active brain patterns. ⁽¹⁾

Sleep is common to all mammals and birds, and also seen in reptiles, amphibians and fish.

Sleep occurs in repeating periods, in which the body alternates between two distinct modes: REM sleep and non-REM sleep. A well-known feature of sleep is the dream, an experience typically recounted in narrative form, which resembles waking life while in progress, but which usually can later be distinguished as fantasy. During sleep, most of the body's systems are in an anabolic state, helping to restore the immune, nervous, skeletal, and muscular systems; these are vital processes that maintain mood, memory, and cognitive function, and play a large role in the function of the endocrine and immune systems. The internal circadian clock* promotes sleep daily at night. ⁽²⁾

Yet daylight isn't the only signal that the brain can latch on to for the purpose of biological clock resetting, though it is the principal and preferential signal, when present. The brain can also use other external cues, such as food, exercise, temperature fluctuations, and even regularly timed social interaction. All of these events have the ability to reset the biological internal clock.

The twenty-four-hour biological clock sitting in the middle of our brain is called the suprachiasmatic nucleus.

Supra meaning above, chiasma meaning crossing point, the crossing point is that of the optic nerves coming from your eyeballs. Those nerves meet in the middle of your brain, and then effectively switch sides. The suprachiasmatic nucleus is located just above this intersection for a good reason.

Its "samples" the light signal being sent from each eye along the optic nerves as they head towards the back of the brain for visual processing. The suprachiasmatic nucleus uses this reliable light information to reset its inherent time inaccuracy to a crisp twenty-four-hour cycle to prevent any drift. ⁽³⁾

Sleep is essential for survival. The purposes of sleep and mechanisms of sleep are only partially understood and are therefore the subject of intense research. Sleep is a highly conserved behavior across animal evolution. ⁽⁴⁾

* Circadian clock: an internal twenty-four-hour clock within your brain that communicates its daily circadian rhythm signal to every other region of your brain and every organ in your body. Walker, M. PhD. Why we sleep scribner page 14
(1,2,4) Wikipedia <https://en.wikipedia.org/wiki/Sleep>
(3) Walker, M. PhD. Why we sleep scribner page 18

2.2 What is sleep From a TCM perspective

In TCM, the notion of normal sleep is reflected in the terminology used, that is; *an mian* 安眠 = peaceful sleep. The character for “An” 安 could be translated as: quiet, peaceful, calm. As in calming the Shen*. And the character “Mian” sleep 眠, is build up from the characters for eye and for community.

An mian could mean: “withdraw from the community to merge with the self.”

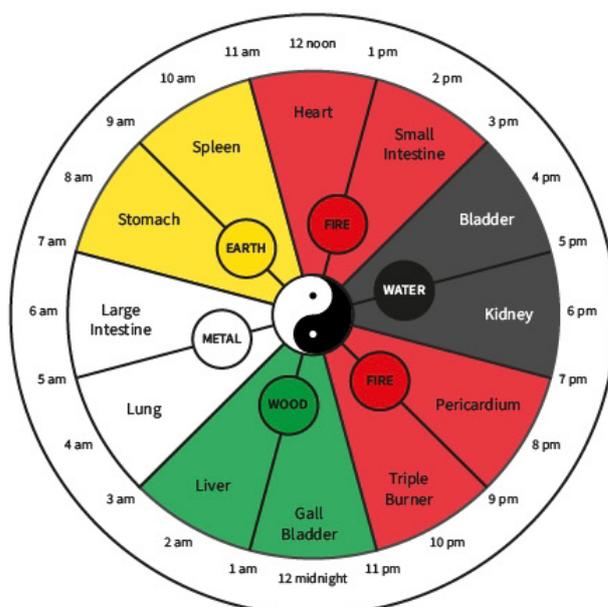
TCM looks at the sleep-wake cycle as a dynamic state, using theories like *yin and yang*, circulation of *Qi* (energy) and activity of the *Shen* (spirit) to understand and explain the sleeping process.

While sleeping the body recharges, this is important to maintain the balance of yin and yang within it. The sequence of daily and seasonal cycles is the original expression of the waxing and waning of yin and yang in the universe. The human body is programmed to live in harmony with this rhythm.

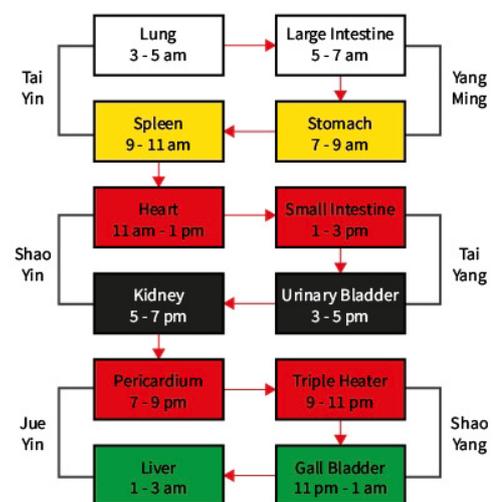
LingShu: "When yang qi is at its limit and yin qi is abundant, one's eyes are closed. When yin qi is at its limit and yang qi is abundant, one is awake."

We naturally go to bed at the yin predominate time, while we wake up at the yang predominate time. From a western perspective we call this the circadian clock.

On a daily basis, qi follows a specific time schedule and pathway to circulate within the body. TCM believes that qi is more present in different meridians at different times. This is called the meridian clock or the meridian flow chart.



Meridian clock (fig 1)



Qi flow chart (fig 2)

*Shen translated could mean “spirit” or “soul”, in TCM our soul or spirits has 5 aspects: Shen, Hun, Po, Yi and Zhi
fig 1 and fig 2 by Ehud Neuhaus

The sleep-wake cycle is regulated by this energy cycle, in particular by two types of qi: Wei (protective) qi and Ying (nutritive) qi.

Wei qi has a yang property because it has more functional characteristics such as fighting EPF (external pathogen factors) or controlling sweating. Wei qi circulates through the body 50 times per day. In the daytime, it flows along the yang meridians, which starts from the bladder meridian, passes through the small intestine-, gallbladder-, sanjiao- and stomach meridian, to finally reach to the large intestine meridian.

From sunrise to sunset, wei qi flows around the yang meridians 25 times, which enables the body function to be active and remain awake. At nighttime, wei qi enters the yin meridians and circuits around and through the kidney-, heart-, lung-, liver and spleen meridians 25 times.

There are two extra meridians, the Yin Qiao Mai and Yang Qiao Mai that help strengthen the links between the meridians, and also controls the opening and closing of the eyes.

Ying qi has a yin property as it can form into materials needed by other parts of the body. ying qi follows the regular meridian flow chart and continuously circulates through the body in a daily cycle.

According to The Yellow Emperor's Classic of Medicine, the flowing pathways are the lung-, large intestine-, stomach-, spleen-, heart-, small intestine-, bladder-, kidney-, pericardium-, sanjiao-, – gallbladder-, liver-, Du Mai and Ren Mai meridians. Both ying qi and wei qi share the same origin, but they flow in opposite directions. The movements of these two types of qi work in a coordinated manner to maintain a harmonious balance.

2.3 Shen and Hun

The sleep-wake cycle is also part of the activity of Shen and the Hun. Shen can be translated as: “spirit” or “Mind” and implies our consciousness, mental functions, mental health, vitality and our “presence”. It is the highest authority of the physical body that orders it to rest or work. In coordination with the natural rhythm, shen resides in the heart at night for recharging, and comes out during daytime to exert its duties. Shen is specifically said to live in the Blood Vessels (part of the system of the Heart) and to be nourished by the Blood. If Shen is disturbed sleeping problems may occur. According to Maciocia we must keep the Shen quite without emotions, without stimulant. Shen is easy overstimulated by watching tv, sitting behind the computer or playing games etc.

Hun is the part of the soul that survives after death. The nature of the Hun is yang. the Hun is the coming and going of the Shen, or in other words “what comes and goes with the Shen is the Hun”. The theme of the Hun is movement she has to move on a physical- (free flow of liver qi) and psychic level. The psychic part of Hun is having plans, ideas, goals, a sense of direction in live. Ideas come from the Hun not from the Shen. Shen needs the movement of the Hun, when liver qi stagnates, the shen suffers. One aspect of the lack of movement of the Hun of lack of movement of liver qi is depression. This is very common in our contemporary live, the result of watching TV, news, zoom meetings and being in a lockdown/quarantine.

Excessive movement of the Hun, to much ideas, to many goals and as a result being awake at night are not from insomnia, but by choice.

2.4 When Shen and Hun are in harmony

An Mian or peaceful sleep is the result of harmony of yin and yang in our body. Yang keeps us awake while yin lets us sleep. When we suffer from insomnia, yang is not interacting with yin, in other words our internal environment has been disturbed and stays too active.

3. Jet Lag and our circadian rhythm

The classic explanation of Jet lag is a physiological disorder, caused by rapidly moving through different time zones. However nowadays this idea is a bit obsolete, we have to include those who for what kind of reason change their circadian rhythm. One could think of shift workers, students who study at night and of course people who fly a lot to different time zones.

The term Jet lag comes from travelling with a Jet airplane. While traveling fast, the body doesn't have time to synchronize with the local time, while traveling slow, by train, boat or car, the body does. Thus, in the latter we don't have any problems because we're constantly adapting, and keeping a normal day and night rhythm, while traveling by plane we skip a night or even a day and night.

The circadian rhythm is a natural internal process that regulates our sleep-wake cycle. It repeats on each rotation of the earth which is about every 24 hours. These rhythms are driven by a circadian clock which has been studied worldwide in plants, animals and human beings.

In the old days when we didn't have gas or electric light, people's day and night rhythm were according to the natural light and dark hours. We would wake up as soon as the sun was rising and go to bed not long after sunset.

After the invention of electric light and having access to it all the time, our natural rhythm shifted; our days became longer, while our nights got shorter.

Changing our day and night rhythm or creating longer days and shorter nights for a longer period affects our health this is what we call "Social Jet Lag", a disturbance of our circadian rhythm.

“A sleep deprived brain is more dangerous than a brain under the influence of alcohol.”

Dr. Satchin Panda: “the Circadian code”

In the same book Dr. Panda writes that roughly 87 percent of adults have social jetlag and go to bed at least 2 hours later on the weekend.

He also states: “A brain on shiftwork cannot make rational decisions. A single night shift has cognitive effects that can last a week.” ⁽¹⁾

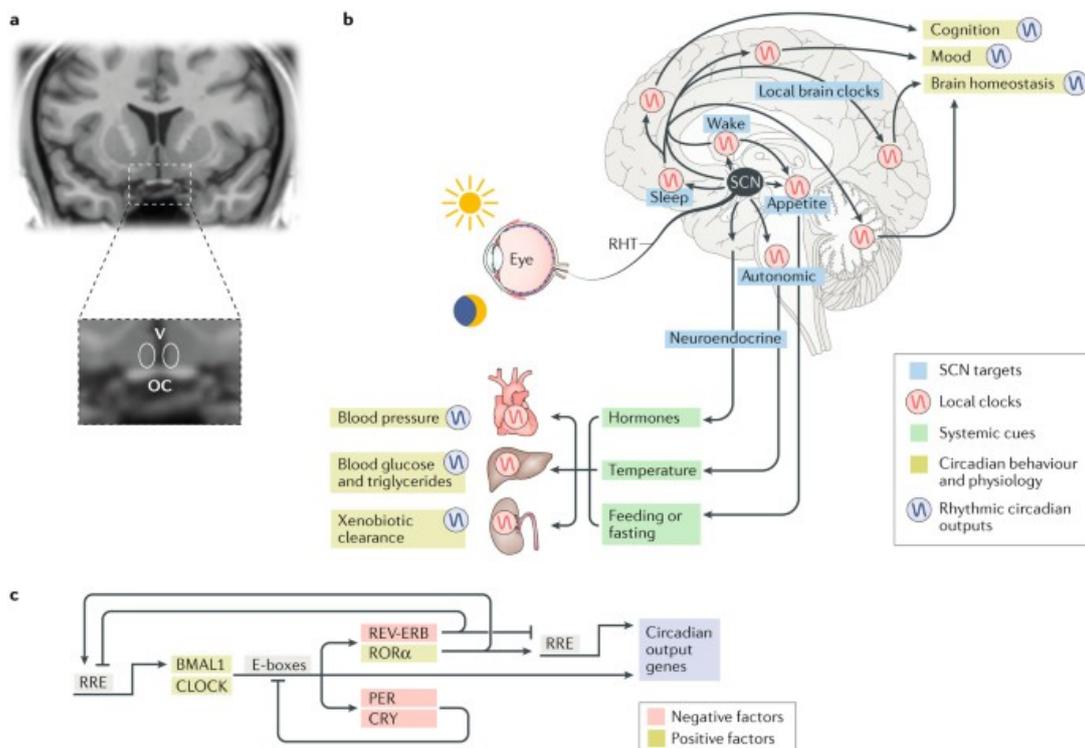
Symptoms of jet lag may include:

- Fatigue
- Insomnia
- Disorientation or mental confusion
- Nausea or loss of appetite
- Headaches
- Edema ⁽²⁾

(1) The Circadian code, Panda S. Vermillion 2018 page 4-5,

(2) Acupuncture for insomnia, Montakab, H. Thieme, 2012 page 84

These symptoms can last up to 10 days. The duration of the symptoms are estimated to be 1 day for each time zone crossed. (1) Or as Walker states it in his book: "why we sleep": "For every day you are in a different time zone, your suprachiasmatic nucleus can only readjust by about one hour." In this same book Walker states: "Scientists have studied airplane cabin crews who frequently fly on long-haul routes and have little time to recover. Two alarming results have emerged. First, part of their brains—specifically those related to learning and memory—had physically shrunk, suggesting the destruction of brain cells caused by the biological stress of time-zone travel. Second, their short-term memory was significantly impaired. They were considerably more forgetful than individuals of similar age and background who did not frequently fly through time zones. Other studies of pilots, cabin crew members and shift workers have reported additionally disquieting consequences, including far higher rates of cancer and type 2 diabetes than the general population—or even carefully controlled match individuals who do not travel as much." (2)



(fig 3)

(1) The Circadian code, Panda S. Vermillion 2018
 (2) Walker, M. PhD. Why we sleep scribner page 26
 Fig 3 nature.com

3.1 What is shift work?

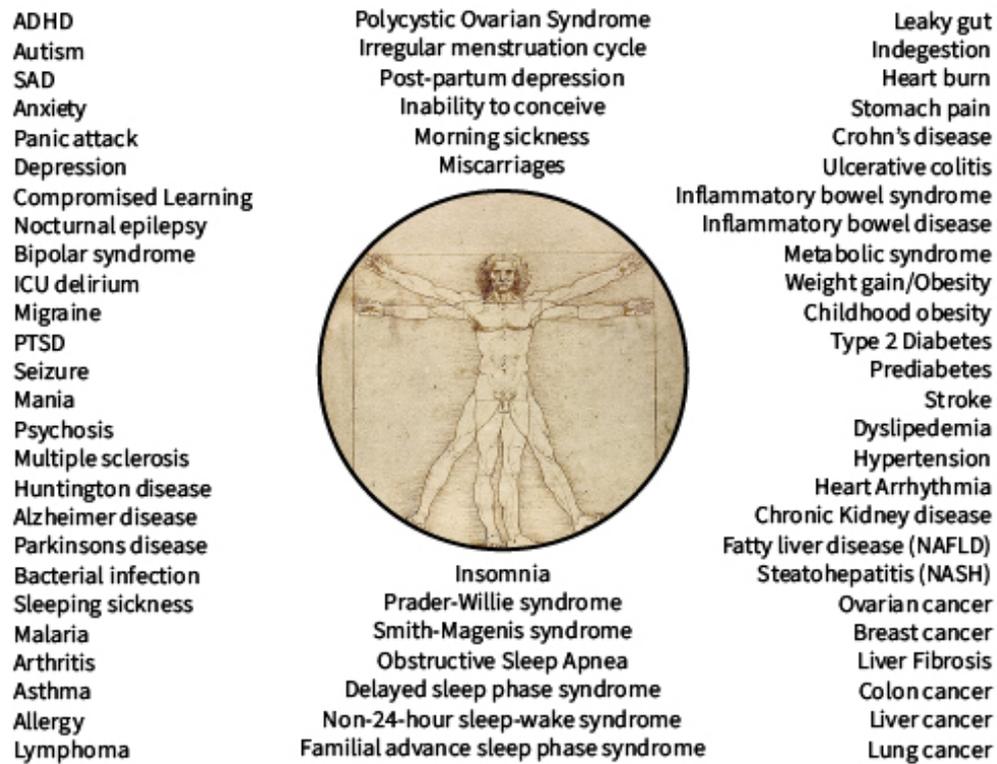
The official European definition of a shift worker is: *A person who stays awake more than 3 hours between 22.00 and 05.00 for more than 50 days in a year.*

Dr. Panda roughly divides 7 groups of shift workers who experience jet lag.

- *Traditional shift work*: roughly 20-25% of nonmilitary work force in any developing or developed countries involved with shiftwork. This includes emergency responders (firefighters, emergency dispatchers); police; workers in health services, manufacturing, construction, utility services, air transportation, ground transportation, and food services; custodial staff; and call centre customer support workers.
- *Shift work-like lifestyle*: this includes high school and college students, musicians, performing artists, new mothers (and fathers), in-home caregivers and spouses of shift workers.
- *Jobs in the gig economy*: this includes part time drivers for ride-share services and food delivery services, flexible workers and freelancers.
- *Jet lag*: this occurs when you travel across 2 or more time zones within an day. Pre-COVID 19 nearly 8 million air travelers took to the air each day, and half of them traveled over least 2 time zones.
- *Social jet lag*: this occurs when someone sleeps late and wakes up at least 2 hours late on the weekend. More than 50% of the population in modern society experiences social jet lag.
- *Digital jet lag*: this happens when you chat with friend or colleagues that are several time zones away. Over social networks or digital devices and as a result have to stay awake for more than 3 hours between 22.00 and 05.00.
- *Seasonal circadian disruption*: millions of people living in extreme north and south latitudes (residents from northern Canada, Sweden, Norway and southern Chile for example) experience less than eight hours of daylight during winter and more than 16 hours of daylight in summer. These extreme exposures disrupt their circadian rhythm. ⁽¹⁾

(1) The Circadian code, Panda S. Vermillion 2018 page 7

3.2 Diseases and disorders linked to Jet lag and a desynchronized circadian rhythm



(fig 4)

4. What are possible TCM patterns in Jet lag

4.1 Possible TCM patterns could be:

- Deficiency of yin
 - Heart-yin deficiency
 - Liver-yin deficiency
 - Kidney-yin deficiency
- Deficiency of blood
 - Heart blood deficiency
 - Liver blood deficiency
- Deficiency of body fluids
- Heart fire
- Liver yang rising
- Gallbladder deficiency
- Kidney and heart not harmonized

The most effected meridians with jet lag are the liver and heart meridians, they regulate our sleep. Mentally the Hun and Shen are affected and cannot anchor in the blood. Day and night rhythm are turned around meaning Yang and Yin are changed, the yin is too weak to hold the yang at night, again this results in Hun and Shen have no place to reside. Besides that, the heart yin and liver yin are deficient, the kidney-heart axis is affected too.

4.2 the 5 elements

If we convert this to the 5 elements:

The insulting sequence: the grandchild insults the grandparent.⁽¹⁾

Fire (yang) can insult **water** (yin) causing kidney yin deficiency, Kidney (**water**) fails to transform fluids, results in dampness accumulation in the spleen (**earth**)

Dampness in the spleen (**earth**) impairs the free flow of liver qi (**wood**)

Liver fire (**wood**), by ascending may impair the descending of the lung qi (**metal**)

Phlegm in the lung (**metal**) may impair the circulation of heart qi (**Fire**)

The generating sequence: the mother cannot feed the child:

Liver blood (**wood**), becomes deficient and leads to heart (**Fire**) blood deficiency, this leads to Spleen (**Earth**) blood deficiency. The spleen now gets Qi deficient which leads to spleen yang deficiency too, this results in Lung (**Metal**) Qi deficiency. Lung Qi deficiency leads to lung yang deficiency and results in Kidney (**Water**) yin deficiency. Kidney yin deficiency leads to Liver yin deficiency, and this can result into liver blood deficiency and the circle is round.

The two above diagrams of the 5 elements could be the result of chronic jetlag for a longer period, possibly together with poor lifestyle choices like food and exercise.

We of course have the controlling and overacting sequences as well.

Maciocia, G. The Foundations of Chinese Medicine page 33 2015

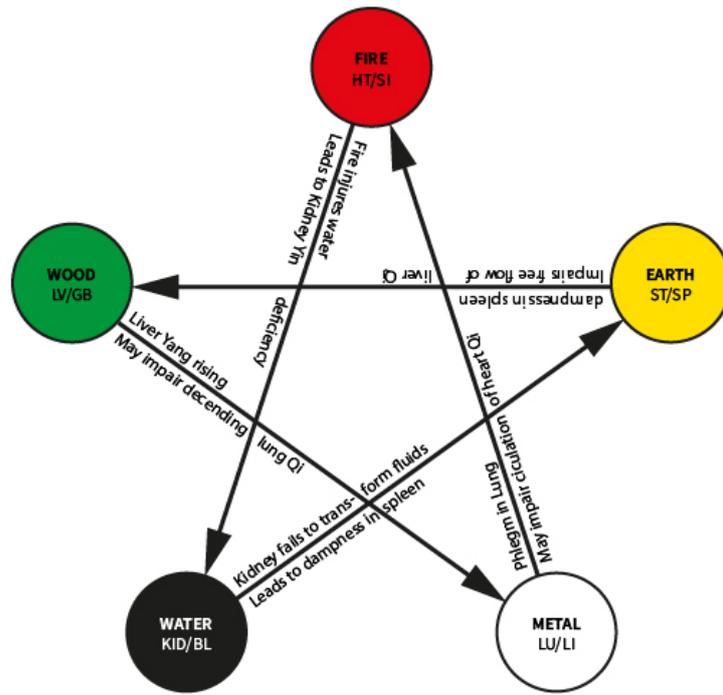


Fig 5 The insulting sequence

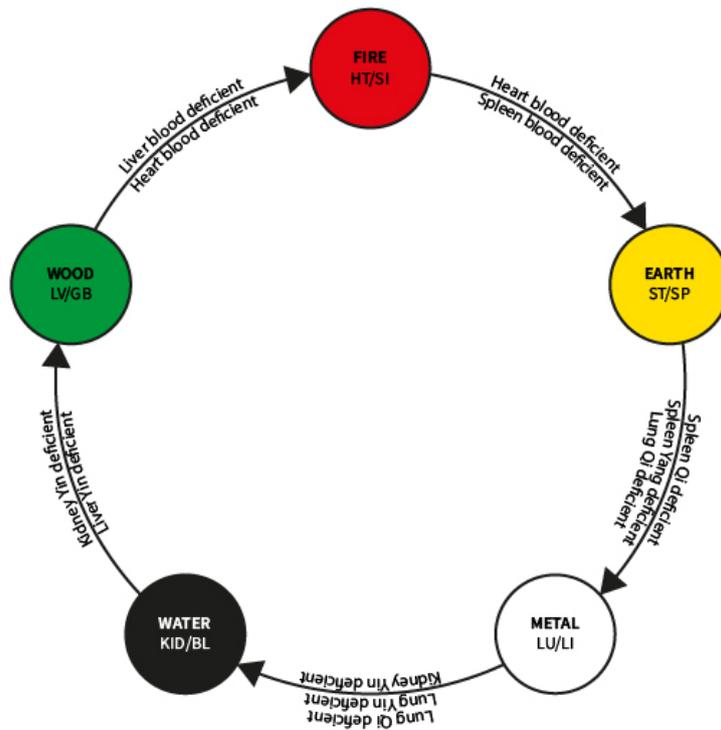


Fig 6 The generating sequence

5. Western treatment of Jetlag

As you can see in figure 3.2 (social) jetlag can be the cause of many physical and psychic health problems. It is not only the lack of sleep as well as the things we do before going to sleep that could worsen the effects of jetlag.

5.1 Medication

In western medicine its common to treat jet lag with chemical medication like melatonin or sleeping pills.

Melatonin is a hormone produced by the pineal gland and controls our wake/sleep rhythm. When our circadian clock is out of balance due traveling or shift work, the production of melatonin is out of balance too, therefore doctors describe melatonin supplements to “reset” our circadian clock

Melatonin is generally safe for short-term use. Unlike with many sleep medications, with melatonin you are unlikely to become dependent, have a diminished response after repeated use (habituation), or experience a hangover effect.

The most common melatonin side effects include:

- Headache
- Dizziness
- Nausea
- Drowsiness

Other, less common melatonin side effects might include short-lasting feelings of depression, mild tremor, mild anxiety, abdominal cramps, irritability, reduced alertness, confusion or disorientation, and abnormally low blood pressure (hypotension). ⁽¹⁾

Sleeping pills can go by many names: sedatives, hypnotics, tranquilizers. Different chemical compositions work different on the body and brain. Some help you to fall asleep, some help you to sleep through the night and some do both. However even though they “help with sleep” studies show that the state you’re in is different than in a natural sleep. Matthew Walker in his book “why we Sleep” describes it as follow: “The quality of sleep that you have when you’re on these drugs is not the same as normal, naturalistic sleep. They’re classified as “sedative hypnotics,” so the drugs actually just sedate you — and sedation is not sleep.” ⁽²⁾

The list of side effects, potential risk or complications of this type of medication is enormous. But maybe the biggest problem here is the potential depending of the medication.

(1) mayo clinic <https://www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/melatonin-side-effects/faq-20057874>

(2) Why we Sleep, Walker, M. scribner 2018

5.2 Reducing blue light

One of the first things we could change is reducing the amount of blue light we take in hours before sleep. Blue light is a portion of the visible light spectrum that can have unique effects on alertness, hormone production, and sleep cycles. Electric powered screens like t.v., computer, tablet, mobile phone and even LED lights, produce a lot of blue light that stimulates the brain in thinking that its daylight, and disturbing our circadian clock by suppressing the release of melatonin that we need to get drowsy. Reducing this blue light by switching of your devises or changing it into yellow light at least 2-3 hours before sleep gives great results in improving sleep pattern.

5.3 Eating before sleeping

Eating right before going to bed has some pros and cons, it all depends on what you eat and how much. Chronic jet lag can result in obesity due to the bad choices we make in food when we are hungry. A light snack before going to sleep prevents us from being hungry and keeps our blood sugar leveled, and some snacks like bananas, walnuts, oats, and tomatoes even help our body to produce melatonin. However, when we sleep our whole system slows down, as well as our metabolism. Consuming food right before sleep, especially high in carbs can make it harder to digest and will result in weight gain. Mostly when we are hungry late at night our choices in food are poor, high on sugar and carbs, this is a good reason not to eat before going to bed, or while watching t.v. The best time to eat is about 3 hours before going to sleep.

5.4 Sleep enough hours

Our circadian rhythm is more or less a 24 hour cycle, in this cycle we need a certain amount hour of sleep. The diagram below shows how much sleep different age groups need for optimal health.

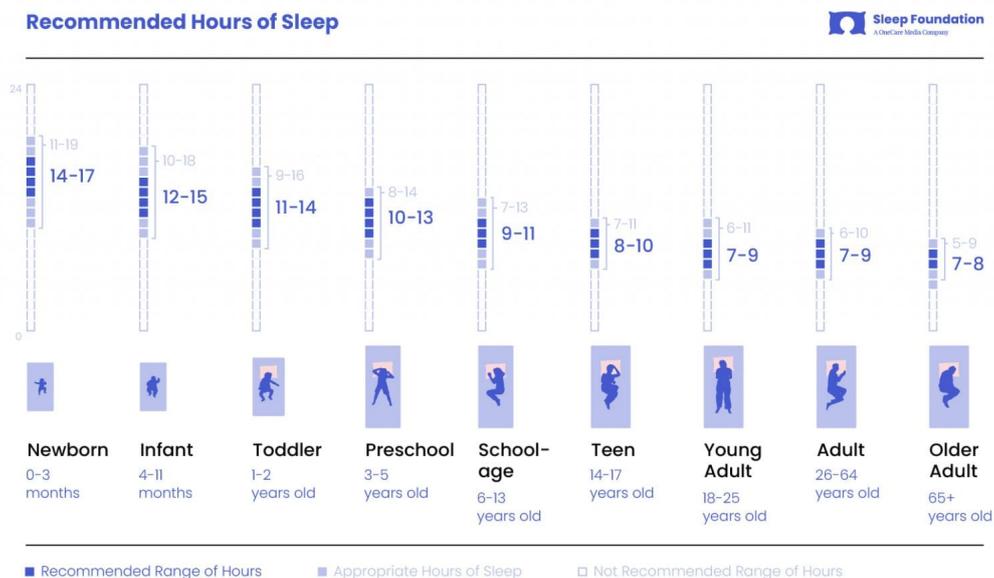


Fig 7

(fig 7) sleepfoundation.org

Besides enough sleep it's important to create or maintain a good sleep rhythm, meaning going to bed at a certain time and sleep 8-9 hours. Since our circadian rhythm is 24 hours, and our pineal gland produces melatonin when its dark, and we wake up as soon as it is getting light 22.00-6.00/7.00 could be an optimal sleep rhythm.

5.5 Mobile phone

don't put your mobile phone in your bedroom or don't use it as an alarm clock. Many times, when we use our mobile phone as an alarm clock or when we have our mobile phones in our bedroom, we tend to take a look at it as soon as we wake up. This stimulates the brain again to be awake and break our night rest. A good thing here is to have an old-fashioned alarm clock and keep the phone far away from where you sleep.

5.6 not being sleepy when its bedtime

Especially with jetlag or shift work it happens that a person is very tired but can't sleep. To stimulate the body to become in a sleeping mood, breath exercises could help. Long and deep breaths could mimic the bodies' reaction to sleep and help the brain to produce melatonin. This video shows some great breath exercises that are helpful.

6. TCM treatment of Jet lag

There isn't a "good for everyone" formula in TCM that helps with overcoming jet lag. Every person is unique and therefore needs a unique tailor-made treatment. The most classic way to treat a person is according to pulse and tongue diagnosis and a good anamnesis. However, if there is not an underlying pathology that needs to be treated first like a deficiency or a stagnation, one could choose to only treat the jet lag complaints.

6.1 treatment according to the meridian clock

When we look at the meridian clock and compare it with the circadian clock, we see lots of similarities, one could even say they are the same but seen from an eastern and western point of view. In his book "Acupuncture for Insomnia" Hamid Montakab⁽¹⁾ compares them.

A great way to treat jet lag from flying is to use the Yuan source points (the points where the Yuan Qi derived from the original Jing, pools), and needle them on the hour of arrival. This way you tap into the source and let more qi flow into the system, and so resetting the meridian clock. This could be good in combination with the earth points (for the Yang meridians) of the same meridian too.

The Yuan Source & Earth points are: ⁽²⁾

Yuan Source	Earth point
LU 9 Tàiyuān 03-05AM	Same
LI 4 Héngū 05-07AM	LI 11 Qūchí
ST 42 Chōngyáng 07-09AM	ST 36 Zúsānlǐ
SP 3 Tàibái 09-11AM	Same
HE 7 Shénmén 11-13PM	Same
SI 4 Wàngū 13-15PM	SI 8 Xiāohāi
BL 64 Jìnggū 15-17PM	BL 40 Wēizhōng
KI 3 Tàixī 17-19PM	Same
PC 7 Dàlíng 19-21PM	Same
SJ 4 Yángchí 21-23PM	SJ 10 Tiānjīng
GB 40 Qiūxū 23-01AM	GB 34 Yánglíngquán
LV 3 Táichōng 01-03AM	Same

In my opinion all these points could be great in combination with DM 20 Bāihùi, not only to earth but as well to keep the connection to the heavens open.

(1) Acupuncture for insomnia, Montakab, H. Thieme, 2012

(2) Point names from A Manual of Acupuncture, Deadman, P. & Mazin Al-Khafaji 2017

6.2 Resetting qi flow in the whole system

Montakab (1) describes an ancient Ming dynasty point combination for resetting biorhythms and balancing the hormone system used by Master Yuen. This point combination was referred to as the “Inner four Gates” and is different than the “inner four gate” point combination that we nowadays use which is LV 3 Tàichōng and PC 6 Nèiguān, needled bilateral.

The “original” inner four gates are the last point of the “zu jue yin gan jing” channel LV 14 Qímén combined with the first points of the “shou tai yin fei jing” channel LU 1 Zhōngfū to re-establish the day-night balance and harmonize the postnatal qi. These four points are complimented by DU 20 Bāihuì and REN 12 Zhōngwān to balance the prenatal energies. By adding BL 1 Jingmíng this combination becomes an interesting treatment option for all disturbances of the circadian clock as experienced in jet lag or shift work.

Montakab recommends the following needling order:

Starting with REN 12, then LU 1 on the right side for women (for men on the left), followed by LV 14 on the opposite side, followed by LU 1 on the opposite side followed by LV 14 on the same side (creating a figure eight), then DU 20 ending with BL 1 on both sides. M-HN 3 Yíntáng (third eye) may alternately replace BL 1.

As you can see in fig 2 the qi flow starts in LU 1 and ends in LV 14, needling this combination in this order charges the whole meridian system.

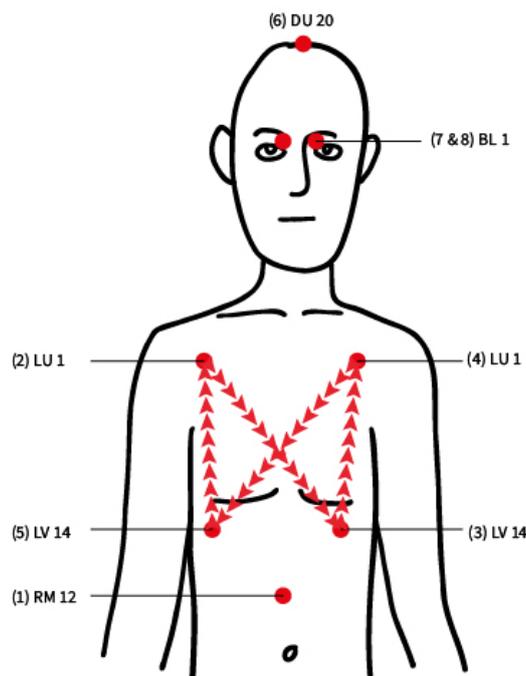


Fig 9

(1) Acupuncture for insomnia, Montakab, H. Thieme, 2012 page86-87
(fig 9) by Ehud Neuhaus after Montakab, H. Acupuncture for insomnia

6.3 treatment according to the 5 elements

When we fly to another time zone, we not only have to keep in mind that we change time and fly through time zones, but also that the season can change, in this case we need to synchronize the system to a new climate. Montakab (1) uses the supplementing and reducing points based on the principle “supplementing the mother and reducing the son” the treatment is directed at the channels most likely to suffer. Example: traveling from Europe to South East Asia in winter, we are going from winter into summer. The systems most likely to suffer are Kidney and Heart, the seasonal supplementing points are wood points. The reduction points are earth points.

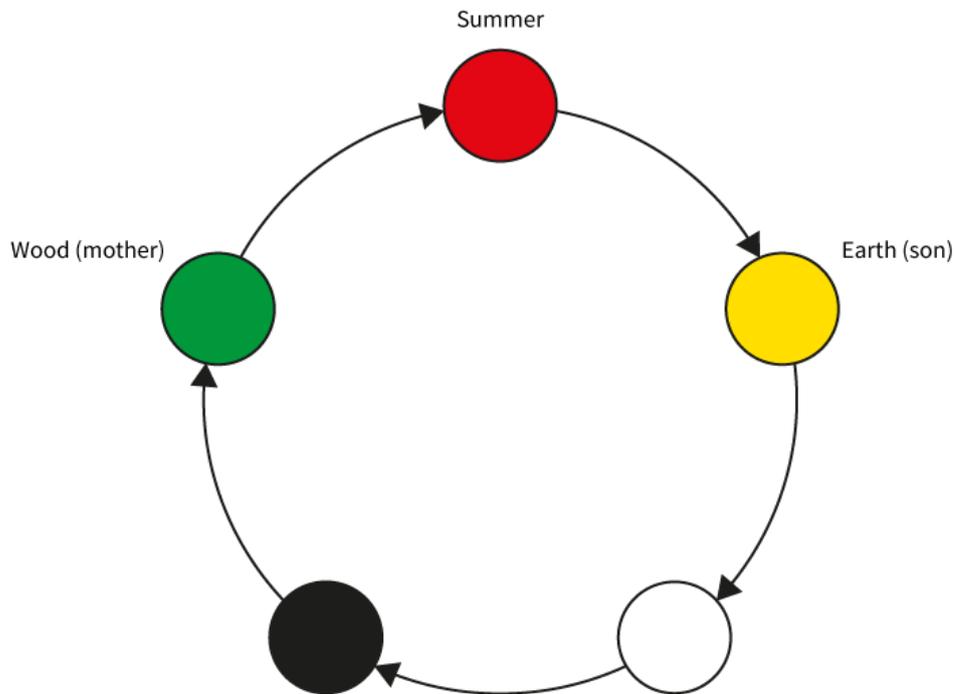


Fig 10

Therefore the points to use are:

HT 9 Shàochōng: Jing well and wood point of the heart channel

HT 7 Shénmén: Spirit Gate: Shu-stream, Yuan source and Earth point of the heart channel

KI 1 Yōngquān: Gushing Spring: Jing-well and wood point of the kidney channel

KI 3 Tàixī: Supreme Stream: Shu-stream, Yuan-source point and Earth point of the kidney channel

You could as well think about the earth and wood points of the Liver (wood) and Stomach (earth) meridians although Montakab doesn't mention this

(1) Acupuncture for insomnia, Montakab, H. Thieme, 2012 page 86
(fig 10) by EHUD Neuhaus after Montakab, H. Acupuncture for insomnia

When travelling in the opposite direction from South East Asia to Europe, we travel from summer into winter. The points to choose here are the metal and wood points. The channels to treat are again kidney and heart as well the lung, which easily suffers from the cold.⁽¹⁾

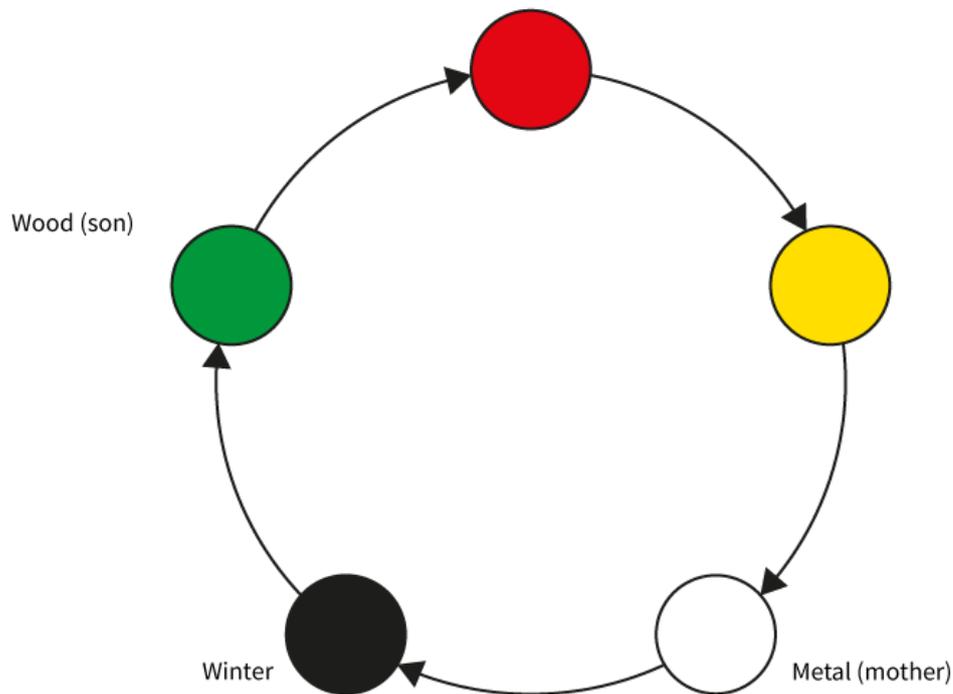


Fig. 11

KI 7 Fùliū: Returning Current: Jing-River and metal point of the kidney channel
 KI 1 Yōngquān: Gushing Spring: Jing-well and wood point of the kidney channel
 HT 4 Língdào: Spirit Path: Jing-River and metal point of the heart channel
 HT 9 Shàochōng: Lesser Rushing: Jing well and wood point of the heart channel
 LU 8 Jīngqú: Channel Gutter: Jing-River and metal point of the lung channel
 LU 11 Shàoshāng: Lesser Shang: Jing-well and Wood point of the lung channel

(1) Acupuncture for insomnia, Montakab, H. Thieme, 2012 page 86
 (fig 10) by Ehud Neuhaus after Montakab, H. Acupuncture for insomnia

6.4 treating jet lag according to the Dr. Tan balance method

The Balance method of Dr. Richard Tan is great to treat clients with for all kinds of different complaints. For sleep issues one could choose from the “Juejin-Shaoyang”-, “Juejun – Yangming”- or “Shaoyin-Shaoyang” protocols, they could work great for jet lag, however there is no perfect jet lag protocol, so it comes down to pulse diagnosis and see if there is a protocol that fits (see fig.12), otherwise one should create a protocol that will ballans the different meridians. (see fig. 13)

Protocollen van Dr. Tan																																			
4 Magicals #1 Behandelt de gehele thorax <table border="1"> <tr><td>LI</td><td>PC</td></tr> <tr><td>KID</td><td>ST</td></tr> </table> Puntkeuze afhankelijk van locatie Klacht	LI	PC	KID	ST	4 Magicals #2 Hormonen, Hitte, Damp en Vloeistoffen <table border="1"> <tr><td>SJ</td><td>HT</td></tr> <tr><td>SP</td><td>GB</td></tr> </table>	SJ	HT	SP	GB	4 Magicals #3 Hormonen en spijsvertering <table border="1"> <tr><td>SJ</td><td>PC</td></tr> <tr><td>SP</td><td>ST</td></tr> </table>	SJ	PC	SP	ST	Tan's Magic 8 Gynaecologie protocol LI 4/5 HT 5 SJ 5 PC 6/7/2 KID 1/7 ST 36/40/8 SP 4/6 GB 34/41																				
LI	PC																																		
KID	ST																																		
SJ	HT																																		
SP	GB																																		
SJ	PC																																		
SP	ST																																		
Tan's Magic 8 + 1 Resetten spijsvertering <table border="1"> <tr><td>LU 7</td><td>PC 6</td></tr> <tr><td>LJ 4</td><td>HT 5</td></tr> <tr><td>SJ 5</td><td>ST 36</td></tr> <tr><td>LIV 8</td><td>GB 34</td></tr> </table>	LU 7	PC 6	LJ 4	HT 5	SJ 5	ST 36	LIV 8	GB 34	Angst en Insomnie LI 11 LU 11 SJ 8 PC 9 SJ 10 HT 9 SP 6 ST 34 KID 7 GB 41 LIV 5 BL 65 + An Mian en Shenmen	Seizoens-Allergie En hoofdpijn veroorzaakt door Phlegm <table border="1"> <tr><td>LI 4</td><td>LU 10</td></tr> <tr><td>SJ 5</td><td>PC 8</td></tr> <tr><td>SJ 4</td><td>HT 8</td></tr> <tr><td>SP 9</td><td>ST 45</td></tr> <tr><td>KID 10</td><td>GB 44</td></tr> <tr><td>LIV 8</td><td>BL 67</td></tr> </table>	LI 4	LU 10	SJ 5	PC 8	SJ 4	HT 8	SP 9	ST 45	KID 10	GB 44	LIV 8	BL 67	Fibromyalgie <table border="1"> <tr><td>LU 11</td><td>LI 4</td></tr> <tr><td>PC 9</td><td>SJ 3</td></tr> <tr><td>HT 9</td><td>SJ 3</td></tr> <tr><td>ST 36</td><td>SP 6</td></tr> <tr><td>GB 34</td><td>KID 3</td></tr> <tr><td>BL 40</td><td>LIV 4</td></tr> </table>	LU 11	LI 4	PC 9	SJ 3	HT 9	SJ 3	ST 36	SP 6	GB 34	KID 3	BL 40	LIV 4
LU 7	PC 6																																		
LJ 4	HT 5																																		
SJ 5	ST 36																																		
LIV 8	GB 34																																		
LI 4	LU 10																																		
SJ 5	PC 8																																		
SJ 4	HT 8																																		
SP 9	ST 45																																		
KID 10	GB 44																																		
LIV 8	BL 67																																		
LU 11	LI 4																																		
PC 9	SJ 3																																		
HT 9	SJ 3																																		
ST 36	SP 6																																		
GB 34	KID 3																																		
BL 40	LIV 4																																		
Taiyin - Taiyang Wei Qi, watermetabolisme, pijn langs Taiyang, vermoeidheid, piekeren, oedeem <table border="1"> <tr><td>SI 2/5</td><td>LU 10/7</td></tr> <tr><td>SP 2/5</td><td>BL 66/60</td></tr> </table>	SI 2/5	LU 10/7	SP 2/5	BL 66/60	Shaoyin - Taiyang Xue, Jing, Vloeistoffen, palpates, osteoporose, menstruatie, slecht geheugen <table border="1"> <tr><td>SI 3/8</td><td>HT 7/3</td></tr> <tr><td>KID 3/10</td><td>BL 40/65</td></tr> </table>	SI 3/8	HT 7/3	KID 3/10	BL 40/65	LIV - LU - Taiyang Qi stagnatie, Wei Qi, druk op borst, allergieën, hoofd/ooog/nek/schouder/rug <table border="1"> <tr><td>SI 3/8</td><td>LU 11/8</td></tr> <tr><td>LIV 3/8</td><td>BL 64/67</td></tr> </table>	SI 3/8	LU 11/8	LIV 3/8	BL 64/67	KID - LU - LI - BL Watermetabolisme, uitscheiding, darmen, astma, incontinentie, onvruchtbaarheid, psoriasis <table border="1"> <tr><td>LI 1/4</td><td>LU 11/8</td></tr> <tr><td>KID 1/4</td><td>BL 67/64</td></tr> </table>	LI 1/4	LU 11/8	KID 1/4	BL 67/64																
SI 2/5	LU 10/7																																		
SP 2/5	BL 66/60																																		
SI 3/8	HT 7/3																																		
KID 3/10	BL 40/65																																		
SI 3/8	LU 11/8																																		
LIV 3/8	BL 64/67																																		
LI 1/4	LU 11/8																																		
KID 1/4	BL 67/64																																		
Jueyin - Shaoyang Shen, Qi Xue, Wind en Lever Yang Hitte, Insomnia, PMS, oogklachten <table border="1"> <tr><td>SJ 3/10</td><td>PC 7/3</td></tr> <tr><td>LIV 3/8</td><td>GB 34/41</td></tr> </table>	SJ 3/10	PC 7/3	LIV 3/8	GB 34/41	Shaoyin - Shaoyang Shen, Hitte, Lever Yang Vuur, hoofd/nek, koorts, insomnia, slecht geheugen, opvliegers, vermoeidheid <table border="1"> <tr><td>SJ 3/10</td><td>HT 7/3</td></tr> <tr><td>KID 3/10</td><td>GB 41/34</td></tr> </table>	SJ 3/10	HT 7/3	KID 3/10	GB 41/34	SP - HT - Shaoyang Bloed Lengte, interne Wind, verteringsfuncties, spanning nek/schouders, oedeem, wazig zicht, aften, duizeligheid <table border="1"> <tr><td>SJ 1/4</td><td>HT 7/3</td></tr> <tr><td>SP 1/4</td><td>GB 41/34</td></tr> </table>	SJ 1/4	HT 7/3	SP 1/4	GB 41/34	LIV - HT - SI - GB Shen, Hitte, Hart/Lever functies, Hout - Vuur disbalans, hoge bloeddruk, hepatitis <table border="1"> <tr><td>SI 3/8</td><td>HT 7/3</td></tr> <tr><td>LIV 3/8</td><td>GB 41/34</td></tr> </table>	SI 3/8	HT 7/3	LIV 3/8	GB 41/34																
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SJ 1/4	HT 7/3																																		
SP 1/4	GB 41/34																																		
SI 3/8	HT 7/3																																		
LIV 3/8	GB 41/34																																		
Taiyin - Yangming Ademhaling, spijsvertering, watermetabolisme, Damp in Long/ Milt, voedselallergieën, astma en bronchitis <table border="1"> <tr><td>LI 3/11</td><td>LU 9/5</td></tr> <tr><td>SP 3/9</td><td>ST 43/36</td></tr> </table>	LI 3/11	LU 9/5	SP 3/9	ST 43/36	Jueyin - Yangming Hout valt Aarde aan (diarree of braken en misselijkheid), IBS, darmzweren, pijn in epigastrum, geïrriteerd PMS, hoofdpijn <table border="1"> <tr><td>LI 1/4</td><td>PC 9/6</td></tr> <tr><td>LIV 1/4</td><td>ST 42/45</td></tr> </table>	LI 1/4	PC 9/6	LIV 1/4	ST 42/45	KID - PC - Yangming Shen verstoring, Water - Vuur disbalans, uit willen kleden, constipatie, keutelooop, voedt Yin, beïnvloedt borst/abdomen <table border="1"> <tr><td>LI 1/4</td><td>PC 9/6</td></tr> <tr><td>KID 1/4</td><td>ST 42/45</td></tr> <tr><td>LI 2/5</td><td>PC 8/5</td></tr> <tr><td>KID 2/7</td><td>ST 41/44</td></tr> </table>	LI 1/4	PC 9/6	KID 1/4	ST 42/45	LI 2/5	PC 8/5	KID 2/7	ST 41/44	SP - PC - SJ - ST Damp in Milt en Hitte in San Jiao, herstelt Shen, voedt Xue en Yin, transformeert Damp, diarree, vermoeidheid etc. <table border="1"> <tr><td>SJ 1/4</td><td>PC 9/6</td></tr> <tr><td>SP 1/4</td><td>ST 45/42</td></tr> </table>	SJ 1/4	PC 9/6	SP 1/4	ST 45/42												
LI 3/11	LU 9/5																																		
SP 3/9	ST 43/36																																		
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SJ 1/4	PC 9/6																																		
SP 1/4	ST 45/42																																		
Stress Stress lv.m. plannen -> Jueyin - Yangming Stress lv.m. emotionele controle -> Jueyin - Shao yang	Depressie Boosheid -> Jueyin - Shaoyang Angst -> Jueyin - Yangming Verdriet -> Shaoyin - Shaoyang	Slaapproblemen 1. Jueyin - Shaoyang Moeilijk inslapen 2. Jueyin - Yangming Lichte slaap en piekeren 3. Shaoyin - Shaoyang - Veel slapen, nog steeds moe - Moe, maar niet kunnen slapen	4. LIV - HT - GB - SI Woelen, nachtmerries, opvliegers tijdens de nacht 5. SP - HT - Shaoyang Hormoon gerelateerde patronen																																

Fig 12

Aangedane meridiaan	Balanssysteem					
	1	2	3	4	5	6
Tai Yin - LU	SP	BL	LI	BL	LIV	LU
Yang Ming - LI	ST	LIV	LU	KID	ST	LI
Shao Yin - HT	KID	GB	SI	GB	SP	HT
Tai Yang - SI	BL	SP	HT	LIV	BL	SI
Jue Yin - PC	LIV	ST	SJ	ST	KID	PC
Shao Yang - SJ	GB	KID	PC	SP	GB	SJ
Shao Yang - GB	SJ	HT	LIV	HT	SJ	GB
Jue Yin - LIV	PC	LI	GB	SI	LU	LIV
Tai Yang - BL	SI	LU	KID	LU	SI	BL
Shao Yin - KID	HT	SJ	BL	LI	PC	KID
Yang Ming - ST	LI	PC	SP	PC	LI	ST
Tai Yin - SP	LU	SI	ST	SJ	HT	SP

Fig. 13

6.5 treating ZangFu according to tongue and pulse diagnosis

When traveling through time zones or working shifts will affect the ZangFu. If we take a thorough anamnesis, questioning and taking pulse and tongue diagnosis we may find underlying conditions, that can worsen the effect of jetlag and therefore must be treated first. For example, when a client is very deficient, we must feed the system first, when a system is stagnated, we must solve that first. This could as well be treated during the same treatment.

See chapter 4.1 and below for the most effected systems. Explanations and classic treatments could be found in “the foundations of Chinese Medicine” by Giovanni Maciocia ⁽¹⁾

- Deficiency of yin
 - Heart-yin deficiency *page 498*
 - Liver-yin deficiency *page 550*
 - Kidney-yin deficiency *page 638*
- Deficiency of blood *page 473*
 - Heart blood deficiency *page 496*
 - Liver blood deficiency *page 548*
- Deficiency of body fluids *page 476*
- Heart fire *page 500*
- Liver yang rising *page 552*
- Gallbladder deficiency *page 708*
- Kidney and heart not harmonized *page 642*

6.6 Herbs

Where in the west we treat people with sleep medication for jet lag and insomnia, TCM has good results with herbs and herbal formulae. where in the west people tend to get the same medicine for similar symptoms, in TCM every client is treated individually and therefore its always better to prescribe a custom-made herbal formula. However, when there are no urgent underlying symptoms, the use of a ready-made herbal formula could be sufficient to treat the complaint.

In the research: Traditional Use of Chinese Herbal Medicine for Insomnia and Priorities Setting of Future Clinical Research ⁽²⁾. They used traditional Chinese herbs as described in historical literature to treat insomnia and found very good results in the commonly cited formulae *Wen dan tang*, *Suan zao ren tang*, *Ban xia shu mi tang* and *Gui pi tang*.

Western herbs could be used in the TCM way as well. Most common herbs used to promote sleep are:

Eschscholzia californica or Californian poppy

Humulus lupulus or Hop

Passiflora Incarnata or Passionflower

Valeriana officinalis or Valerian

Hypericum perforatum or St. Johns wort

Lavendula Angustifolia or Lavender

(1) The foundations of Chinese Medicine Maciocia, G. 2015

(2) Traditional Use of Chinese Herbal Medicine for Insomnia and Priorities Setting of Future Clinical Research:
<https://www.liebertpub.com/doi/abs/10.1089/acm.2018.0249>

7. client reports

I saw 3 clients 3-4 times after either an international flight or an European flight, when they had to wake up very early morning.

Client 1 Dr Tan balance method

Date 13-03 2021	Pulse	Ha	Lv	Kid	Lu	Sp	Kid
		+	++	+	+	++	+-
		+	++	+	+	++	+-
		+	++	+	+	++	+

Liver and Spleen felt very full while kidney yang felt a bit empty compared to the rest. The overall pulse felt wiry. Because both the liver and spleen were in excess I decided to choose the LV-LU-Taiyang formula, the idea behind this was while flying or being in a different air pressure the liver qi will stagnate. Lung qi might not flow to good and basically effecting the whole system. Because of missing a night eat pattern is mixed up which might explain SP/ST in excess.

On 20-03-2021	Pulse	Ha	Lv	Kid	Lu	Sp	Kid
		+	+	+	++	++	++
		+	+	+	++	++	++
		+	+	+	++	++	++

On 12-04-2021	Pulse	Ha	Lv	Kid	Lu	Sp	Kid
		++	+-	+	++	++	++
		+	+	+	++	++	++
		+-	+	+	++	++	++

On 21-04-2021	Pulse	Ha	Lv	Kid	Lu	Sp	Kid
		+	+	+	+	+	+
		+	+	+	+	+	+
		+	+	+	+	+	+

I decided to use the same formula every time and needed "Buddhas Tringle" with Pyonex needles while leaving.

The client reacted very good on this treatment, had the feeling that it was easier to get back in a normal sleep rhythm, interesting I saw this client twice direct after a long flight and twice the day after. Treating directly after a flight was on some spots very painful even though I used tubes, while on the days that we treated a day after the client didn't feel anything.

I recently saw this client, and she told me that she really feels the difference of jet lag without an acupuncture treatment. Recovery is much slower and she feels bad the days after a flight without treatment.

Client 2 classic ZangFu

Date 29-03-2021

Pulse



Ha	Lv	Kid	Lu	Sp	Kid
++	++	-	+	++	+-
++	++	+-	+	++	+-
+	+	+-	+	++	+

Came back from a long intercontinental flight the day before. This client is 50 yrs old in the menopause. Sleeps overall good, sometimes night sweating and cools of. Stool is regularly and firm not sticky, pee, 7-9 times a day, normal colour, used to have a normal menstruation. No further complaints.

Tongue is interesting, dark, deflecting, no coating: stagnation with intern wind and yin deficiency. The pulse shows a similar pattern.

Treatment: the 4 gates LV 3 and LI 4 , to let the qi flow through the whole system, Kid 3 to nourish the kidney yin and tonify kidney yang. Sp 3 to tonify the spleen and regulate Qi. Everything was needed bi lateral.

On 08-04-2021

Pulse



Ha	Lv	Kid	Lu	Sp	Kid
-	-	-	+	+	-
+-	+	-	+	+	-
+	+	+	+	+	+

Total different tongue and pulse, client was a bit agitated, due to a long flight, came straight from the airport and lots going on intern with KLM. Where there was an excess/stagnation last treatment there seemed a deficiency this time.

Treatment: I decided to do the inner 4 gates, again LV 3 and PC 6. To spread the liver qi and at the same time to “protect” the heart and calming the spirit. I used KiD 1 to let the client land back on earth but used DU 20 to keep a connection open with the heavens. RM 17 to unbind the chest and regulate the qi. And KiD 3, SP 3 and ST 36 to regulate the qi, nourish, and tonify kidney yin and yang and overall feeding with St 36. Besides from the inner 4 gates which I needed bi lateral everything was needed only on the right side.

The client reacted very well on both treatments. She slept better than she thought, even her smart watch told her that her night rest over the next days was better, she felt less agitated and calm after the treatments, especially the last one.

Client 3 Qi flow reset

I saw this client 5 times and only used the qi flow reset points as described in chapter 6.2. I only did a pulse diagnosis to feel if there wasn't a big deficiency/excess or stagnation that I had to treat first. I know that this client has overall a "bad" reaction on long flights. Doesn't keep a rhythm abroad or home. Sleep after a long flight is poor, waking up at least once a night and goes out for about an hour, and must use the toilet sometimes 3 times a night. This client has a great reaction on the treatment, sleeps better from the first night on, and occasionally wakes up at night due lack of sleep. Still has to use the toilet at night but only once. Besides the treatment I suggested to use earplugs as well while sleeping. This as well is an enormous improvement.

8. conclusion

Of course, everybody is unique and therefore need a unique personal customized treatment, preferably according to the classic zangfu with a thorough anamnesis and pulse and tongue diagnosis. However, some people will only come to see an acupuncturist and want to be treated for in this case jet lag problems.

One should always do a pulse diagnosis to see if there are no urgent underlying problems that must be treated first. If the latter is not the case my conclusion is to use the Qi flow reset method as mentioned in chapter 6.2 or Dr. Tans balance method as mentioned in chapter 6.4.

The clinical research was minimal but has good prospects for further therapeutic development. More research will be necessary to get a wider overview, which I will continue in the future.

9. survey

This survey was completed by 73 people, both flight attendants and pilots. This survey was not meant to get an unambiguous answer, but to get an overview with what meridian systems could be affected most for people and what percentage works on preventing/reducing the effects of jet lag.

If you look at the survey it seems that an equal amount of people has a Shen related problem or a Hun related problem, the amount of waking up at night in my opinion is very high. I'm happy to see that most of the questionnaires works out in one way of another, but a bit troubled that there is a relatively high percentage that use sleep medication.

1. Is it difficult to fall asleep?
Yes 37%
No 63%
2. Is it difficult to sleep through the night?
Yes 56,3%
No 43,7%
3. How often do you wake up during the night?
0 times 9,6%
1 time 37%
2 times 32,9%
Several times 20,5%
4. How long do you stay awake when you wake up during the night?
0-15 min 57,7%
15-30 min 18,3%
30-60 min 21,1%
Longer 2,8%
5. Do you wake up early?
Yes 46,6%
No 53,4%
6. Do you suffer more from jet lag to the east, west doesn't matter?
East 31,5%
West 39,7%
Doesn't matter 28,8%
7. Do you keep a NL rhythm while abroad?
Yes 19,2%
No 80,8%
8. Do you keep a rhythm while home?
Yes 77,8%
No 22,2%
9. Or do you sleep in?
Yes 43,8%
No 56,2%
10. Do you work out?
Yes 83,6%
No 16,4%
11. How often do you work out a week?
1 time 19,1%
2 times 39,7%
3 times 17,6%
More often 23,5%
12. Do you use sleep medication (incl. Melatonin)?
Yes 20,5%
No 79,5%

10. exercise videos that can help promoting sleep

Breath exercises: <https://youtu.be/HnkuRgF7qyE>

Qi Gong exercises: <https://youtu.be/H6UOk8arDDw>

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