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Hidden Modern Health Problems and Crouching Traditional Exercise Solutions for Computer Users

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ABSTRACT

As the rapid progress of ICT (Information and Communications Technology), the number of computer users is also escalating sharply. These computer users are very susceptible to RSI (Repetitive Strain Injuries) which may be in the form of physical disorder, such as MSD (Musculoskeletal Disorders) or CVS (Computer Vision Syndromes), and various mental disorders. These disruptions are mainly due to people's ignorance to ergonomic positions and incorrect attitudes in using the computer for years. The biggest enemy of modern people is called 'Disease of Civilization', caused by the changes in behavior due to the advancement of technology and bad life style. "There is nothing new under the sun" - The Book of Ecclesiastes 1:9. To overcome the impact of modernization, the solution is thinking "backward" to old concepts of the ancestors. Traditional exercises, which at first used for defense mechanism against the nature and enemies, are now applied in the work life. In particular, the authors intend to invite Indonesian computer users to cultivate "Aman dan Sehat ber-Komputer" (= ASK) ("Safe and Healthy Computing") by integrating exercises as a their daily life-style. There are many hidden health problems for modern computer user, but there are also many traditional exercises that crouch against the problems.

Author Keywords

Safe and Healthy Computing, modern life-style, traditional exercises, RSI, MSD, CVS, ergonomic

INTRODUCTION

Of the total of 7.2 billion of world population, 3 billion of them are internet users. During 2013, the numbers of internet users in Indonesia had reached 74.75 million, including 31.7 million 'Netizens' (Internet users with 'work-hours' at least 3 hours per day) [1]. The numbers of computer users are more than the number of internet users.

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The health of computer users (hereinafter referred to as users) who perform their work continuously and repeatedly for a long time in front of computers, exacerbated by conditions of ignorance about ergonomics and wrong behavior in doing his job, resulting in a physical disorder known as RSI (Repetitive Strain Injuries). RSI may manifest as: 1. MSD (Musculo Skeletal Disorders), injury or pain in muscles and joints, and 2. CVS (Computer Vision Syndromes), eye irritation by looked at a computer screen for too long. In addition, users may also experience a mental disorder, such as frequent headaches, insomnia, loss of appetite (anorexia), impaired digestion (dyspepsia), depression, high blood pressure, heart disease, and many other diseases.

Solution, inexpensive, quick but effective way to overcome the health problems is socializing the ASK ("Aman dan Sehat berKomputer") ("Safe and Healthy Computing") program. This program initially explains the potential health hazards of the users. Explanation is done through the website and social-media or direct presentation, the campaign, and especially through the implementation of Olah Diri Tradisional (hereinafter referred to as ODT) training. Activities undertaken by ODT's trainees are a set of exercises, relaxations and self-massages (acupressure) at certain acupoint. All those practical and simple exercises can then be performed routinely every day or inserted in the break-time of daily activities. ODT's material selected mainly from the wealth of Chinese Traditional Exercise that has been widely recognized and trusted internationally, such as: Taiji Quan, Wu Qin Zi, Ba Duan Jin, Zhineng Qigong and many others.

History

In the 21st century, one of the greatest accomplishments we can celebrate is our continuous pursuit of fitness since the beginning of humankind [3]. Throughout prehistoric time, the quest for fitness was driven by a need to survive through the arduous tasks of hunting and gathering. Today, humans also need to maintain their health in daily work in the modern world that has greatly influenced by technology. History records as follows: Primitive Man (pre-10.000 BC), The Neolithics Agricultural Revolution (10.000 - 8.000 BC), The Near East (4.000 - 250 BC), Ancient Chinese and Indian Civilizations (2.500 - 250 BC), Ancient Greek Civilization (2.500 - 200 BC), Roman Civilization (500 BC - 476 AD), The Dark Ages (476 - 1000 AD) and Middle Ages (900 - 1400 AD), The

Renaissance (1.400 - 1.700 AD). In the 21st Century we also need a kind of exercise that suitable for computer users. Importance to note, the best exercise is a proven, reliable, efficient, effective, does not require a long time but has a lot of benefits.

Why TCM ?

The exercise that have the most libraries and recommended are developed based on Traditional Chinese medicine (=TCM), which is based on Chinese philosophy, including the theory of Yin-Yang, the Five Elements (Wu-xing), the Meridian system of the human body (Jingluo) and many others. TCM believes that all processes in the human body are related to and interacted with the nature. The onset of the disease is caused by disharmony between the environment inside and outside the body. Symptoms of imbalance are used in the understanding, treatment and prevention of disease. TCM practices include herbal medicine, acupuncture, Tui Na massage, diet therapy, exercise (Qigong and Taiji), and also astrology (Fengshui). TCM concepts known as Eastern medicine is often at odds with Western medicine, but the practitioners combine both of them based on the evidence. Traditional medicine in Indonesia, including TCM, was stipulated in the Decree of the Minister of Health of the Republic of Indonesia Number 1076 / Menkes / SK / VII / 2003 on the Implementation of Traditional medicine. Surat Izin Pengobatan Tradisional (SIPT) (=Permit of Traditional Medicine) is given by the Chief Medical Officer of the District / Municipality to practitioners whose methods have met the requirements of research and testing and proven to be safe and beneficial for health [8].

East meets West

In doing your daily work, there are three stages of you get suffering on the part of certain muscle or bone parts of the body. The stages are starting from Discomfort, Pain and eventually Injury (=DPI). Suffering can affect health significantly, both during and outside your working hours. Suffering delimitates what you do, how you interact with other people and how you respond to the situation.

Your body are designed to be used [9]. Blood brings nutrients and oxygen to the tissues and removes waste products. To assist the heart in moving blood around the body, the muscles need to contract and relax, thereby 'pumping' it along. Your bodies also need to move to keep your joints healthy. Joint movement keeps the joint lubricated and nutrients move around, and this is what allows the joint to operate properly. If there is no movement in the joint, the fluids and gases within the joint gather in one place, increasing the pressure in part of the joint and causing discomfort. The more rarely used, a joint is increasingly difficult to move. That is, the joints which are slightly used will be 'stiff' in the short term and in the long term may lose part of the range to be moved. Making sure you regularly stretch and move joints through their full

range of movement will ensure you keep their full range of movement.

Think of your joints as operating much like a door hinge. Kept lubricated and regularly moved through their full range, your joints will keep their proper function. If not used in part of the range, a joint will become stiff and may break down. Lack of movement also affects your tendons and connective tissues, by: decreasing their strength, and de-creasing the range through which they can move.

Apart from the brain and spinal cord, nerves are either 'motor' – providing action – or 'sensory' – providing feeling. Damage to motor nerves causes weakness or paralysis; they may easily fatigue or give way. Damage to sensory nerves causes numbness, tingling or altered sensations, and pain.

In TCM, the network known as Qi Meridian (Jingluo) spread throughout the body, which are mapped to acupoints (see Figure 1). If the qi (energy) go in then the meridian is smoothly, it will create harmony in the body, and thus your body is able to fight again the disease. Otherwise in case of obstacles on the meridian, it will be displayed as a health disorder. To pave the way of qi, it is required exercises known as Qigong and Taiji.

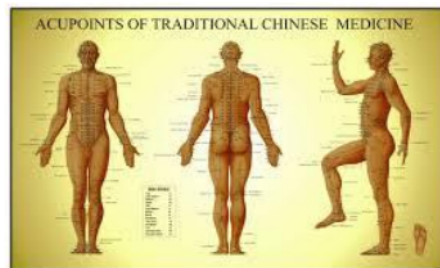


Figure 1: Qi Meridian

Beyond the exercises, there are a number of contributory factors, which may lead to the onset of DPI. We have grouped these factors into seven categories: (see Figure 2).

Individual factors: Things a person can and can't change about the way he is.

Psychosocial factors: The way a person interacts with his social environment and the influences on his behaviour.

Work organization: How work is arranged, delegated and carried out.

Workplace layout/awkward postures: The way the workplace is set up and the working positions workers adopt.

Load/forceful movements: What objects a person handles and the forces he has to apply to use them.

Task invariability: How much a task changes over time.

Environmental issues: Where the work takes place and the conditions a person works in.

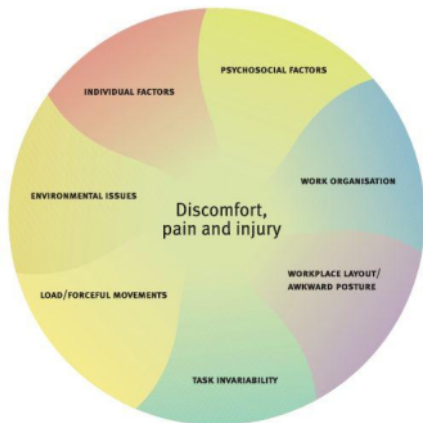


Figure 2: Seven categories of DPI. [9]

RESEARCH METHODS

The health problems of computer users originated from ergonomic conditions, computer placement and position of the user's body posture while working. The second problems are RSI – Repetitive Strain Injuries, appear as tangible Physical disorders consist of MSD - Musculo Skeletal Disorders and / or CVS - Computer Vision Syndromes, and Mental disorders such as insomnia, dyspepsia, migraine and so many others [2].

During the activity using the computer, the user should always try to relax. There is a method 20-20-20 recommending that the user every 20 minutes stop for 20 seconds to look at the object within 20 feet (± 6 meters). Breaking-time can be used to perform exercise movements, relaxations or self-massages on some specific acupoints. In addition, more importantly, users individually or in groups every day doing the exercises.

Sample a variety of exercises:

The Eyes exercises: Eyes are the most precious jewel that must be maintained as well as possible. How bright you are, without healthy eyes, you can not do much. The eyeball is moved by muscles surrounding the eye [2]. Impairments such as myopia, hipermetropi, presbyopia, astigmatism, Amblyopia and others, can be prevented and corrected by exercises that strengthen the the eye's muscles and massages in some acupoints around the eye.

The Arm exercises: According to Qi Meridian of TCM, acupoints on the arm are associated with upper body organs (lung, large intestine, small intestine, heart, pericardium and triple-burner). Movements of the arms in addition to train the arm muscles also strengthen upper body organs.

The Leg exercises: Acupoint on the legs are associated with lower body organs (stomach, spleen, bladder, kidney, gall bladder and liver). Movements on legs in addition to train the leg muscles also strengthen the lower body organs.

Socialization of the ODT training is done by organizing and developing a program called "Aman dan Sehat berKomputer" (ASK) conducted in accordance with the steps that can be seen in **Figure 3**.

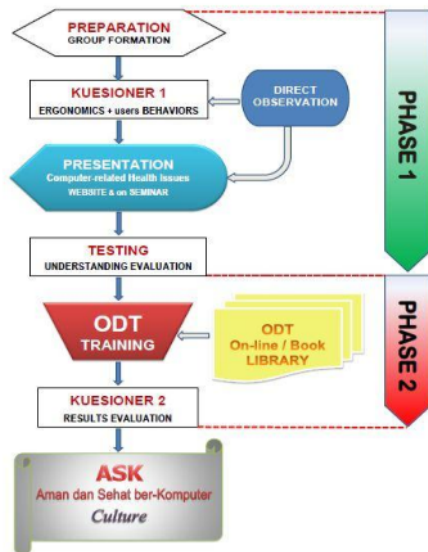
Preparation is done in a company by establishing a maximum of 50 user-membered group. This kind of training is divided into two phases. The first phase begins with filling out KUESIONER-1 forms for the purposes of analysis user health problems which contains questions about the state of ergonomics and behavioral habits of their work. Questions of KUESIONER-1 in addition to the standard question also obtained from observations typically found in each company. A PRESENTATION on the explanation of the potential hazard to the user's health threats through the materials will follow the evaluation of KUESIONER-1. Instead of downloading the presentation materials from the website, the users can attend on-site presentation. This phase concludes with TESTING, where participants will be evaluated the level of their understanding.

Phase two is the main activity ODT training conducted for 3 days. Ultimately done with filling out KUESIONER-2 that its evaluation results are used to measure the effectiveness of the whole training.

Finally, the expectation of ASK program is that computer users will have additional new habit i.e routine ODT daily practice. ODT practitioner will always preserve and maintain a healthy body and soul into a 'Seger-Waras' human who has a excellent health, reliable, not easy to get sick, able to be ready at any times and always stay motivated, so he could be more beneficial for the community. Research shows a strong relationship between the level of Public health with Strength competitiveness (Competitiveness rating). Countries with high levels of Public health appeared to have a higher competitiveness ratio (ILO, 2003).

Efforts to encourage the user to follow the ASK program through ODT training is in line with the declaration of "Indonesia Berbudaya Keselamatan dan Kesehatan Kerja (K3) Tahun 2015" ("Culturing Indonesia in Occupational Safety and Health 2015") based on Decision of Menakertrans [Kep.372 / MEN / XI / 2009](#) [6]. Speech of Menakertrans on "Upacara Hari K3 Nasional & Pernyataan Dimulainya Bulan K3 Nasional tahun 2014" at Jakarta, 12 January 2014 [5], urges implementation of the K3 is not only a government responsibility, but also the responsibility of all parties, especially Industrial society.

Thus, all relevant parties are obliged to take an active role according to their functions and authorities to make efforts in the K3 continuously and sustainably, and to make the K3 as a part of work culture, so as to prevent cases of occupational accidents and diseases. This will certainly affect the stability in the business, and can indirectly increase economic growth nationally [6].



Figure

3: ASK Research Methods steps.

The K3 is not just a matter of discipline and obedience, it is also an investment in human resources and business productivity. Institution which has workers who do a lot of sick leaves and recruit new employees is costly for companies and wasting time for managers and other staff.

CONCLUSION

Nowadays, every day is estimated there are more than 40 million computer users in Indonesia that sit more than 3 hours in front of computer or other gadgets and the amount in a short time will increase rapidly.

According to the history of the human civilization, in every era human requires special methods in fitness. Similarly, in this information age, there should be a special exercise faced to the threat due to from advances in technology, especially in ICT. That there is nothing new under the sun, thus the solution to overcome the modern-life-style diseases is bringing back the traditional exercise heritage. ASK program is a set steps of cultivation program for culturing Safe and Healthy Computing life-style, includes ODT exercises.

As the existence of Senam Tera Indonesia which has widely known, especially among the elderly, ASK program is also expected to attract Indonesian computer users society and participates to support government programs: "Indonesia ber-Budaya K3 tahun 2015" (Culturing Indonesia in Occupational Safety and Health 2015).

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worldwide, who we encountered in 'face to face' meeting, as well as in the virtual world through various social media. As a lecturer of Human Computer Interaction, we are 'called' to be a 'bridge' to collect ancient art materials of traditional exercises and bring it back in a simple, efficient and effective way in order to be useful to modern society.

To our fellow computer users, we also would like to thank for the warm welcome in a variety of the introduction of Safe and Healthy Computing programs (ASK) and trainings. Your attention and enthusiasm are a great trigger to our passion to work better. Sincerely our gratitude also goes to our friends who involved in the ASK program activities.

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