

The study of fatigue compared between touch screen and keypad mobile phone for use social network

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Abstract. This aims of study to investigate and survey fatigue from use of social network between touch screen and keypad mobile phone with Public Health student Suranaree University of Technology total 614 person. They were screened by eye diseases, wrist injury. thumb and finger injury and other people do not use mobile social network. That separate 2 sample group for keypad and touch-screen mobile phone 30 person per group. The result compared before and after use of all mobile phones use social network with continue period of two hours . The data analyzed by Paired sample-t test showed that the force of the hand and the pressure of the finger decreases with significance P-Value 0.05. The eye strain test result before and after use keypad and touch screen mobile phone in range 0.5-6.0 Hz total of 27 and 25 person respectively. That analyzed by Paired sample-t test showed that eye strain increased with significant P-Value 0.05. The compared result of the wrist strength and the finger pressure by mobile phone type with Two independent sample T test showed that the results with keypad mobile phone are increase more than touch screen mobile phone with significant at the P-Value 0.05.

Keywords. Ergonomics, Fatigue, Social network, Mobile phone, Keypad, Touch screen

1. Introduction

The information technology has developed rapidly in present.. The facilities of information system to strength for fundamentals of human life for support demand in the mobile phone, that very popular with globalization community. They are ability to communicate to all most area and all the time.

The data from Economic newspaper No. 17 to 20 June 2012 showed the number of mobile users. 6.2 billion people and forecast there will be 3G network covers 85% of the worldwide the mobile phone user increase more than 9 billion people in 2017

The teenagers group they use mobile phone for many purpose such as music, pictures, videos, play games, send and receive mail and connect to the internet for use social network.

The mobile phones contribute comfortable communication, otherwise that have effect on the body. The data from Journal of Medicine in Thailand (Volume 337) said that if you use the thumb and bend for press bottom are frequent, that may be cause of tendon inflammation at his thumb, wrist (De Quervain syndrome) and tendon inflammation of the fingers (Trigger thumb). Moreover if holding mobile phone in long time may be cause of shoulder and neck pain.

The mobile phone and alphabet are small size. It is difficult to monitor and many people have to bend the neck for look up the screen. Then cause eye and neck muscles

fatigue.

For this reason, the researchers team plan to studied muscle and eye fatigue with Public Health students at Suranaree University of Technology Thailand . They use the mobile phone for social network more than 2 hour per day for suggest solution with appropriate solution contribute to fatigue reduction

2. Methods

This study is a Quasi experiment the wrist, fingers strength and eye strain before and after use social network between keypad and touch screen mobile phone with Public Health students at Suranaree University of Technology Thailand. The research method in first step the research team provide questionnaire for screen samples, they are use Keypad mobile phone and Touch screen mobile phone.

In second step the research team set up work station and control illumination 600 Lux in



Figure 1: Control illumination 600 Lux at work station

In the third step the research team test eye strain by Critical Fusion Frequency before and after use keypad and touch screen mobile phone with social network 2 hour in figure 2.



Figure 2: Critical Fusion Frequency test

In the fourth step the research team test wrist and fingers strength by Grip Strength Dynamometer and before and after use keypad and touch screen mobile phone for social network before and after use keypad and touch screen mobile phone with social network 2 hour in figure 3 and 4 respectively.

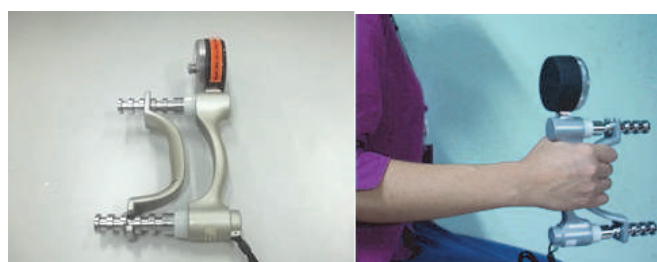


Figure 3: Grip Strength Dynamometer measurement



Figure 4 : Pinch gauge measurement

3. Results

The study result of questionnaire survey from use of social network between touch screen and keypad mobile phone with Public Health student Suranaree University of Technology total 614 persons and then return 447 persons. They are use keypad mobile phone 277 persons and touch screen mobile phone 170 persons. The sample are men 70 persons (15.7%) and women 337 persons (84.3%). Major of age 20 and 21 years (33.1 and 24.1%) respectively. They are left skill 46 persons (10.3%), right skill 401 persons (89.7%) and 387 persons (86.6%) do not have congenital disease, 60 persons (13.4%) have congenital disease. They are not an accident / injury 301 persons (67.3%) and had an accident / injury 146 persons (32.7) in this experiment are the people who have been injured wrist either. side One side of the wrist. (Left or right) of the thumb and index finger. From the sample to be tested. However they are not select student they had an accident and injury with wrist and fingers for sample because that may have health affect with them. In addition 292 persons (65.3%) are common, 155 persons (34.7%) are eye disease and 139 from eye disease are myopia, color blindness 14 persons. However they are not select for sample. From 447 persons all most use mobile phone and 328 persons have mobile phone ability to approach social network, That 328 persons they are use mobile phone for use social network 203 persons (45.4%). An average one day they are use social network by mobile phone less than 1 hour total 94 persons (21%) and 57 persons (12.8%) use social network by mobile phone continue 1-2 hour. That data from 203 persons they have problem when use mobile phone for social network total 122 persons (27.3%) and mainly they have eye strain and neck muscle pain. That muscle pain relate with group they use social network continue 30-60 minute total 80 persons and 73 persons use social network more than 60 minute. When they have muscle fatigue they try to stop 153 persons, otherwise 34 persons continue use mobile phone for social network. The research team was selected 2 sample group for keypad and touch-screen mobile phone 30 persons per group. The eye strain test result before and after use keypad and touch screen mobile phone in range 0.5-6.0 Hz total of 27 and 25 persons respectively. That analyzed by Paired sample-t test showed that eye strain increased with significant P-Value 0.05,

The eye strain test result before and after use social network compared between keypad and touch screen mobile phone by Two independent sample-t test showed that eye strain when they use keypad mobile phone increased more than touch screen mobile phone with significant P-Value 0.05, that result show in this Figure 5 in below.

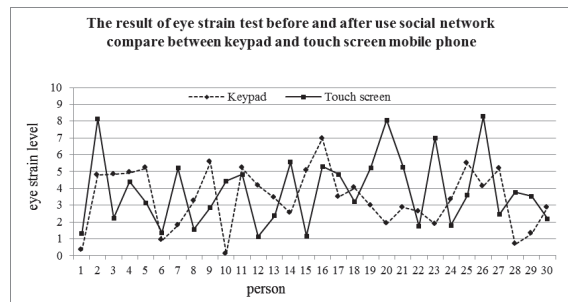


Figure 5: The result of eye strain test (compared between keypad and touchscreen mobile phone)

The fingers pressure test result before and after use keypad and touch screen mobile phone. That analyzed by Paired sample-t test showed that fingers pressure test decreased with significant P-Value 0.05

The figure pressure test result before and after use social network compared between keypad and touch screen mobile phone by Two independent sample-t test showed that figure pressure test keypad mobile phone decreased more than touch screen mobile phone with significant P-Value 0.05, that result show in this Figure 6 in below.

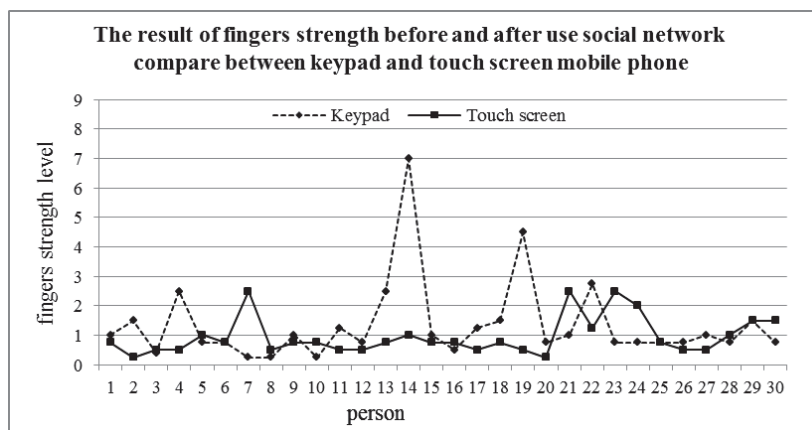


Figure 6: The result of finger pressure test (compared keypad and touchscreen mobile phone)

From this result from eye strain test are increase from use social network by mobile phone. The hand strength and fingers pressure test are decrease after use social network by mobile phone. For that reason when we use social network by mobile phone, we necessary to consider duration not over 2 hour if necessary to use more than 2 hour we should be change posture and close up your eye for reduce fatigue.

4. Discussion and Conclusion

This research focus to study fatigue from use social network by mobile phone. The research team study 3 parameter such as eye strain, hand strength and fingers pressure test and next research should be consider other parameter such as mobile screen size, mobile screen distance from eye and body posture when the sample use mobile phone because that parameter may be effect for fatigue.

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