Evaluation of arch of foot patch by biomechanical method

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ABSTRACT

This experiment tested the effectiveness of pain relief patches using a human factors engineering method. It is said that sticking pain relief patches on the plantar arch of the foot can help reduce fatigue around the hips and knees. Measurements for this study involved the evaluation of the static upright postures of 8 female participants. I got the subject to measure blood pressure and cardiac beats rate. Moreover, the Visual Analog scale questionnaire survey was conducted. Data were collected a total of four times per person, both before and after exercising with and without the pain relief patches. The eye-opening state and the eyelid closure state were added, respectively. Since it measured by eight patterns, 64 data was collected. While there were no effects observed before exercising for both conditions. There were no significant difference in area between Center of pressure (COP) measurements during the static upright postures in an eyes-open state after conducting the exercises with and without the pain relief patches. Consequently all participants reported that they did not feel the pain relief patches on their feet. The results of this experiment support the fatigue-alleviating effects of the pain relief patches and suggest its possibility in maintaining a more stable static upright posture. It was considered that post physical activity, due to decreasing the trajectory of COP, it was effect of possibility anti-fatigue function.

Keywords: biomechanics, health care product, visual analog scale, quite standing, COP

1. Introduction

According to the Ministry of Internal Affairs and Communication’s Population Projections for Japan, Japan’s population peaked in 2005 and has been on a gradual decline since. Due to the rise in the average life expectancy and the decline in the birth rate, moreover, the Japanese population is rapidly aging. With the aging rate for over the 65 years surpassing 21% in 2007, Japan has become a so called super-aged society. It is estimated that one in four persons will be 65 or over by 2015. It was necessary to kinesitherapy longer for posture control and gait control, also prevent for locomotive syndrome. The purpose of this study was to investigate the effect of foot sole patch in standing motion controls. One of the root cause not to get a habitual practice was to be fatigue conditions. There were many product to depression for muscle fatigue, shoes, socks, wear and supplement. There was not enough data about foot sole patch in the shoe for comfortable exercise.

2. Method

Measurements for this study involved the evaluation of the static upright postures of 8 female participants. It was measured blood pressure and cardiac beats rate for monitoring physical activity. Moreover, the Visual Analog scale questionnaire survey was conducted for healthy conditions about sense of well-being. The data were collected a total of four times per person, both before and after exercising with and without the pain relief foot patches, respectively each data collection days. The eye-opening state and the eye closed state quite standing movement were added data by force plate, respectively. Since it measured by eight patterns by person (Center of pressure: area and trajectory), it was produced 64 data from all subjects. While there were no effects observed before exercising for both conditions in blood pressure.
3. Results

There was no significant difference in area between Center of pressure (COP) measurements during the static upright postures in an eyes-open state after conducting the exercises with and without the pain relief patches. Moreover there were no significant references in visual analog scale about healthy conditions. Consequently all participants reported that they did not feel the presence of the pain relief patches on their feet.

The results of this experiment supported the fatigue-alleviating effects for only subjective visual analog scale. It was suggested that possibility of maintaining stable static upright posture in COP(Figure 1 and 2). There was a little effect of possibility anti-fatigue function.

4. Conclusion

There was significant different in eye open COP trajectory. That’s was not enough data for effect of foot sole patch. In a super-aged society, old people with reduced physical activity and sensory function make up the majority, and efforts must be made to equipment and appliances so that these people can live safely and healthy. The importance of this research and analysis, from the view point of ergonomics, on biomechanical data of university student with not reduced physical functions, and not concerning the limitations on the range of movement of a person’s joint in quite standing posture. Therefore, we will have focused older and disable person in future.

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