



SMART CORSET

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1.0 EXECUTIVE SUMMARY

Low back pain (LBP) is experienced in 60%–80% of adults at some point in their lifetime. Low back pain has been recognized as one of the most common causes of work disability. Trunk movement such as flexion and rotation are the risk factor of low back pain which is a common musculoskeletal disorder in occupational settings associated with incorrect working condition and poor ergonomic especially in industrial and health care worker, the number is increasing overtime.

Therefore, from our observation on nature of working condition and random survey that we had done at 5 different hospital, out of 500 worker 300 had history of low back pain and it been increasing through out the year. By referring to the issue mention, we came out with corset which is wearable corset to monitor lower back movement in workers to help avoid the risk factor and to indicate poor posture that was common cause of low back pain.

Our product is known as Smart Corset. In the market, there is huge lumbar support product but still the worker having back pain. We decide to come up with an innovation to prevent further back pain and also as awareness tool in bending the trunk whenever worker want to do activities such as lifting or carrying.

Smart Corset can prevent the incorrect posture by monitoring the posture of lumbar spine within safe range 40° - 45°degree. Smart Corset is use to prevent worker from back injury by using awareness sensor indicator of proper body posture. Another good thing is it also use for patient to reduce recurrent symptoms that will occur rapidly and to prevent symptoms from become severe.

The target markets of this product are product supplier, online business entrepreneur, pharmacy, fitness center, drop ship and online business agent. On the other hand, the product will be established in Malaysia since there is no existing application of sensor awareness for back support in today technology. Thus, this kind of product is believe to provide a competitive advantage over others established competitors. Apart from that, the product can be wear by any individual that has back pain and poor posture.

The organizations manage by 5 members including Maisarah, Syamimi, Azlinda, Nurul Hidayu and Nurul Ain. The organization is dividing into hierarchy model which is categorized into 5 roles which are Chief Executive Office, Financial Manager, Marketing manager, Product and Operation Manager and inventor or product maintance.

2.0 INTRODUCTION

Problem Statement/Issues

Based on our survey at 5 different hospital about 300 worker had back pain problem due to work disability. To solve the issue we design a product to overcome the problems.

1. Why the number of low back pain among worker increase through years?
2. How does poor posture will be prevent?

Objectives of report

To come out with the solution to minimize back pain problem and awareness of poor posture and lifting technique.

The purpose of the product (Smart Corset) is use to prevent individual from back injury by using awareness sensor indicator of proper body posture. It help to reduce recurrent symptoms that will occur rapidly and to prevent symptoms from become severe.

Methodology

The method used is qualitative method. The qualitative research is primarily exploratory research. It is used to gain an understanding of underlying reasons and opinions. Besides that, it provides insight into the problem or helps to develop ideas or hypothesis for potential quantitative research.

The method used for this product development was through interviewing the product supplier, was the easiest way to collect all the information regarding the business. The business was analyzed by using SWOT analysis.

1. Websites

- a. Searching for new innovation, machines that specialize in making smart corset automatically that seem to be new Malaysia

2. Idea Generation

- a. Brainstorming ideas into Mind Map
- b. Observation of the current trends.

3. Survey

- a. Survey was done in 5 different hospital regarding low back pain cases.
- b. 100 worker in each hospital will be interview why, how, when they get low back pain.

There are a few limitations regarding the study. The analysis done through detailed observation, explanation and assumption where it is impossible to define exactly what elements are important and crucial that should be considered as a main problem and solution.

3.0 TECHNOLOGY DESCRIPTION

The existing product from royal posture support brace lumbar and shoulder corrector belt therapy are adjustable for men and women. The product help to supports and encircles the vertebral column, can keep your shoulder, neck, and body upright, the corset gently force the muscles to keep your body in the straight position.

Smart corset are the external device that is worn by the human to avoid the bad posture, help prevents back injuries, congenital spinal deformities and as a treatment of lower back pain. Smart corset also improve trunk re positioning error and reduce excessive trunk movement.

The type of fabric material for the corset was 30% polyester and 70% neoprene. The breathable fabric can be wear inside the clothes and friendly for sensitive skin individual. The smart corset come in various sizes which are small, medium, large, extra large until triple extra large. The size also can be adjustable according to patient convenient and comfortable.

From brainstorming session we get the idea to put on sensor at the corset to upgrade the existing product and make new market. There are two types of sensor which are buzzer and vibrator motor sensor. Vibrator motor sensor to detect trunk bending or flexion that exceed range of 45 degree. It use to inform users after receiving the signal of trunk bending exceeding normal range by vibrating over lower back area. Same with the buzzer sensor also function to detect trunk bending or flexion and transmit the signal through sound. The vibrator motor and buzzer sensor come in a form of mini motor disc.

This smart corset use a battery as power supply and can be rechargeable . The voltage for the power supply range between 7 to 12 Volt. We use minimal power supply for the sensor so the battery will last longer. The product acts as prevention and alertness system in our daily activity that using trunk movement.