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Effect of posterior cervical spine tool on neck alignment for the adults with anterior head posture

Ji Woong Park[1†], Ji Hoon Park[4], Dong Soo Chae[4], Seong A Lee[2], Yunyoung Nam[4†], Hyun Seok[3], Ye bin Cho[5*]

Soonchunhyang University Seoul Hospital, Department of Physical Medicine and Rehabilitation[1], Soonchunhyang University, Department of Occupational Therapy[2], Soonchunhyang University Bucheon Hospital, Department of Physical Medicine and Rehabilitation [3], Soonchunhyang University, Department of Computer Science and Engineering[4], Soonchunhyang University, Department of ICT Convergence Rehabilitation Engineering[5]

Objectives

With the popularity of computers, the frequency of the appeals to the neck, shoulder, and musculoskeletal abnormalities has been increased in students and professionals who frequently use the computers. The anterior head posture (turtle neck syndrome), which frequently occurs in long-term computer working group, is a cause of diverse musculoskeletal, nerve and vascular disorders because the head moves in front of the gravitational center line and becomes chronic. It is difficult for the general people to know whether the intervention methods so far are a correct cervical posterior motion of the cervical deep muscle. Analogue methods are mostly used, and there are digital devices only for the prevention of the head posture. So we decided to develop a digitized head anterior rehabilitation tool.

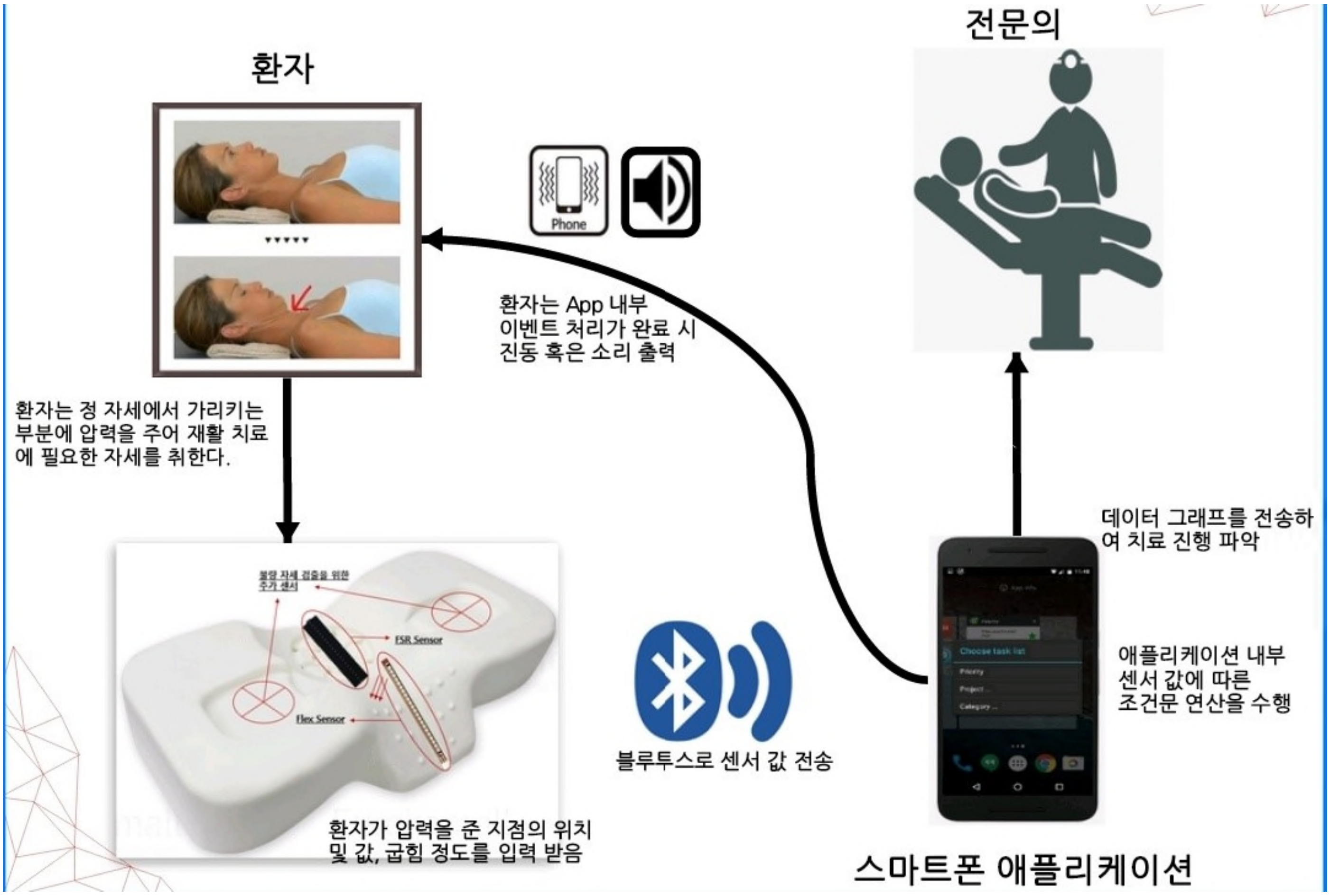
Methods

When the subject is placed in a lying position and presses the pillow after the posterior cervical spine, the target receives inputs of position, value and degree of bending through Arduino Bluetooth module via FSR•FLEX sensors. After receiving the above information, the application executes the conditional statement operation (exercise method), and the vibration is output when the event processing is completed (Fig. 1). In the right posture, the patient puts pressure on the pointing part to take necessary positions for rehabilitation treatment. The patients will output vibration or sound when the internal event processing is completed within the app. Then, they enter the position, value of the pressure point and the degree of bending, and send sensor value to Bluetooth. The specialist identifies the progress of the treatment by sending a graph of data. They perform the conditional operation according to sensor value in application.

Results

If the patients apply this posterior cervical spine tool to a person with a anterior head posture as a steady exercise, the neck adjustment is returned to the normal range and the symptoms of the anterior head posture and musculoskeletal symptoms will be alleviated considerably. Conclusions: We suggested it is meaningful that this is designed to induce the correct operation and make it easier to use than the existing equipment for Turtle neck syndrome. In addition, if the exercise information is used in the medical field, it will be more helpful to understand patient’s physical condition.   Keywords: Forward head position (FHP), Turtle neck syndrome, Rehabilitation exercise, FSR•FLEX sensor.

Acknowledgment :This research was financially supported by the “ICT Convergence Smart Rehabilitation Industrial Education Program” through the Ministry of Trade, Industry & Energy (MOTIE) and Korea Institute for Advancement of Technology (KIAT).


환자
전문의
Phone
불량 자세 검출을 위한 추가 센서
FSR Sensor
Flex Sensor
App info
Choose task list
Priority
Project ...
Category ...
스마트폰 애플리케이션

환자는 App 내부 이벤트 처리가 완료 시 진동 혹은 소리 출력

환자는 정 자세에서 가리키는 부분에 압력을 주어 재활 치료에 필요한 자세를 취한다.

블루투스로 센서 값 전송

환자가 압력을 준 지점의 위치 및 값, 굽힘 정도를 입력 받음

데이터 그래프를 전송하여 치료 진행 파악

애플리케이션 내부 센서 값에 따른 조건문 연산을 수행

Figure 1. Process of neck posture control device.