Outline:

**Abstract**

Recent technological advancements in soft actuators, flexible electronics, and system integration technologies have enabled the creation of a portable, low cost, and unobtrusive wearable sensor glove that is used in conjunction with a sensory feedback device. This combination of technologies has the ability to advance the status quo of healthcare, prosthetics, and rehabilitation. The application of a wearable sensor glove and sensory feedback device has emerged as a promising paradigm to enhance the care provided to patients with neurological and musculoskeletal conditions. The integration of soft and biocompatible materials with miniaturized electronics, sensors, and actuators is undoubtedly an attractive prospect to develop a wearable sensor glove and sensory feedback device. The development of soft pneumatic actuators that are used in conjunction with micro-motors provides one with the ability to physically actuate patients with perceived sensory transfer signals. A sensory feedback device that has a high performance requires a high degree of mechanical flexibility, low weight, and a simple user interface. This paper includes the most up-to-date materials, sensors, actuators, and system-packaging technologies to develop a wearable sensing glove and sensory feedback device. This paper presents a summary of the requirements for the material properties, sensor capabilities, electronics performance, and user interaction. Details of the mechanical, electrical, system architecture, and material properties are discussed in regard to their application in healthcare, prosthetics, and rehabilitation. Additionally, the limitations of the current materials and technologies are discussed, as well as the key challenges and the future direction of how a wearable sensor glove is used in conjunction with a sensory transfer device. Overall, this paper is used as an all-inclusive review of the technologies used to develop a wearable sensor glove and a sensory feedback device.

**Introduction**

Sensory impairment is a symptom of a variety of neurological conditions such as spinal cord injuries (SCI), cerebral palsy, peripheral neuropathy, sclerosis, and diabetes. Amputee patients face a similar issue with their prosthetics which are, up to date, unable to sense or feel. The lack of tactile, proprioceptive, and temperature feedback from a limb (whether human or artificial) often leads to a feeling of disembodiment over the limb, resulting in reduced use of the limb or rejection (in the case of prosthetics) [Design and evaluation of a sensory...][7]. Patients with sensory impairments rely solely on vision as a feedback mode to determine the state of their limbs, this can be greatly inconvenient [4]. The need for a device that is able to communicate the sensory and physical states of a sensing-less limb is evident.

**Tables and Figures**

-Tables:

-Existing wearable sensor glove technology of pressure, temperature, and strain

-Figures:

-Existing wearable sensor glove technology

-Summarized key properties of wearable sensor gloves

-Overview of commercial wearable sensor glove technology

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