Although positive effects ~~are~~can be achieved by continuously performing preventive care and other health ~~activities~~care activities, performing the same activities ~~every day~~daily can ~~be~~cause a mental strain. Therefore, research has been ~~performed~~conducted on maintaining the motivation of users and encouraging them to use exercise systems by incorporating games wherein the users can perform voluntary activities. ~~On the other hand, t~~The Kinect system developed by Microsoft is able to recognize ~~people's postures~~a person's posture and the three-dimensional coordinates of their joints, and ~~work has been done to~~ research and ~~develop~~development of systems that use ~~a~~ Kinect to measure hand and foot movements for rehabilitation purposes~~-~~ has been conducted. ~~Since~~ Because ~~the~~ Kinect can detect real-world human postures, it can also be used to recognize antagonistic exercises. Recently, several Kinect-based commercial rehabilitation systems have been developed. ~~Formerly, w~~We previously designed and developed a prototype lower~~-~~limb chair exercise support system ~~using~~that uses a depth image sensor~~,~~ and evaluated ~~the~~ performance and usability. The system recognizes and evaluates exercises ~~based~~ on the basis of 3D position data and joint angles for skeletal and RGB data obtained from the Kinect sensor. In this study, we designed, implemented, and evaluated a system that supports antagonistic exercise using a depth sensor. ~~It~~ The system recognizes exercises ~~by~~ using skeletal data about the user's joints acquired from a depth sensor~~,~~ and evaluates the user's exercises to provide real-time feedback. In addition, it~~This system~~ uses an audiovisual display to explain the exercise procedures to the user~~,~~ and ~~displays user's~~plays their real~~-~~time video to encourage ~~the user to perform the exercises. It~~exercise. It also has a rhythm game function whereby the user can exercise in time with music. This system ~~is provided with~~includes four types of exercise: upper~~-~~/lower~~-~~limb antagonistic movement, upper~~-~~limb left/right antagonistic movement, rock/paper/scissors using both arms and both legs, and duple~~-~~/triple~~-~~time exercises.

Comment [A1]: In American English, a comma (called serial or Oxford comma) is inserted before "and" in a series of three or more items.

Comment [A2]: When a compound adjective is used before a noun, it is connected using a hyphen. At this instance, the compound adjective "real-time" modifies the noun "video."

SAMPLE

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