Objective Assessment Of Balance And Muscular Fitness In Older Adults With Movement Sensor Technology

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Abstract

The United States aging population is expected to grow from 13% in 2011 to 19% in 2030. Interventions that effectively help older adults perform activities of daily living will improve quality of life. Traditional fitness tests for adults +60 years of age rely on timed assessment or the number of repetitions for performance. Age-gender norms are used to categorize fitness and measure change after prescribed exercise. However, this type of assessment does not provide objective information about the quality of the performance. The movement sensor is a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device such as the A2P software on the iPad. This provides useful information for the exercise professional and patient to assess with an exercise prescription and follow-up testing.

Methods

The movement sensor is a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device such as the A2P software on the iPad. This provides useful information for the exercise professional and patient to assess with an exercise prescription and follow-up testing.

Learning Objectives

Participants will:
1. Understand the rationale for the assessment of physical function in older adults.
2. Identify a process to objectively measure physical function in cardiac and pulmonary rehabilitation.

Background

The United States aging population is expected to grow from 13% in 2011 to 19% in 2030. Interventions that effectively help older adults perform activities of daily living will improve quality of life. Traditional fitness tests for adults +60 years of age rely on timed assessment or the number of repetitions for performance. Age-gender norms are used to categorize fitness and measure change after prescribed exercise. However, this type of assessment does not provide objective information about the quality of the performance.

Purpose

To describe how movement sensor technology (MST) utilizes a 3-A accelerometer and 3-A gyroscope be used in cardiac and pulmonary rehabilitation to provide additional performance measures during recognized standardized tests.

The movement sensor is a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device such as the A2P software on the iPad. This provides useful information for the exercise professional and patient to assess with an exercise prescription and follow-up testing. The movement sensor is a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device such as the A2P software on the iPad. This provides useful information for the exercise professional and patient to assess with an exercise prescription and follow-up testing.

Discussion

The United States aging population is expected to grow from 13% in 2011 to 19% in 2030. Interventions that effectively help older adults perform activities of daily living will improve quality of life. Traditional fitness tests for adults +60 years of age rely on timed assessment or the number of repetitions for performance. Age-gender norms are used to categorize fitness and measure change after prescribed exercise. However, this type of assessment does not provide objective information about the quality of the performance. The movement sensor is a small portable device that can be attached to (a) the body such as the lower back, (b) a light-weight barbell or wood dowel and/or (c) embedded inside a small portable device such as the A2P software on the iPad. This provides useful information for the exercise professional and patient to assess with an exercise prescription and follow-up testing.

References

2. Centers for Disease Control and Prevention: National Center for Injury Prevention Control. The 4-Stage Accident, Deaths & Injuries (STEADI) toolkit compiled by the Centers for Disease Control for use by health care providers to identify patients at low, moderate and high risk for falls. The addition of MST quantifies the time an individual remains within zones of stability, minor instability and major instability during the Side-by-Side Stand, Semi-Tandem, Tandem and/or Single-Leg Balance Test. Some patients may be unable to remain balanced for the 10-second timeframes for the tests. However, the progressive demand with each test enables the evaluator to determine the patient’s current balance performance status with additional objective metrics. This information can then be quantified and compared to the original field test.
4. Activities, Deaths & Injuries (STEADI) toolkit compiled by the Centers for Disease Control for use by health care providers to identify patients at low, moderate and high risk for falls. The addition of MST quantifies the time an individual remains within zones of stability, minor instability and major instability during the Side-by-Side Stand, Semi-Tandem, Tandem and/or Single-Leg Balance Test. Some patients may be unable to remain balanced for the 10-second timeframes for the tests. However, the progressive demand with each test enables the evaluator to determine the patient’s current balance performance status with additional objective metrics. This information can then be quantified and compared to the original field test.