Video Game Rehabilitation

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Is There A Place for Games in Therapy?

- Currently
  
- Stroke Victims

- Elderly

- Why Not Athletes?
  
  - In fact, some clinics have started using Wii in rehab.
Old Techniques, New Toys

- Traditional Rehabilitation
  - Therabands, proprioception, manual resistance, etc.

- No Special Equipment
  - Just Wii and Existing Games

- Not Boring/Not Reinventing the Wheel
Existing Video Rehabilitation Devices

- Cybex Trazer
Existing Video Rehabilitation Devices

- Balance Systems
  - Biodex Kat System
- PC Based System
Existing Video Rehabilitation Devices

- **Great Tools**
  - Fun, exciting, challenging, and most important...different.

- **Problems?**
  - Bulky
  - Learning Curve
  - Expensive
Benefits of Using Wii

- **Cost** – A Nintendo Wii only costs $200, and includes all the basic equipment necessary for doing rehabilitation.

- **Contents:**
  - 1 Wii Console
  - 1 Wii Remote
  - 1 Nunchuck Remote
  - Wii Sports
Benefits of Using Wii

- Cost – Wii Fit plus is only $100

1 Wii Fit Plus game
1 Wii Balance Board
Benefits of Using Wii

- **Mii Profile** – As you continue to progress and play more, the intrinsic difficulty of your opponent increases.

- **Difficulty** – In addition to the intrinsic increase in difficulty, traditional rehabilitation progressions can be used to increase difficulty.
Benefits of Using Wii

- Feedback
  - ‘Wii Sports’ provides scoring against a computer player, so as you improve it provides feedback.
    - Additionally, factors such as MPH of pitches also provide feedback.
  - ‘Wii Fit Plus’ provides feedback through a variety of ways using the balance board.
Set Up

- **Mii**
  - A Mii is an electronic representation of the individual playing.
  - The Mii can be personalized to look as similar or different to the individual as the imagination allows.
  - Each individual Mii progresses based on the success and amount of time played.
Exercises

- **Wii Tennis**
  - Wii tennis allows for both upper and lower extremity rehabilitation.

- **Upper Extremity**
  - D1 and D2 flexion and extension used for forehand and backhand strokes.

- **Progression**
  - Add Therabands to exercise

- **Sport Specific**
Exercises

- **Wii Tennis**
  - **Lower Extremity**
    - Proprioception
    - Shuffle with the direction of the ball
  - Progression
    - Add Theraband around the patient’s ankles for resistance.
Exercises

- Wii Bowling
  - Lower Extremity
    - Proprioception
    - Progression
    - Create an unstable surface
    - Have a therapist create external forces to pull the athlete off balance
Wii Baseball

Upper Extremity

- D1 and D2 flexion and extension used when pitching and hitting
- Progression
  - Add Therabands to exercise
- Sport Specific
  - Can be very specific to throwing motion
Exercises

- Wii Boxing
  - Upper Extremity
    - Allows for a variety of upper extremity movements
  - Progression
    - Add Therabands to exercise
- Lower Extremity
  - Proprioception
Wii Sports also allows for progression of exercises between sports games.

For Example:

- Proprioception
  1) Bowling
  2) Tennis
  3) Boxing
Progression
Exercise Progression

- There are 2 ways to progress an athlete’s rehab using Wii Sports
  - Traditional Progressions
    - Adding Weight, Resistance, decreasing stability of a surface
  - Mii Progression
    - The difficulty of the opponent increases as the athlete does more activity.
Wii Fit / Wii Fit Plus

- There are a variety of very useful proprioceptive and core stabilization exercises included in the Wii Fit system.
- The Wii Balance Board provides a great deal of useful feedback about the distribution of force on the athlete’s feet.
Wii Fit / Wii Fit Plus
Adherence

- One of the main problems with doing rehabilitation, is the adherence to the program. Many traditional programs can be long, tedious, and boring.
- By integrating a tool such as the Nintendo Wii, the experience would be more enjoyable which would likely lead to an increase in an athlete complying to rehab.
Rules

- Rules are. . . . Have Fun
  - Imagination is key, invent new exercises
  - Follow traditional criteria of progression
  - Use traditional rehab concepts
  - Make sure exercises are monitored
  - Many exercises are functional in nature
Incorporating Gaming Technology into Athletic Injury Rehabilitation

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Questions