

*"The Clinical Advantage"*<sup>TM</sup>



# Biodex Balance System SD

- **Total Knee Reconstruction**



**Cincinnati SportsMedicine  
& Orthopaedic Center**

*A Nationally Recognized Center of Excellence*

*A cooperative effort by Biodex Medical Systems, Inc. and Cincinnati SportsMedicine & Orthopaedic Center*

# BIODEX

Biodex Medical Systems, Inc.

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# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### PHASE II – three-four weeks

#### ACTIVITIES

Weight Shifting / Static .....	5-1
Bilateral Standing / Dynamic.....	5-2
Single Leg Standing / Static .....	5-3

### PHASE III – five-six weeks

#### ACTIVITIES

Weight Shifting / Static .....	5-4
Bilateral Standing / Dynamic.....	5-5
Single Leg Standing / Static .....	5-6

### PHASE IV – seven-eight weeks

#### ACTIVITIES

Bilateral Standing / Dynamic.....	5-7
Single Leg Standing / Static .....	5-8
Postural Stability Test.....	5-8

### PHASE V – nine-twelve weeks

#### ACTIVITIES

Bilateral Standing / Dynamic.....	5-9
Single Leg Standing / Static .....	5-10
Postural Stability Test.....	5-10

### PHASE VI – thirteen-sixteen weeks

#### ACTIVITIES

Bilateral Standing / Dynamic.....	5-11
Single Leg Standing / Static .....	5-12
Postural Stability Test.....	5-12

Note: The balance progressions that follow are based on the protocols developed and provided by the Cincinnati Sports Medicine Center. The original protocols can be viewed at this link:

**<http://www.cincinnati-sportsmed.com/csm/>**

All phases are broken down into training and testing possibilities related to these protocols and potential stances utilized.

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### PHASE II – THREE-FOUR WEEKS

#### Activities

- Weight Shifting / Static
- Bilateral Standing / Dynamic
- Single Leg Standing / Static

#### Weight Shifting / Static

Use the **Percent Weight Bearing** training screens to perform static medial / lateral weight shifting (*fig.1*), anterior posterior weight shifting and to re-establish center of balance (*fig.2*).



(fig.1)



(fig.2)

Use **Weight Shift** training screens to emphasize lateral shifting over the affected leg to prepare for full weight bearing ambulation (*fig.3*).



(fig.3)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Bilateral Standing / Dynamic

Use the **Postural Stability** training screens in dynamic mode to establish postural stability on a moveable surface (*fig.1*) and to have the patient control dynamic movement away from their center of balance (*fig.2*).



(fig.1)



(fig.2)

Use the **Maze Control** training screen to challenge the patient to control dynamic movement away from their center of balance (*fig.3*).



(fig.3)

Use the **Random Control** training screen to facilitate control of movement around the patient's center of balance which is dictated by the machine (*fig.4*).



(fig.4)

### Positions and Conditions

Use bilateral standing / holding on / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.5*).

Progress to bilateral standing / no holding / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.6*).



(fig.5)



(fig.6)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Single Leg Standing / Static

Use **Percent Weight Bearing** training screens for single leg activities in static mode to facilitate center of balance on the affected leg medially / laterally (*fig.1*), anteriorly / posteriorly and in combined planes (*fig.2*).



(fig.1)



(fig.2)

Use **Postural Stability** training screens for single leg activity in static mode to facilitate center of balance (*fig.3*).



(fig.3)

Use **Limits of Stability** training screen to challenge the sway envelope of a single leg stance in static mode (*fig.4*).



(fig.4)

### Positions and Conditions

Single leg standing / holding (*fig.5*).



(fig.5)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### PHASE III – FIVE-SIX WEEKS

#### Activities

- **Weight Shifting / Static**
- **Bilateral Standing / Dynamic**
- **Single Leg Standing / Static**

Use the **Percent Weight Bearing** training screens to perform static medial / lateral weight shifting (*fig.1*), anterior / posterior weight shifting and to re-establish center of balance (*fig.2*).



(fig.1)



(fig.2)

Use **Weight Shift** training screens to emphasize lateral shifting over the affected leg to prepare for full weight bearing ambulation (*fig.3*).



(fig.3)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Bilateral Standing / Dynamic

Use the **Postural Stability** training screens in dynamic mode to establish postural stability on a moveable surface (*fig.1*) and to have the patient control dynamic movement away from their center of balance (*fig.2*).



(fig.1)



(fig.2)

Use the **Maze Control** training screen to challenge the patient to control dynamic movement away from their center of balance (*fig.3*).



(fig.3)

Use the **Random Control** training screen to facilitate control of movement around the patient's center of balance which is dictated by the machine (*fig.4*).



(fig.4)

### Positions and Conditions

Use bilateral standing / holding on / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.5*).

Progress to bilateral standing / no holding / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.6*).



(fig.5)



(fig.6)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Single Leg Standing / Static

Use **Percent Weight Bearing** training screens for single leg activities in static mode to facilitate center of balance on the affected leg medially / laterally (*fig.1*), anteriorly / posteriorly and in combined planes (*fig.2*).



(fig.1)



(fig.2)

Use **Postural Stability** training screens for single leg activity in static mode to facilitate center of balance (*fig.3*).



(fig.3)

Use **Limits of Stability** training screen to challenge the sway envelope of a single leg stance in static mode (*fig.4*).



(fig.4)

### Positions and Conditions

Single leg standing / holding (*fig.5*).



(fig.5)



# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### PHASE IV – SEVEN-EIGHT WEEKS

#### Activities

- Bilateral Standing / Dynamic
- Single Leg Standing / Static
- Postural Stability Test

#### Bilateral Standing / Dynamic

Use the **Postural Stability** training screens in dynamic mode to establish postural stability on a moveable surface (*fig.1*) and to have the patient control dynamic movement away from their center of balance (*fig.2*).



(fig.1)



(fig.2)

Use the **Maze Control** training screen to challenge the patient to control dynamic movement away from their center of balance (*fig.3*).



(fig.3)

Use the **Random Control** training screen to facilitate control of movement around the patient's center of balance which is dictated by the machine (*fig.4*).



(fig.4)

#### Positions and Conditions

Use bilateral standing / holding on / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.5*).

Progress to bilateral standing / no holding / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.6*).



(fig.5)



(fig.6)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Single Leg Standing / Static

Use **Percent Weight Bearing** training screens for single leg activities in static mode to facilitate center of balance on the affected leg medially / laterally (*fig.1*), anteriorly / posteriorly and in combined planes (*fig.2*).



(*fig.1*)



(*fig.2*)

Use **Postural Stability** training screens for single leg activity in static mode to facilitate center of balance (*fig.3*).



(*fig.3*)

Use **Limit of Stability** training screen to challenge the sway envelope of a single leg stance in static mode (*fig.4*).



(*fig.4*)

### Positions and Conditions

Single leg standing / holding (*fig.5*).



(*fig.5*)

### Testing:

Baseline test at 8 weeks for postural stability / static

Perform a postural stability test to establish a baseline of postural stability in static mode. three trials of 20-second bilateral standing / no holding. (*fig.6*).



(*fig.6*)

### PHASE V – NINE-TWELVE WEEKS

#### Activities

- Bilateral Standing / Dynamic
- Single Leg Standing / Static
- Postural Stability Test

#### Bilateral Standing / Dynamic

Use the **Postural Stability** training screens in dynamic mode to establish postural stability on a moveable surface (*fig.1*) and to have the patient control dynamic movement away from their center of balance (*fig.2*).



(fig.1)



(fig.2)

Use the **Maze Control** training screen to challenge the patient to control dynamic movement away from their center of balance (*fig.3*).



(fig.3)

Use the **Random Control** training screen to facilitate control of movement around the patient's center of balance which is dictated by the machine (*fig.4*).



(fig.4)

#### Positions and Conditions

Use bilateral standing / holding on / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.5*).

Progress to bilateral standing / no holding / dynamic mode for Postural Stability, Maze Control and Random Control (*fig.6*).



(fig.5)



(fig.6)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Single Leg Standing / Static

Use **Percent Weight Bearing** training screens for single leg activities in static mode to facilitate center of balance on the affected leg medially / laterally (*fig.1*), anteriorly / posteriorly and in combined planes (*fig.2*).



(fig.1)



(fig.2)

Use **Postural Stability** training screens for single leg activity in static mode to facilitate center of balance (*fig.3*).



(fig.3)

Use **Limits of Stability** training screen to challenge the sway envelope of a single leg stance in static mode (*fig.4*).



(fig.4)

### Positions and Conditions

Single leg standing / holding (*fig.5*).



(fig.5)

### Testing:

Postural Stability / Dynamic Test vs. Normative Data using Fall Risk protocol at 12 weeks (*fig.6*).



(fig.6)

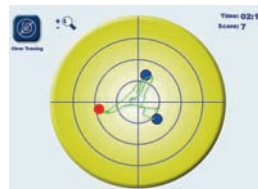
### PHASE VI – THIRTEEN-SIXTEEN WEEKS

#### Activities

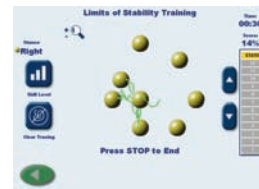
- Bilateral Standing / Dynamic
- Single Leg Standing / Static
- Postural Stability Test

#### Bilateral Standing / Dynamic

Use the **Postural Stability** with targets (*fig.1*), Limits of Stability (*fig.2*) and Maze Control (*fig.3*) training screens to challenge dynamic postural stability in this phase.



(fig.1)



(fig.2)



(fig.3)

#### Positions and Conditions

Bilateral standing / no holding / dynamic (*fig.4*).



(fig.5)

# BALANCE APPLICATION PROTOCOLS

## Total Knee Reconstruction

### Single Leg Standing / Static

Use **Percent Weight Bearing** training screens for single leg activities in static mode to facilitate center of balance on the affected leg medial / laterally (*fig.1*), anterior / posteriorly and in combined planes (*fig.2*).



(fig.1)



(fig.2)

Use **Postural Stability** training screens for single leg activity in static mode to facilitate center of balance (*fig.3*).



(fig.3)

Use **Limits of Stability** training screen to challenge the sway envelope of a single leg stance in static mode (*fig.4*).



(fig.4)

### Positions and Conditions

Single leg standing / holding (*fig.5*).



(fig.5)

### Testing:

Postural Stability / Dynamic test vs. normative data using Fall Risk protocol at 16 weeks (*fig.6*).



(fig.6)

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