



The Bio Leg® & MoPro™ Practitioner's Guide version 1.5



The general setup methods are detailed
in the '**MoPro™ Guidebook for
Professionals**
- **App designed for Bio Leg®.**'

Produced by BionicM

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1. Foreword

- **MoPro™ is an app used to adjust the parameters of Bio Leg®.**
 - Once it has been properly set up by a certified professional, daily use is not required.
- **MoPro™ can be downloaded from the App Store.**
 - An internet connection is required to download the app.
 - After installation, MoPro™ can be used offline for adjustments.
- **To use MoPro™, a device meeting the following requirements is necessary:**
 - iOS 15.6 or later (compatible with both iPhone and iPad)
 - Bluetooth version 4.2 or later
- **MoPro™ offers two account types based on the range of adjustable parameters: User and CPO (Prosthetist-Orthotist) accounts.**
 - This document focuses on the CPO account.
 - To switch to a CPO account, an ID and password issued by BionicM Inc. are required.
- **The CPO account has two adjustment levels: Beginner and Expert.**
 - Beginner level displays only frequently adjusted parameters.
 - Parameters available at the Beginner level are labeled **Beginner** in this document.
 - Expert level displays all parameters, including those shown at the Beginner level.
 - This document describes all available parameters.

2. Power ON/OFF

- **Timing for Powering On:**
 - Always ensure that the user has properly donned the prosthetic leg before turning on Bio Leg®.
 - Turning on the power before the prosthesis is worn may cause unexpected behavior, increasing the risk of falls or injury.
- **When the power is turned OFF, motor assistance is disabled, and Bio Leg® behaves like a single-axis knee joint with no yielding resistance.**
- **Motor assistance is not available while charging.**
 - Do not use Bio Leg® while it is charging.
 - Do not use or move the device while the charging cable is connected, as this may cause injury or cable damage.

3. Modes and Parameter Descriptions

This chapter covers each mode of Bio Leg®, explanations of adjustable parameters, key points for operation and training, as well as screening and evaluation procedures.

3.1 Yielding

This section explains the Yielding mode of Bio Leg®, along with training methods and parameter adjustments.

3.1.1 What's Yielding Mode?

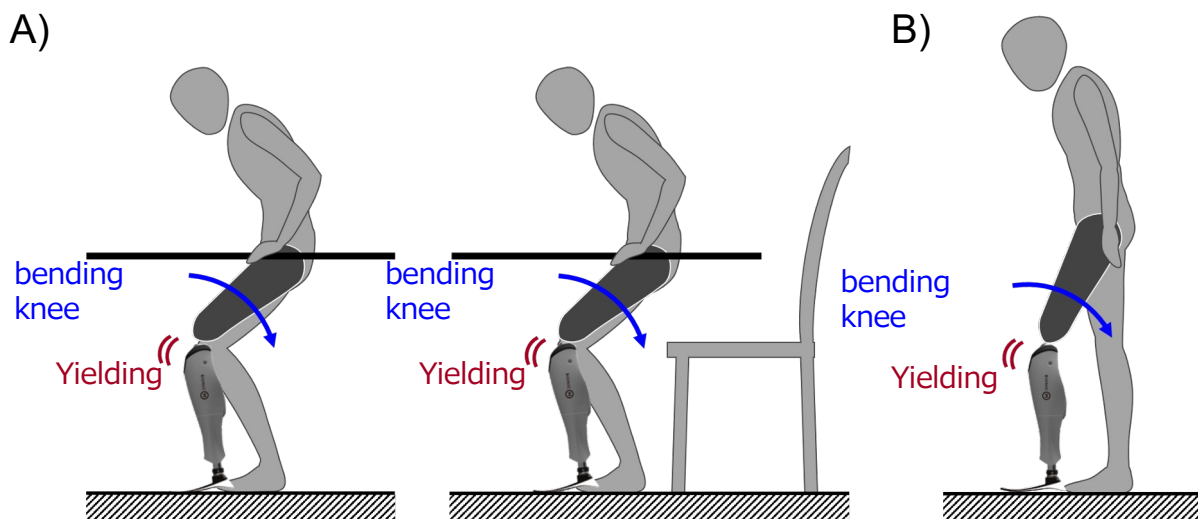
- Yielding refers to the resistance applied during knee flexion.
- Bio Leg® is a default-stance knee joint that provides continuous flexion resistance except under specific conditions. This state is referred to as Yielding Mode.
- Unless the device is in swing phase, sitting position, sit-to-stand, or stair ascent/descent modes, Bio Leg® remains in Yielding Mode.
- It provides regulated resistance during quiet standing, the stance phase of gait, sitting down, and descending stairs or slopes.

3.1.2 Instruction of Yielding

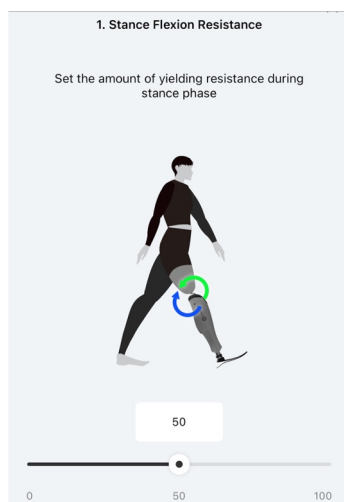
- The Bio Leg® is a “Default Stance” knee joint. When the power is ON, the Yielding function is always active, except under specific conditions.
 - For users who have never used a knee joint with a yielding function or are not yet accustomed to its resistance, use one of the following methods to help them become familiar with the feel of knee flexion resistance.
- A. Within parallel bars, have the user bend the knee by shifting the buttocks backward.
Repeat this several times to help them become aware of the resistance during knee flexion.
Ensure the foot does not slip. A chair can be placed behind the user to allow them to sit down, if appropriate.
- B. Have the user step forward with the prosthetic leg and bend the knee while applying weight.
- C. Repeat this several times to help them learn the feel of the flexion resistance.

** If the device unexpectedly enters Rest Mode (p.18) and extension assistance is activated, lift the prosthetic leg to exit Rest Mode, then try bending the knee slightly faster.*

** Alternatively, you can reduce the likelihood of entering Rest Mode by decreasing the value of “4. Knee Velocity to Initiate Rest.”(p.22)*



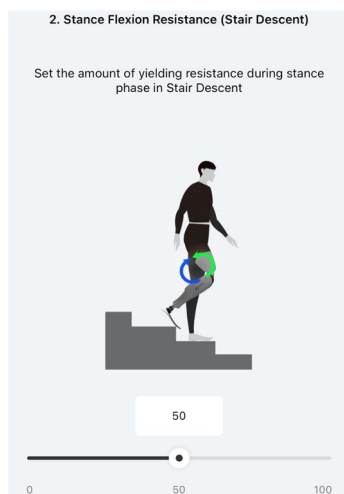
3.1.3 Adjust parameters for Yielding



1. Stance Flexion Resistance **Beginner**

This parameter sets the yielding resistance during the stance phase of walking, sitting down, and the first two steps on the prosthetic side during Stair Descent.

If the yielding resistance feels too strong, try decreasing this value.



2. Stance Flexion Resistance (Stair Descent) **Beginner**

This parameter sets the yielding resistance after the third step on the prosthetic side during Stair Descent mode.

If the resistance feels too strong, try decreasing this value.

Set both parameters to the same value, especially for first-time users.

Instability may occur due to the change in resistance after the third step.

Setting “2. Stance Flexion Resistance (Stair Descent)” slightly lower than “1. Stance Flexion Resistance” can be beneficial when descending long stairs quickly.

However, if the difference between the two values is too large, the yielding resistance may change drastically after the third step on the prosthetic side, increasing the risk of early knee collapse and falls.

When adjusting these values, please proceed with caution, taking into account the user’s physical ability and level of proficiency.

3.2 Gait

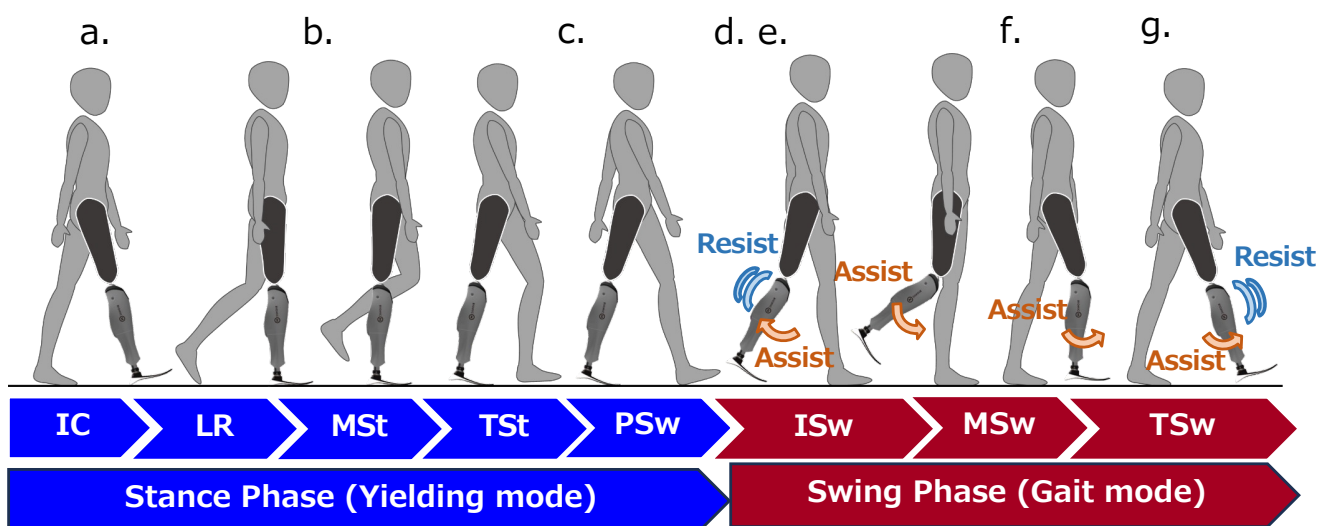
This chapter explains the behavior of the Bio Leg® during Swing phase, including methods for gait training, adjustments to knee assistance and resistance parameters, and key clinical guidance.

3.2.1 What is Gait Mode?

Bio Leg® transitions into **Gait Mode** during the swing phase, providing appropriately timed assistance and resistance for knee flexion and extension.

In MoPro™, adjustable parameters include **heel rise**, **swing assistance**, and **terminal impact**.

3.2.2 Instruction of Gait mode



A) Stance Phase Instructions

- a. Initiate Initial Contact with a **heel strike** on the prosthetic side. Emphasize controlled **hip extension** to promote effective rocker progression and a stable stance phase.
- b. Apply **downward pressure** through the prosthesis to facilitate axial loading. Avoid compensatory movements such as **excessive lateral trunk bending** or **forward trunk inclination**.
- c. Ensure **adequate weight transfer** through the **forefoot** during Terminal Stance to maintain forward progression. Monitor for proper **pelvic and lumbar alignment**, avoiding **anterior pelvic tilt** or **lumbar lordosis**.

B) Swing Phase Instructions

- d. After the sound limb makes ground contact, confirm that the **prosthetic-side hip** is sufficiently extended. Guide the user to coordinate **weight transfer** with **hip flexion**, allowing the prosthetic knee to flex and the limb to swing forward naturally. **Avoid lifting** the prosthesis to initiate swing, as this can interfere with proper transition into Gait Mode.
- e. When executed correctly, Bio Leg® transitions from **Yielding Mode** to **Gait Mode**, indicated by a **short beep and single vibration**, activating **swing assistance and resistance**.
- f. Encourage continued **hip flexion** to advance the prosthesis while avoiding excessive **abduction** or **circumduction** during swing.
- g. Upon **heel contact** and **weight acceptance** on the prosthetic side, the system automatically switches to **Yielding Mode**.

3.2.3 Requirements for Successful Gait Control

【Full Gait Cycle】

- Maintain an upright posture throughout the gait cycle, avoiding excessive anterior or posterior trunk tilt. Ensure there is no excessive anterior pelvic tilt or lumbar lordosis.
 - Practice maintaining proper postural alignment.
 - Strengthen core and hip musculature.
 - Set the initial knee flexion angle of the socket in accordance with the user's hip flexion contracture.
- Ensure smooth weight shifting between the prosthetic and sound limbs during both the stance and swing phases.
 - Practice smooth center of gravity (COG) shifting during gait training, alternating between the sound and prosthetic limbs.

【Stance Phase】

- Ensure sufficient weight bearing on the prosthetic limb during the stance phase, and avoid excessive reliance on upper limb support such as parallel bars or walking aids.
 - Practice prosthetic-side loading to promote proper weight acceptance.
- Confirm adequate forefoot loading from Terminal Stance to Pre-Swing to ensure proper setup for the Initial Swing.
 - Practice forefoot loading strategies as part of terminal stance training.
- Ensure hip extension on the prosthetic side contributes effectively to forward propulsion.
 - Encourage awareness of rocker motion driven by the hip extensor muscles.
 - Strengthen the hip extensor muscles.
 - Set the initial knee flexion angle of the socket in accordance with the user's hip flexion contracture.

【Swing Phase】

- Ensure the prosthetic limb swings straight forward without circumduction or abduction gait patterns. Also, confirm proper transition of Bio Leg® from Yielding Mode to Gait Mode.
 - Encourage awareness of forefoot loading and straight hip joint swing.
 - Adjust the prosthetic length to match the sound limb.
 - Set the initial knee flexion angle of the socket in accordance with the user's hip flexion contracture.

3.2.4 Parameter Adjustment for Gait Mode

This section explains how to adjust parameters related to knee flexion and extension assistance and resistance during gait.

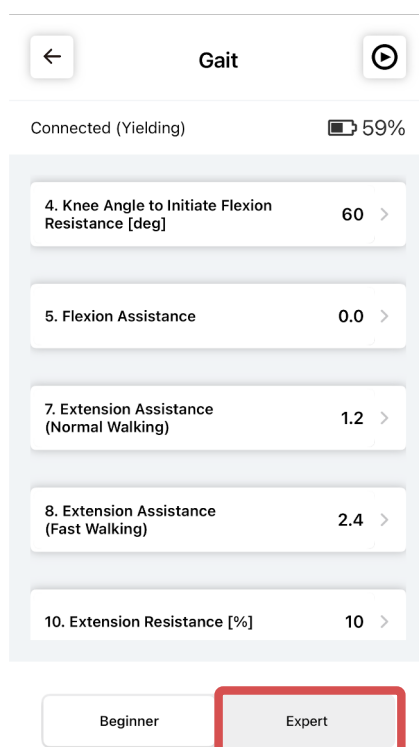
In most cases, adjustments can be made using only the parameters listed under the **"Beginner"** section at the bottom of the screen.

General Adjustment Procedure

1. Check that the knee flexion angle during the Swing Phase is not excessively large, and ensure that the heel rise is symmetrical on both sides.

If users report that knee swing during the Swing Phase feels slow, reduce the value of **"4. Knee Angle to Initiate Flexion Resistance [deg]."**
2. Adjust **"5. Flexion Assistance"** to set knee flexion support during swing. Increase if the user is unable to flex the knee during swing.
3. Fine-tune the knee swing assistance using **"7. Extension Assistance (Normal Walking)"** and **"8. Extension Assistance (Fast Walking)."**
4. Adjust the **terminal impact** using **"10. Extension Resistance [%]."**

However, if the Swing Assistance does not function adequately due to factors such as short stature, low body weight, or muscle weakness, additional adjustments may be necessary using the detailed parameters in the **"Expert"** section.



Terminal Stance - Initial Swing

1. Load Ratio to Initiate Swing

Set the load ratio of body weight to initiate swing phase



Easier 0.5 Harder

0.2 0.5 0.8

1. Load Ratio to Initiate Swing

Set the load ratio of body weight to initiate swing phase.

This parameter generally requires no adjustment.

** For users who have difficulty initiating swing due to low activity (e.g., bilateral or hip disarticulation users), reduce this parameter to facilitate swing initiation.*

2. Knee Velocity to Initiate Swing

Set the required knee velocity to initiate swing phase



Easier 150 Harder

5 152 300

2. Knee Velocity to Initiate Swing

Set the required knee velocity to initiate swing phase.

This parameter generally requires no adjustment.

** For users who have difficulty initiating swing due to low activity (e.g., bilateral or hip disarticulation users), reduce this parameter to facilitate swing initiation.*

3. Flexion Resistance [%]

Set the amount of flexion resistance during Initial Swing; decrease this value if the knee still doesn't flex enough after adjusting "4. Knee Angle to Initiate Flexion Resistance"



20

0 25 50

3. Flexion Resistance [%]

Set the amount of flexion resistance during Initial Swing.

Decrease this value if the knee still doesn't flex enough after adjusting "4. Knee Angle to Initiate Flexion Resistance [deg]."

Initial Swing

4. Knee Angle to Initiate Flexion Resistance [deg]

Set the amount of knee angle to initiate flexion resistance during Initial Swing; increase this value if the knee doesn't flex enough



60

20 55 90

4. Knee Angle to Initiate Flexion Resistance [deg] **Beginner**

Set the amount of knee angle to initiate flexion resistance during Initial Swing.

Increase this value if the knee doesn't flex enough.

5. Flexion Assistance

Set the amount of flexion assistance during Initial Swing



0.0

0.0 2.5 5.0

5. Flexion Assistance **Beginner**

Set the amount of flexion assistance **during Initial Swing**

Increase this value if knee doesn't flex enough.

** If the knee does not flex sufficiently, first adjust "4. Knee Angle to Initiate Flexion Resistance [deg]." If flexion is still insufficient, adjust this parameter, especially for users with difficulty flexing the knee (e.g., bilateral or hip disarticulation users).*

6. Flexion Assistance (Extra)

Set the amount of flexion assistance during Initial Swing; increase this value if the knee still doesn't flex enough after adjusting "5. Flexion Assistance"



0.0

0.0 1.0 2.0

6. Flexion Assistance (Extra)

Set the amount of flexion assistance **during Initial Swing.**

Increase this value if the knee still doesn't flex enough after adjusting "5. Flexion Assistance."

Adjustment of "5. Flexion Assistance" or "6. Flexion Assistance (Extra)" largely depends on user preference, but many users tend to prefer adjusting "5. Flexion Assistance."

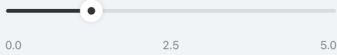
Mid Swing: Extension Assistance

7. Extension Assistance (Normal Walking)

Set the amount of extension assistance during Mid Swing in Normal Walking



1.2



7. Extension Assistance (Normal Walking)

Beginner

Set the amount of extension assistance **during Mid Swing** in Normal Walking.

Increase this parameter if the knee feels slow to extend.

8. Extension Assistance (Fast Walking)

Set the amount of extension assistance during Mid Swing in Fast Walking



2.4



8. Extension Assistance (Fast Walking)

Beginner

Set the amount of extension assistance during Mid Swing in Fast Walking.

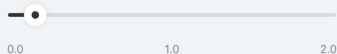
It is recommended to set this parameter to approximately twice the value of "7. Extension Assistance (Normal Walking) ."

9. Extension Assistance (Extra)

Set the amount of extension assistance during Mid Swing; increase this value if the knee still doesn't extend enough after adjusting "7. Extension Assistance in Normal Walking" and "8. Extension Assistance in Fast Walking"



0.1



9. Extension Assistance (Extra)

Set the amount of extension assistance **during Mid Swing**.

Increase this value if the knee still doesn't extend enough after adjusting "7. Extension Assistance in Normal Walking" and "8. Extension Assistance in Fast Walking"

Adjustment of "7. Extension Assistance (Normal Walking) " or "9. Extension Assistance (Extra)" largely depends on user preference, but many users tend to prefer adjusting "7. Extension Assistance (Normal Walking)."

Terminal Swing

10. Extension Resistance [%]

Set the amount of extension resistance during Terminal Swing; increase this value if Terminal Impact occurs



10

0 25 50

10. Extension Resistance [%] **Beginner**

Set the amount of extension resistance during Terminal Swing.

Increase this value if Terminal Impact occurs.

Gait

11. Knee Angle to Initiate Extension Resistance [deg]

Set the amount of knee angle to initiate extension resistance during Terminal Swing; increase this value if Terminal Impact still occurs after increasing "10. Extension Resistance"



33

0 20 40

11. Knee Angle to Initiate Extension Resistance [deg]

Set the amount of knee angle to initiate extension resistance during Terminal Swing.

Increase this value if Terminal Impact still occurs after increasing "10. Extension Resistance."

12. Knee Angle to Initiate Extension Resistance (Short Steps) [deg]

Set the amount of knee angle to initiate extension resistance during Terminal Swing when walking with short steps; increase this value if Terminal Impact occurs



12

0 15 30

12. Knee Angle to Initiate Extension Resistance (Short Steps) [deg]

Set the amount of knee angle to initiate extension resistance during Terminal Swing when walking with short steps.

Increase this value if Terminal Impact occurs.

** During Short Step, Bio Leg® beeps twice briefly when transitioning from Yielding mode to Gait mode.*

3.3 Sit & Stand up

This section explains Sit & Stand up mode, including practice methods for both sitting down and standing up, as well as related parameter adjustments.

3.3.1 What is Sit & Stand up mode?

Sit & Stand up mode consists of the following two modes:

- **Sit mode:** Activated when the knee is flexed, and the user is seated (e.g., in a chair).
- **Sit-to-Stand:** Activated when Standing Assistance engages as weight is applied to the prosthetic limb.

3.3.2 Instructions for Sit & Stand up mode

The basic behavior of Sit & Stand up mode is as follows:

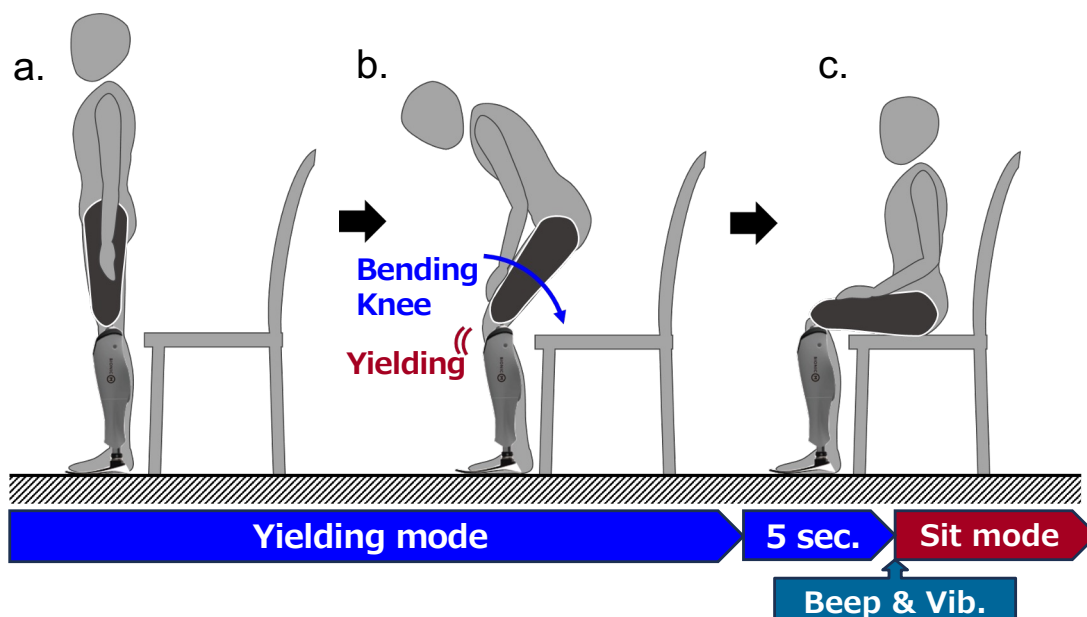
- When moving from standing to sitting, the knee is controlled in Yielding mode.
- After sitting for 5 seconds, Bio Leg® automatically transitions to Sit mode.
- When standing up (**Sit-to-Stand**), Standing Assistance activates once sufficient weight is applied to the prosthetic limb.

A. Instructions for Sitting

1. Position yourself with your back toward the chair.
2. While distributing weight evenly on both the sound limb and the prosthetic limb, use Yielding to slowly bend the knee.
3. Sit down. After 5 seconds, Sit mode will activate. Bio Leg® will emit a short beep and one vibration as confirmation.

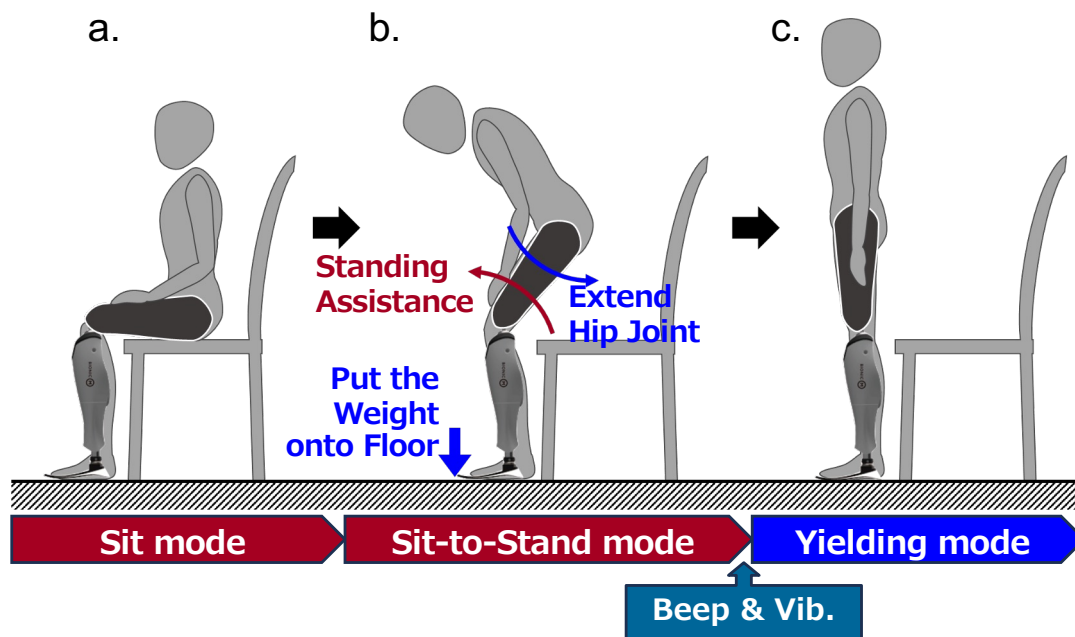
* If the knee transitions into Rest mode (p.18) while sitting motion, exit Rest mode and bend the knee a little faster.

* If bending the knee while sitting is difficult, Sit mode will still activate once the knee is flexed after being seated.



B. Instructions for Standing Up (Sit-to-Stand)

1. Sit lightly on the chair, ensuring that Bio Leg® is in Sit mode.
2. Distribute weight evenly between the sound limb and the prosthetic limb. When weight exceeds a certain threshold, Standing Assistance will activate, helping to extend the knee.
3. Extend your hip joint to shift your center of gravity forward and upward, coordinating with the knee extension.
4. Stand fully until the knee is completely extended.



Sit & Stand up

3.3.3 Tips in Sit/Stand up mode

A. Sit mode

- After transitioning into Sit mode, Bio Leg® applies braking to prevent knee flexion when weight is applied, keeping the knee stationary (it is not locked). This prevents unwanted flexion under load.
- If the knee movement is detected, for example by rotating the turntable, the brake is released automatically.

B. Stand up mode (Sit-to-Stand)

- Even if Standing Assistance does not activate due to insufficient weight on the prosthetic limb, knee extension assistance will engage at the final extension range (when both knee and hip are extended, and hip angle is less than 45°).
- Even if standing up using only the sound limb without placing the prosthetic limb on the ground (with the knee still flexed), knee extension assistance will engage at the final extension range.

3.3.4 Requirements for Successful Sit & Stand up Control

A. Sit mode

Transition conditions:

- **Bio Leg® is sufficiently flexed**
 - Use Yielding mode to practice bending the knee while bearing weight on the prosthetic limb. Support with upper limbs as needed.
- **Bio Leg® has inadvertently entered Rest mode (with motor sound)**
 - Exit Rest mode and bend the knee slightly faster.
 - Adjust the Rest mode parameters (p.21) to make Rest harder to activate:
 1. Minimum Knee Flexion to Initiate Rest [deg]
 2. Maximum Knee Flexion to Initiate Rest [deg]
 3. Knee Posture Holding Time to Initiate Rest [sec]
 4. Knee Velocity to Initiate Rest

B. Stand up mode (Sit-to-Stand)

Transition conditions:

- **Bio Leg® is not excessively tilted forward or backward when standing up**
 - Sit so that Bio Leg® is roughly vertical to the floor, and align the sound foot and prosthetic foot as closely as possible.
- **Seating position is appropriate**
 - Sit slightly forward on the chair.
- **Sufficient weight is applied to the prosthetic limb**
 - Practice bearing weight on the prosthetic limb.
 - To adjust, decrease the weight-bearing threshold (p.17): "2. Load to Initiate Sit-to-Stand [N]."
- **Trunk is leaned forward, shifting center of gravity over the foot**
 - Practice shifting the center of gravity forward and downward.

Completion/Release conditions:

- **Bio Leg® is fully extended after standing up**
 - Instruct the user to fully extend the knee after standing up.

3.3.5 Adjust Parameters for Sit/Stand Mode

To adjust the yielding resistance when sitting, refer to “3.1 Yielding (p.3)”.

1. Sit-to-Stand Extension Assistance

Set the amount of extension assistance during Sit-to-Stand



12

0 12 25

1. Sit-to-Stand Extension Assistance

Beginner

Set the amount of extension assistance during Sit-to-Stand.

increase the value if the start-up assistance is insufficient.

2. Load to Initiate Sit-to-Stand [N]

Set the load required to initiate extension assistance during Sit-to-Stand



Easier

200

Harder

100 300 500

2. Load to Initiate Sit-to-Stand [N] Beginner

Set the load required to initiate extension assistance during Sit-to-Stand.

The ease of transition varies depending on the height of the chair; adjust the setting according to the chair height most frequently used by the user.

Lowering this value makes it easier to transition to Sit-to-Stand mode, but if set too low, unintended Sit-to-Stand assistance may occur.

3.4 Rest

This section explains the details of Rest mode, practice methods for each movement, and how to adjust parameters.

3.4.1 What is Rest mode?

Rest mode in the Bio Leg® refers to a state where extension assistance is activated at a slightly flexed knee position to support body weight.

Instead of locking the knee as in traditional MPKs, it provides flexible support, allowing smooth movements such as squats.

The conditions for entering Rest mode and the settings for extension assistance can be adjusted.

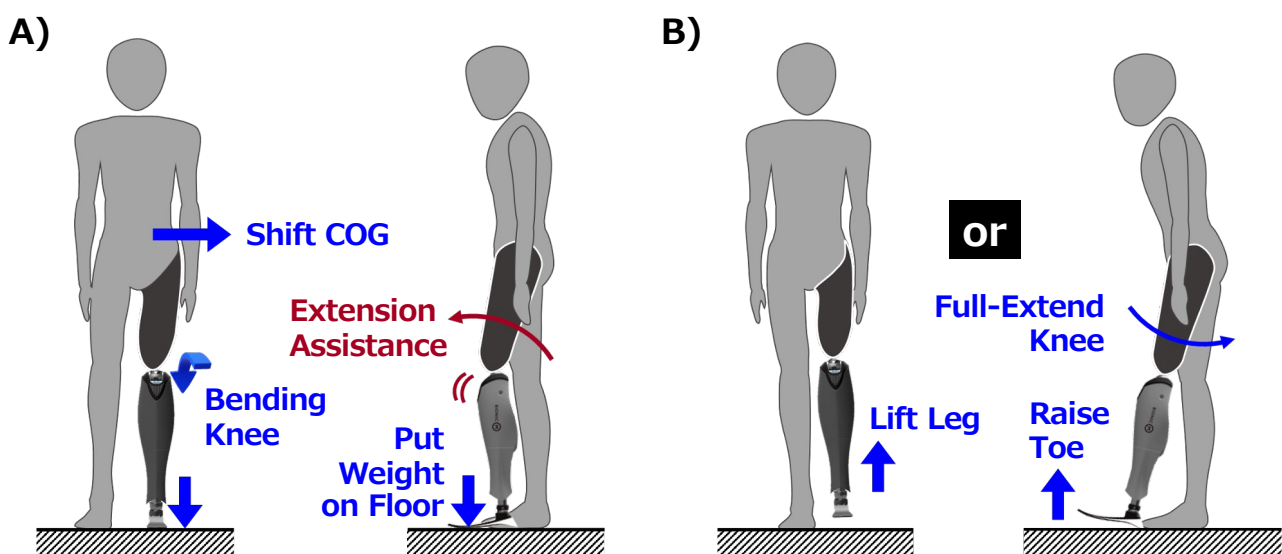
3.4.2 Instructions for Rest mode

A. Transition to Rest mode

1. Move the prosthetic limb half to one step forward.
2. Flex the Bio Leg® approximately 5°–30° (default value)
3. Load weight onto the prosthetic side, ensuring the knee angle remains stable while bearing weight.
4. After maintaining weight bearing for 1.5 seconds (default value), the Bio Leg® transitions to Rest mode, enabling flexible weight support through extension assistance.

B. Transition from Rest mode

1. Lift the prosthetic limb to relieve weight.
2. Alternatively, fully extend the knee and raise the toes of the prosthetic limb.



3.4.3 Tips in Rest mode

- Rest mode continues as long as the forefoot remains in contact with the ground and weight bearing is maintained, even if the knee fully extends.
- Rest mode can also be used while leaning against a wall or other support.
- Rest mode is deactivated when walking is initiated.

3.4.4 Requirements for Successful Rest Control

Transition conditions:

- **Knee flexion angle is within the appropriate range (5–30°)**
 - If the user cannot maintain the correct angle after several attempts, adjust “**1. Minimum Knee Flexion to Initiate Rest [deg]**” and “**2. Maximum Knee Flexion to Initiate Rest [deg]**.”
- **Knee angle and weight bearing are stable (no excessive fluctuations)**
 - If unable to maintain a stable state, increase the value “**4. Knee Velocity to Initiate Rest.**”
- **Sufficient weight is applied to the prosthetic limb**
 - Practice bearing weight on the prosthetic limb.
- **Motor of the extension assistance is running correctly**
 - If inaudible, check all transition conditions.
 - If the motor is audible but assistance is insufficient, increase “**5. Rest Extension Assistance.**”

During Rest mode

- If extension assistance causes full knee extension or forefoot lifting (which would deactivate Rest mode), decrease “**5. Rest Extension Assistance**” to provide appropriate support.

Completion / Release conditions

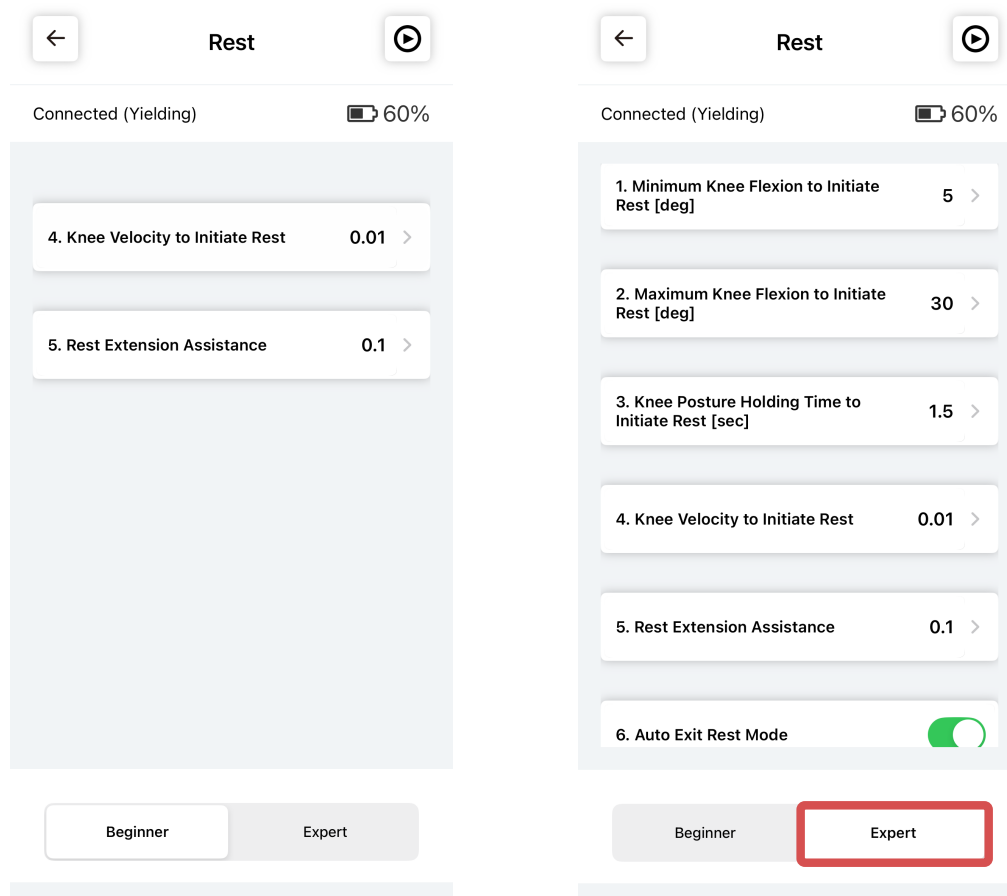
- If the user cannot properly deactivate Rest mode, practice the described Rest mode deactivation actions.

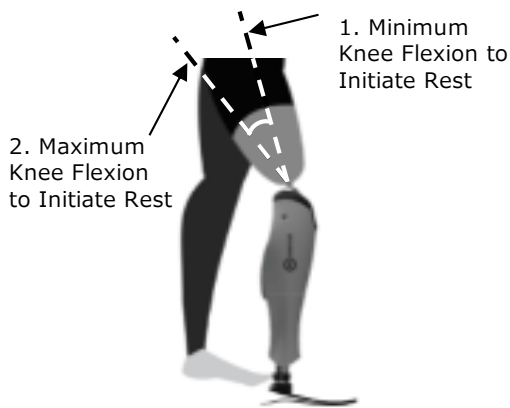
3.4.5 Adjusting Parameters for Rest Mode

Adjustments are made using the parameters in the **“Beginner”** section at the bottom of the screen.

For detailed instructions, refer to MoPro™ Guidebook for Professionals – App designed for Bio Leg®.

If transition to Rest mode is not successful due to factors such as low height, low body weight, or reduced muscle strength, use the parameters in the **“Expert”** section.





Transition conditions for Rest mode

In the default setting, support weight extension assistance is activated when the knee remains within 5–30° without movement for 1.5 seconds while weight is applied to the Bio Leg®.

** This angle is defined between "1. Minimum Knee Flexion to Initiate Rest [deg]" and "2. Maximum Knee Flexion to Initiate Rest [deg]."*

1. Minimum Knee Flexion to Initiate Rest [deg]

Set the minimum knee angle to initiate Rest



5

5

25

45

1. Minimum Knee Flexion to Initiate Rest [deg]

Set the minimum threshold of knee flexion angle to initiate Rest.

2. Maximum Knee Flexion to Initiate Rest [deg]

Set the maximum threshold of knee flexion angle to initiate Rest.

This value must be greater than "1. Minimum Knee Flexion to Initiate Rest [deg]."

If set equal to or smaller, Rest mode transition will not occur even if other conditions are satisfied.

2. Maximum Knee Flexion to Initiate Rest [deg]

Set the maximum knee angle to initiate Rest



30

15

38

60

To disable Rest mode

Set "1. Minimum Knee Flexion to Initiate Rest [deg]" higher than "2. Maximum Knee Flexion to Initiate Rest [deg]."

** Example: Set "1. Minimum Knee Flexion to Initiate Rest [deg]" to 40 and "2. Maximum Knee Flexion to Initiate Rest [deg]" to 30.*

Rest

3. Knee Posture Holding Time to Initiate Rest [sec]

Set the required duration maintaining the knee angle to initiate Rest



1.5

0.5 1.8 3.0

3. Knee Posture Holding Time to Initiate Rest [sec]

Set the required duration for maintaining the knee angle to initiate Rest mode.

** Setting this value too low may cause unintended transitions to Rest mode, which can result in improper operation or increase the risk of falls.*

4. Knee Velocity to Initiate Rest

Set the maximum knee velocity allowed to initiate Rest
(Recommended value: 0.4)



Easier

0.40

Harder

0.01 0.50 1.00

4. Knee Velocity to Initiate Rest **Beginner**

Set the maximum knee velocity allowed to initiate Rest.

If Rest mode is initiated unintentionally, increase this value.

The recommended value is around **0.4**.

** The default setting is **0.01** to prevent unintended initiation of Rest mode during Yielding and Sit-to-Stand adjustments.*

** After completing these adjustments, change the value from **0.01** to **0.4**.*

5. Rest Extension Assistance

Set the amount of extension assistance in Rest



0.1

0.1 0.4 0.6

5. Rest Extension Assistance **Beginner**

Set the amount of extension assistance in Rest.

Increase this value if the knee feels insufficiently supported when a load is applied.

6. Rest condition to stance

When this toggle button is turned off, Rest mode can only be released by removing the load.

For example, under normal conditions, extending the knee and lifting the toes would release Rest mode, but this will no longer be possible.

6. Auto Exit Rest Mode



3.5 Stair Descent

This section describes the Stair Descent mode, recommended practice methods, and parameter adjustment options.

3.5.1 What is Stair Descent Mode?

- Stair Descent mode refers to the control state in which Bio Leg® regulates yielding and swing assistance during stair or slope descent.
- The transition to Stair Descent mode occurs when the prosthetic side steps down to the second step.
To facilitate smooth knee flexion for the next step, the knee flexion angle is maintained at a slightly flexed position at the end of the swing phase.
- Until the user becomes accustomed to this operation, it is easier to descend by placing the forefoot slightly beyond the edge of the step.
Both the swing speed and terminal impact can be adjusted according to user preference.

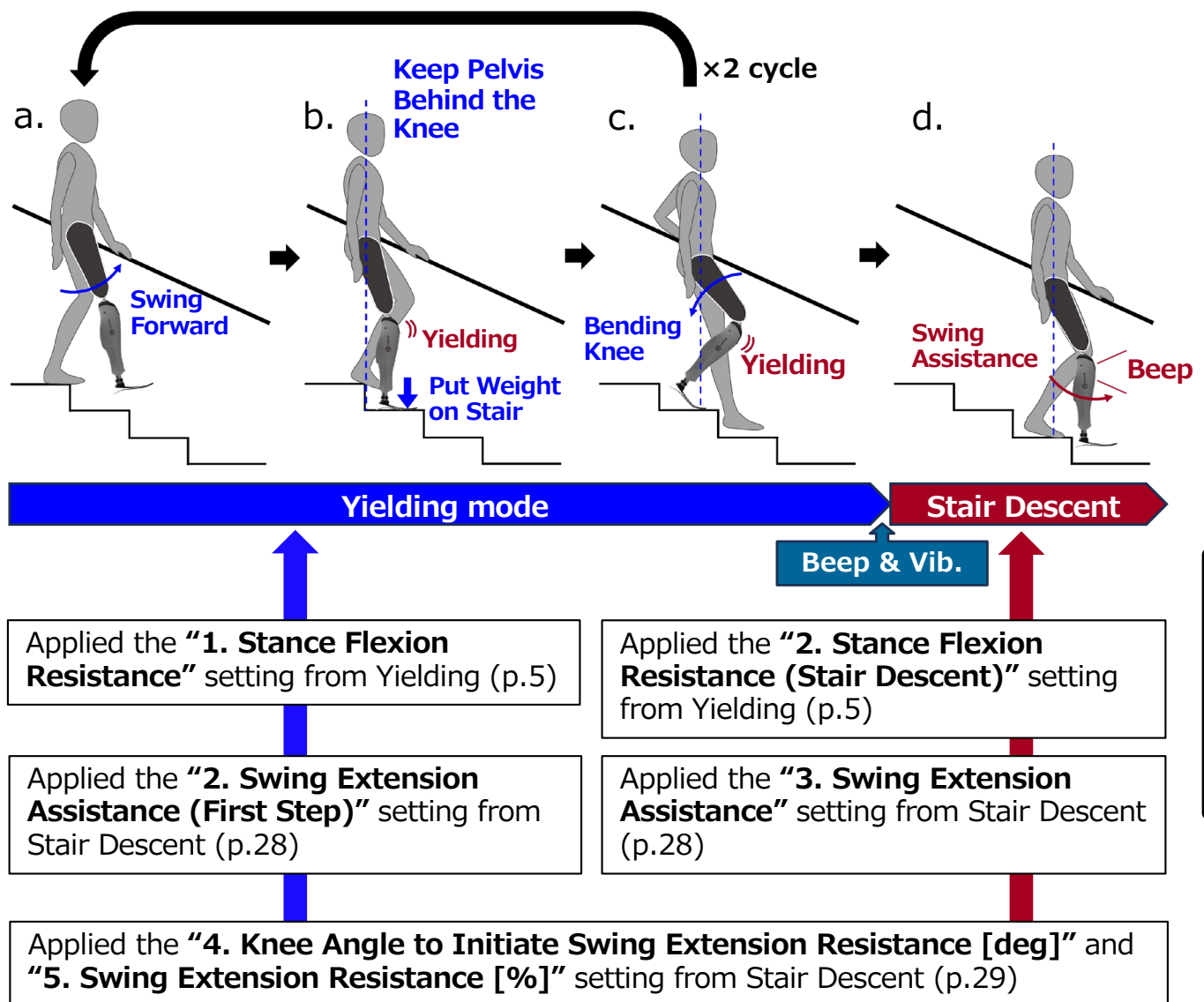
3.5.2 How to Use Stair Descent Mode

A) Transition to Stair Descent Mode

** Before practicing stair descent, it is recommended to familiarize yourself with the sensation of knee flexion using the Yielding function (see "3.1.2 Instruction of Yielding ," p.4).*

- a. Always use a handrail. At first, begin by descending the stairs with the prosthetic side until you become accustomed.
- b. Keep your pelvis positioned slightly behind the knee, lightly flex the prosthetic knee, and lower the prosthetic side by one step. Full-foot contact is acceptable, but if initiating knee flexion is difficult, start by placing the forefoot slightly over the step edge.
- c. While keeping your pelvis behind the Bio Leg®, use Yielding to slowly flex the knee and place the sound side on the next step.
- d. After two full cycles of descent, the Bio Leg® automatically transitions to Stair Descent mode, and Swing Assistance will activate.

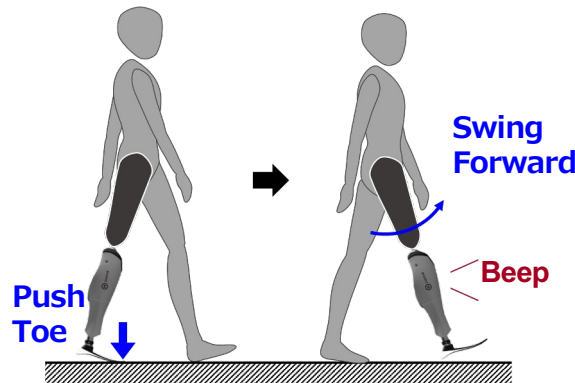
Bio Leg® & MoPro™



B) Exit from Stair Descent Mode

After the patient has descended the stairs, instruct them to place weight on the forefoot of the prosthetic limb and swing the leg forward to resume normal walking. A beep and strong vibration will indicate that Stair Descent mode has been exited.

Alternatively, if the patient remains stationary for 5 seconds, a beep and vibration will indicate that Stair Descent mode has been exited.

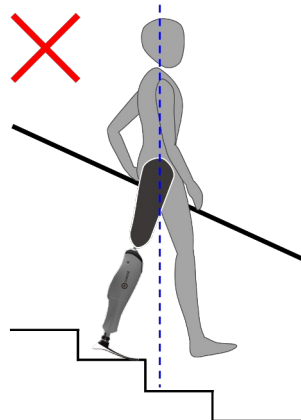


3.5.3 Tips for Stair Descent Mode

- The “2. Stance Flexion Resistance (Stair Descent)” setting from Yielding will be active during Stair Descent mode.
 - * See also: 3.1.3 Adjusting Parameters for Yielding (p.5).
- During Stair Descent mode, Swing Assistance is controlled to pause in a slightly flexed position to facilitate descent to the next step.

3.5.4 CAUTION in Stair Descent Mode

- Always exit Stair Descent mode using the above procedure after descending stairs. Failure to do so may cause unexpected malfunctions of the Bio Leg®, increasing the risk of falling.
- Ensure that the pelvis does not move ahead of the knee joint. If the Bio Leg® interprets this as walking, the Swing Assistance of Gait mode may activate, which could increase the risk of missing a step and falling.



3.5.5 Requirements for Successful Stair Descent Control

In Stair Descent Mode

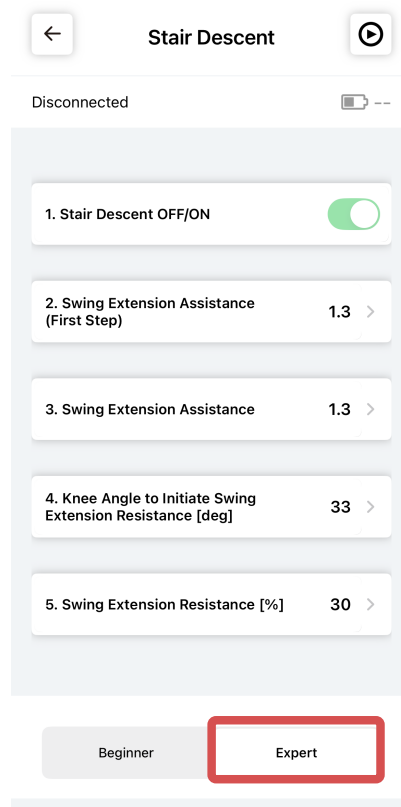
- **Trunk posture:** The trunk should remain upright without leaning forward or backward.
 - Practice maintaining proper posture.
 - Set an appropriate initial flexion angle.
 - Strengthen the hip and trunk muscles.
- **Pelvis position:** The pelvis should remain behind the knee.
 - Practice descending using the last step repeatedly.
 - This issue often occurs in users not accustomed to Yielding, so practice flexing the knee in response to Yielding resistance.
- **Prosthetic limb placement:** The prosthetic limb should be placed on the step with the knee slightly flexed, or it should transition smoothly into knee flexion using Yielding immediately after contact.
 - Practice descending using the last step repeatedly.
 - This issue often occurs in users not accustomed to Yielding, so practice flexing the knee in response to Yielding resistance.

Completion / Release Conditions

- Ensure Stair Descent mode is correctly exited, and the exit signals (beep and vibration) are confirmed.
 - Practice the exit movements repeatedly.
 - Set the appropriate initial flexion angle to allow weight-bearing on the forefoot.

3.5.6 Adjusting Parameters for Stair Descent

- This section explains how to adjust the Bio Leg® behavior during Stair Descent mode.
- In general, adjustments are only required for the Yielding parameter (p.5).
- However, if Stair Descent mode is not suitable for a user due to factors such as low activity level, extremely high activity, or special prosthetic alignment, adjustments may also be necessary for parameters in the **“Basic”** or **“Expert”** sections at the bottom of the screen.



1. Stair Descent OFF/ON



1. Stair Descent OFF/ON

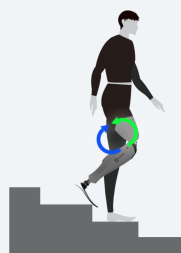
When Stair Descent mode is not used — for example, when descending stairs using a **step-to-step** approach or when the user prefers to control the descent manually — set this toggle button to **OFF**.

When this toggle button is set to **OFF**, Stair Descent mode will not activate, and the Bio Leg® will remain in **Yielding mode** during stair descent.

In this case, the parameters of the “**3. Swing Extension Assistance**” setting from **Stair Descent** and the “**2. Stance Flexion Resistance (Stair Descent)**” setting from **Yielding** will not be engaged.

2. Swing Extension Assistance (First Step)

Set the amount of swing extension assistance when descending the first step



1.3

0.0 1.5 3.0

2. Swing Extension Assistance (First Step)

Beginner

Set the amount of swing extension assistance when descending the first step.

** Unless there is a specific reason not to, set the “**2. Swing Extension Assistance (First Step)**” and “**3. Swing Extension Assistance**” to the same value.*

3. Swing Extension Assistance

Set the amount of swing extension assistance when descending the second and subsequent steps; it is recommended to align this value with “2. Swing Extension Assistance (First Step)”



1.3

0.0 1.5 3.0

3. Swing Extension Assistance **Beginner**

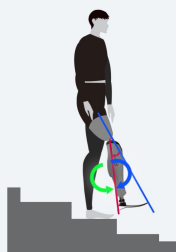
Set the amount of swing extension assistance when descending the second and subsequent steps.

This setting takes effect from the **second step onward** on the prosthetic side during stair descent. If the user wants the knee to extend more quickly, increase the value.

** It is recommended to set this value the same as “**2. Swing Extension Assistance (First Step)**”.*

4. Knee Angle to Initiate Swing Extension Resistance [deg]

Set the amount of knee angle to initiate swing extension resistance during Terminal Swing; decrease this value if more knee extension is desired when you put your leg on a step



33

5 22 40

4. Knee Angle to Initiate Swing Extension Resistance [deg]

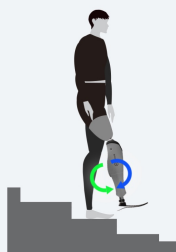
Set the amount of knee angle to initiate swing extension resistance during Terminal Swing

Decrease this value if more knee extension is desired when you put your leg on a step.

In most cases, this parameter does not require adjustment.

5. Swing Extension Resistance [%]

Set the amount of extension resistance during Terminal Swing; adjust this value if knee flexion is not adequately modified "4. Knee Angle to Initiate Swing Extension Resistance [deg]"



30

0 50 100

5. Swing Extension Resistance [%]

Set the amount of extension resistance during Terminal Swing.

Adjust this value if knee flexion is not adequately modified "4. Knee Angle to Initiate Swing Extension Resistance [deg]"

In most cases, this parameter does not require adjustment.

3.6 Stair Ascent

This section explains the details of **Stair Ascent mode**, practice methods for each movement, and how to adjust parameters.

3.6.1 What is Stair Ascent Mode?

Stair Ascent mode in the Bio Leg® refers to the control state in which **knee extension assistance** during stance phase and **swing** (extension and flexion) **assistance** during swing phase are activated to support stair ascent.

The prosthesis transitions to Stair Ascent mode upon performing the **Trigger movement** described below.

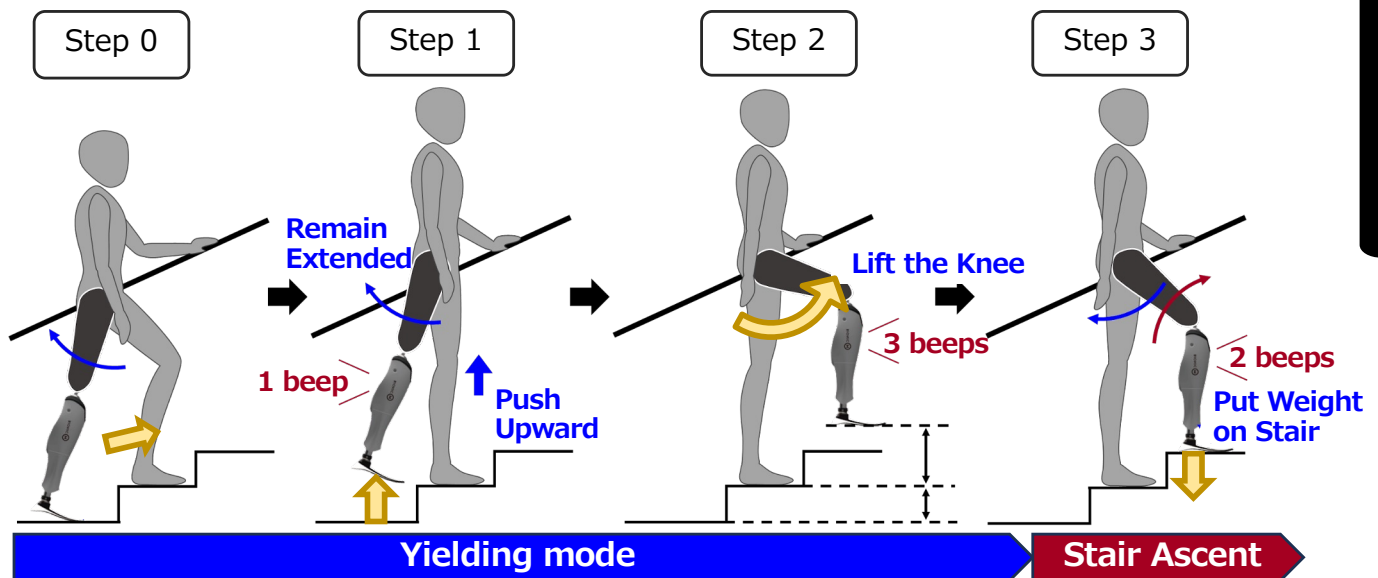
It is possible to set the conditions for transitioning to Stair Ascent mode and to adjust the strength of the extension assistance.

Stair Ascent mode requires sufficient **range of motion**, **muscle strength**, and **practice**.

Depending on factors such as the user's physical ability, the mode may not reach a practical performance level in some cases.

3.6.2 Instruction for Stair Ascent Mode

A) Trigger Movement for Stair Ascent



Bio Leg® & MoPro™

Step 0: Always use the handrail. Place the sound leg on the first step. The prosthetic leg should be positioned with the hip extended and the forefoot loaded.

Step 1: Extend the knee of the sound side as if lifting the body upward. Keep the hip of the prosthetic side extended. When the Bio Leg® emits a short beep and vibration, Step 1 is complete.

Step 2: Within 1.5 seconds after completing Step 1, quickly flex the hip to lift the prosthetic knee. At this point, the Bio Leg® is vertical. Once the Bio Leg® reaches the specified height, it will emit three short beeps and vibrations, completing Step 2.

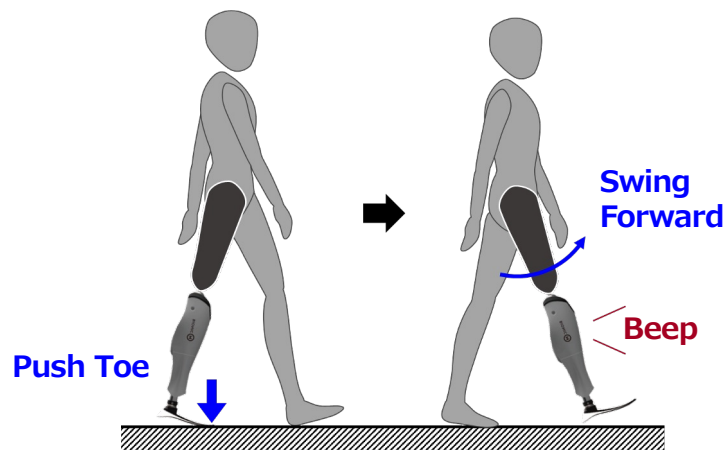
** If the prosthetic leg swings forward, the toe may catch on the riser or step edge. Even if this occurs, Step 2 can still be completed if the Bio Leg® reaches the specified height. Be cautious of balance loss and the risk of falling.*

Step 3: Place the prosthetic leg straight on the step and bear weight directly on it. When the Bio Leg® emits two long beeps and vibrations, Step 3 is complete. Stair Ascent mode is activated, and knee extension assistance engages. Coordinate the timing by extending the hip to ascend the step.

B) Exit from Stair Ascent Mode

After ascending the stairs, place weight on the forefoot and swing the prosthetic limb forward to begin natural walking. A beep and strong vibration will indicate that Stair Ascent mode has been deactivated.

Alternatively, standing still for 5 seconds will also trigger a beep and strong vibration, indicating deactivation of Stair Ascent mode.



3.6.3 Tips in Stair Ascent Mode

- When the prosthetic limb contacts the stair tread and bears weight (after completing Step 3), the **knee extension assistance** activates at the level specified in MoPro.
- The **swing flexion assistance** helps prevent the forefoot from striking the step.
- The **swing extension assistance** helps the foot make full contact with the stair tread, facilitating the next weight-bearing step.

3.6.4 Notes of Stair Ascent mode

- After ascending stairs, always follow the procedure (p.31) to **exit Stair Ascent mode**. Failure to do so may cause unexpected Bio Leg® malfunctions, increasing the risk of falling.
- For safety reasons, do not use **Stair Ascent mode** in strong winds.
- Mastering **Stair Ascent mode** requires sufficient muscle strength, joint range of motion, balance, and practice. Users should be informed in advance that, even if these conditions are met, practical performance may vary depending on the individual.
- When walking on stair landings, **exit Stair Ascent mode** following the above steps. Failure to do so may cause unexpected Bio Leg® malfunctions and increase the risk of falling.

** It is possible to move short distances on landings without exiting Stair Ascent mode if the late stance phase is avoided and the knee is fully extended. However, the risk of falling remains due to the continuation of swing-phase flexion assistance. This is not recommended for non-expert users. Additionally, if the knee is not fully extended during the stance phase, the knee brake will engage fully, almost locking the knee, which should be avoided.*

3.6.5 Requirements for Successful Stair Ascent

Trigger Movement

- Ensure all three steps are completed correctly, and the Beep and Vibration signaling the transition to **Stair Ascent mode** are confirmed.
 - Check that **Stair Ascent mode** is enabled in MoPro and verify that the Beep and Vibration are not turned off.
- Explanation of the parameters for Stair Ascent mode (p.30) and Other settings (p.39)
- If transitioning to **Stair Ascent mode** remains difficult after several practice attempts, use **Training mode** (p.41) to identify the cause.

Behavior in Stair Ascent Mode

- The trunk remains upright without leaning forward or backward, maintaining good posture.
 - Practice maintaining posture. Set an appropriate initial flexion angle and strengthen the hip and trunk muscles.
- Ensure that the **extension assistance** level in **Stair Ascent mode** is appropriate and acts as the driving force for upward movement of the center of gravity synchronized with the extension of the prosthetic hip joint.
 - Adjust the value of “10. Stance Extension Assistance” in MoPro.
- Practice Stair Ascent movements repeatedly. Strengthen hip and core muscles.
- To streamline the transition to **Stair Ascent mode** during practice, use **Motion Training** in Training mode (p.44).

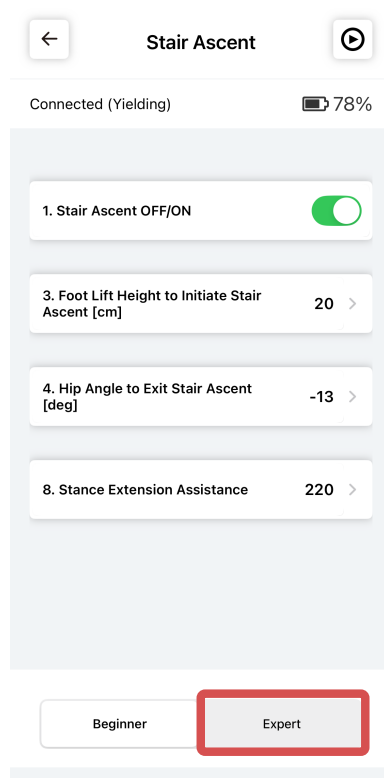
Completion / Exit Conditions

- Ensure **Stair Ascent mode** is correctly exited, and the exit signals (Beep and Vibration) are confirmed.
 - Practice the exit movements repeatedly. Set an appropriate initial flexion angle of the socket to allow weight-bearing on the forefoot.

3.6.6 Adjusting Parameters for Stair Ascent Mode

This section explains the transition conditions to **Stair Ascent mode** and how to adjust the behavior of the Bio Leg® during stair ascent.

- In most cases, adjustments beyond the **Basic** settings are unnecessary.
- If **Stair Ascent mode** is unsuitable for the user due to factors such as low activity, muscle weakness, limited joint range of motion, or unique staircase environments, adjustments may be made using parameters in **Basic** or in the lower section of the screen labeled **Expert**.



1. Stair Ascent OFF/ON



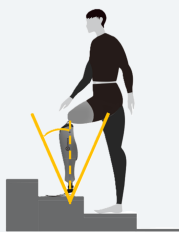
1. Stair Ascent OFF/ON **Beginner**

When **Stair Ascent mode** is not used — for example, when ascending stairs using a **step-to-step approach** — set this toggle button to OFF.

Stair Ascent Mode: Transition and Exit Conditions (1/2)

2. Tibia Angle to Initiate Stair Ascent [deg]

Set the lower leg angle (from vertical) required to initiate Stair Ascent



Harder

35

Easier

30

45

60

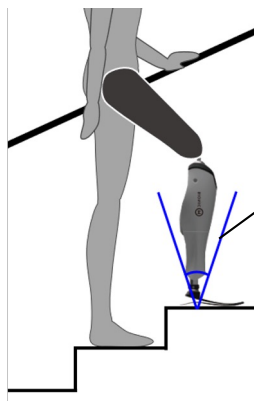
2. Tibia Angle to Initiate Stair Ascent [deg]

Set the lower leg angle (from vertical) required to initiate **Stair Ascent mode** when bearing weight on the prosthetic limb in **Step 3**.

Increasing this value makes it easier to start **Stair Ascent**; while decreasing it makes it more difficult.

In most cases, this parameter does not require adjustment.

Step 3



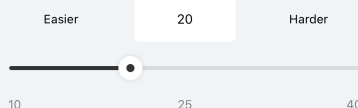
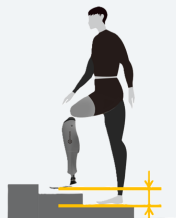
The value is doubled, applying equally forward and backward from vertical.

For example, a setting of 35° results in a total threshold of 70° (35° forward + 35° backward).

Stair Ascent Mode: Transition and Exit Conditions (2/2)

3. Foot Lift Height to Initiate Stair Ascent [cm]

Set the required foot lift height to initiate Stair Ascent; use caution when setting low values to avoid false triggers



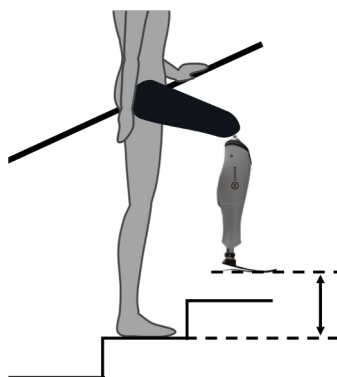
3. Foot Lift Height to Initiate Stair Ascent

[cm] **Beginner**

Set the required foot lift height to initiate **Stair Ascent mode** in **Step 2**.

Use caution when setting a low value, as it may cause false triggers or misidentify a non-stair surface as a stair.

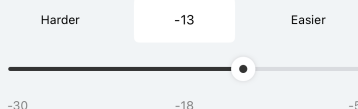
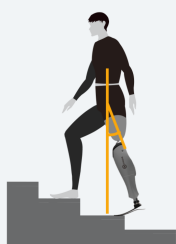
Step 2



Required Foot Lift Height

4. Hip Angle to Exit Stair Ascent [deg]

Set the hip angle to exit Stair Ascent; adjust this value towards "Harder" if Stair Ascent unintentionally ends frequently



4. Hip Angle to Exit Stair Ascent [deg]

Beginner

Set the hip angle to exit Stair Ascent.

This parameter sets the criteria for exiting **Stair Ascent mode** based on the estimated toe load from the hip extension angle.

Decrease this value (toward "Harder") if Stair Ascent mode ends unintentionally.

** Setting the value too low may make it difficult to exit the mode.*

Behavior of the Bio Leg® during Stair Ascent Mode (1/2)

5. Swing Flexion Angle [deg]

Set the amount of knee flexion angle during swing phase in Stair Ascent



90



5. Swing Flexion Angle [deg]

Set the amount of knee flexion angle during Swing phase in Stair Ascent.

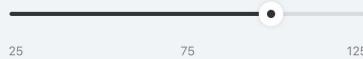
Increase this value if there is insufficient clearance, such as when the toes contact the stairs during Swing phase.

6. Swing Flexion Velocity

Set the amount of knee flexion velocity during swing phase in Stair Ascent; increase this value when increasing "5. Swing Flexion Angle"



100



6. Swing Flexion Velocity

Set the knee flexion velocity during Swing phase in Stair Ascent mode.

Increase this value when increasing "5. Swing Flexion Angle".

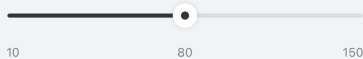
** If this value is not increased, the timing of Bio Leg® extension during the swing phase will be delayed.*

7. Swing Extension Velocity

Set the amount of knee extension velocity during swing phase in Stair Ascent



80



7. Swing Extension Velocity

Set the amount of knee extension velocity during swing phase in Stair Ascent.

Increase this value if the user perceives the Bio Leg® swing as slow.

Behavior of the Bio Leg® during Stair Ascent Mode (2/2)

8. Stance Extension Assistance

Set the amount of extension assistance during stance phase in Stair Ascent



220



10. Stance Extension Assistance **Beginner**

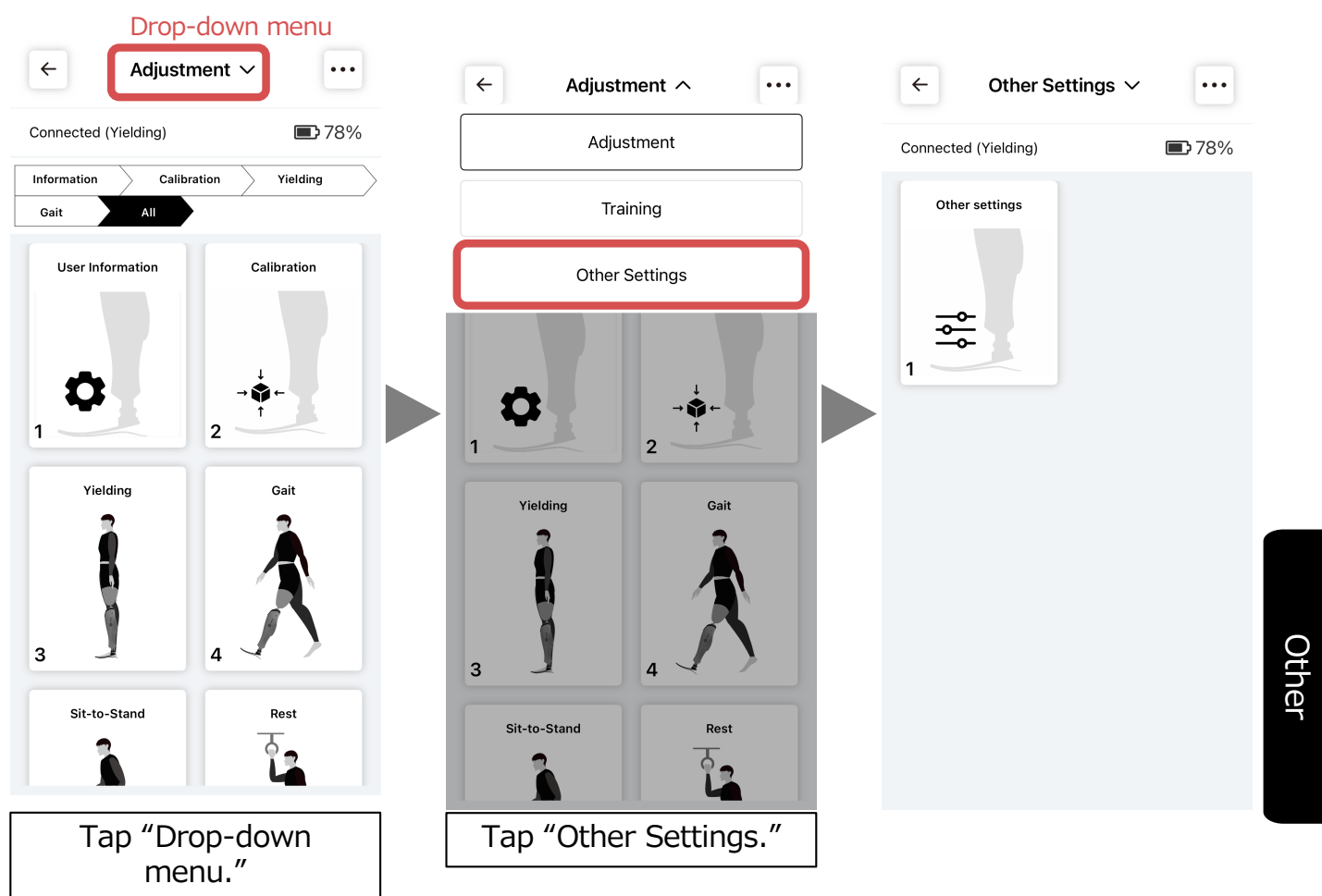
Set the amount of extension assistance during stance phase in Stair Ascent.

Increase this value to provide more knee extension assistance during Stair Ascent mode.

3.7 Other Settings

This section explains adjustments for features such as the beep sound and auto-power-off function.

- Some parameters, such as beep and vibration, serve as cues for each mode, including **Gait mode** and **Stair Ascent/Descent mode**, helping the user confirm mode activation or exit.
- Adjust these settings according to the user's proficiency.



←

Other settings

Connected (Yielding)  78%

1. Beep volume 3 >

2. Beep 

3. Night mode 

4. Night mode: time setting 20 >

5. Vibration 

6. Vibration: exit stairs ascent mode 

7. Vibration: exit stairs descent mode 

8. LED 

9. Auto power off in sit mode 

10. Auto power off time in sit mode [minutes] 30 >

11. Save settings 

Adjust the beep volume in three levels. This parameter is effective only if the beep sound specified in “2. Beep” is enabled.

Enable or disable the beep sound. It is recommended to keep this enabled until the user becomes accustomed to the prosthesis, as the beep serves as a cue for **Gait mode**, **Stair Ascent/Descent mode**, and other modes.

To turn off the LED light at night, select “3. Night Mode” and set the start time (0–23 hours) using “4. Night Mode: Time Setting.” Night Mode is active from the set start time until 5:00 a.m., or until the set start time the next day if it is later than 5:00 a.m.

Enable or disable the vibration. It is recommended to keep this enabled until the user becomes accustomed to the prosthesis, as vibration serves as a cue for **Sit-to-Stand**, **Stair Ascent/Descent mode**, and other modes.

Enable or disable vibration that notifies the user when exiting **Stair Ascent/Descent mode**.
** It is recommended to keep this enabled until the user becomes accustomed to the Bio Leg®.*

Enable or disable the LED on the top power button.

Enable or disable the auto-power-off function, which activates after the time specified in “10. Auto Power Off Time in Sit Mode” has elapsed while the user is in a sitting position.

Set the duration before the prosthesis powers off while sitting. This parameter is effective only when “9. Auto Power Off in Sit Mode” is enabled.

Save the settings. Since parameter values are automatically saved when written to the Bio Leg®, there is no need to operate this toggle button.

Other

40

Powering Mobility for All

BIONIC 

4. Training Mode

What's Training Mode?

Training Mode is designed for practicing the transition and operation of **Stair Ascent Mode**.

It is divided into two parts: **Transition Training** and **Motion Training**.

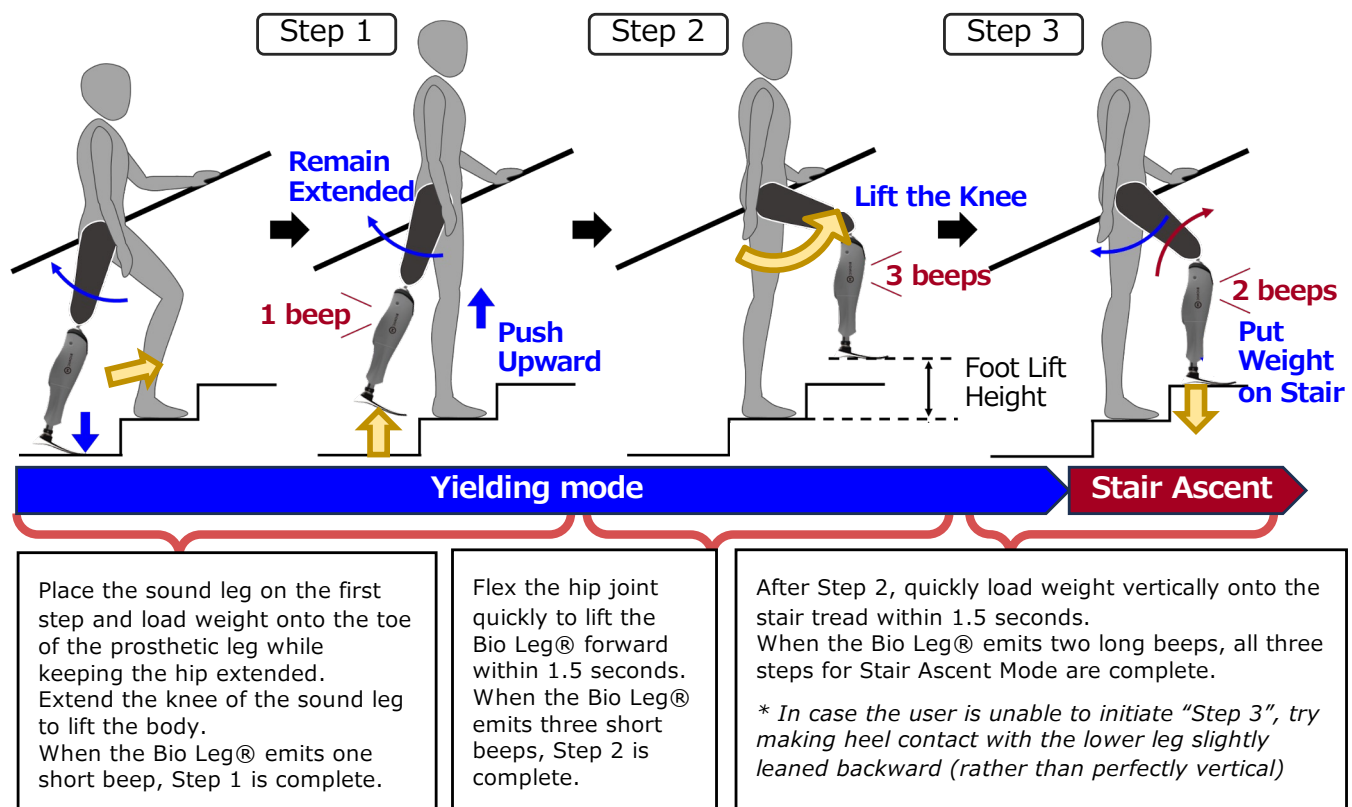
Transition Training

This is used to practice the **Trigger movement**. By activating this mode and performing the Trigger movement, MoPro displays on its screen which movements are not executed correctly and provides feedback.

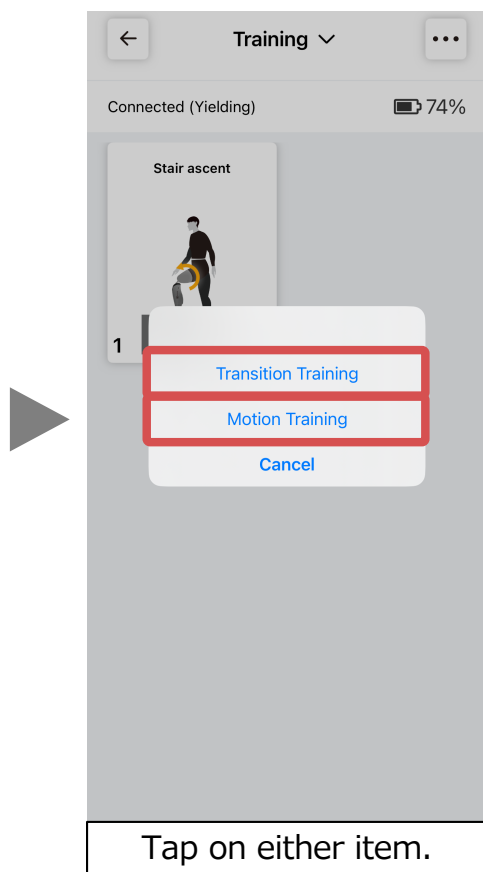
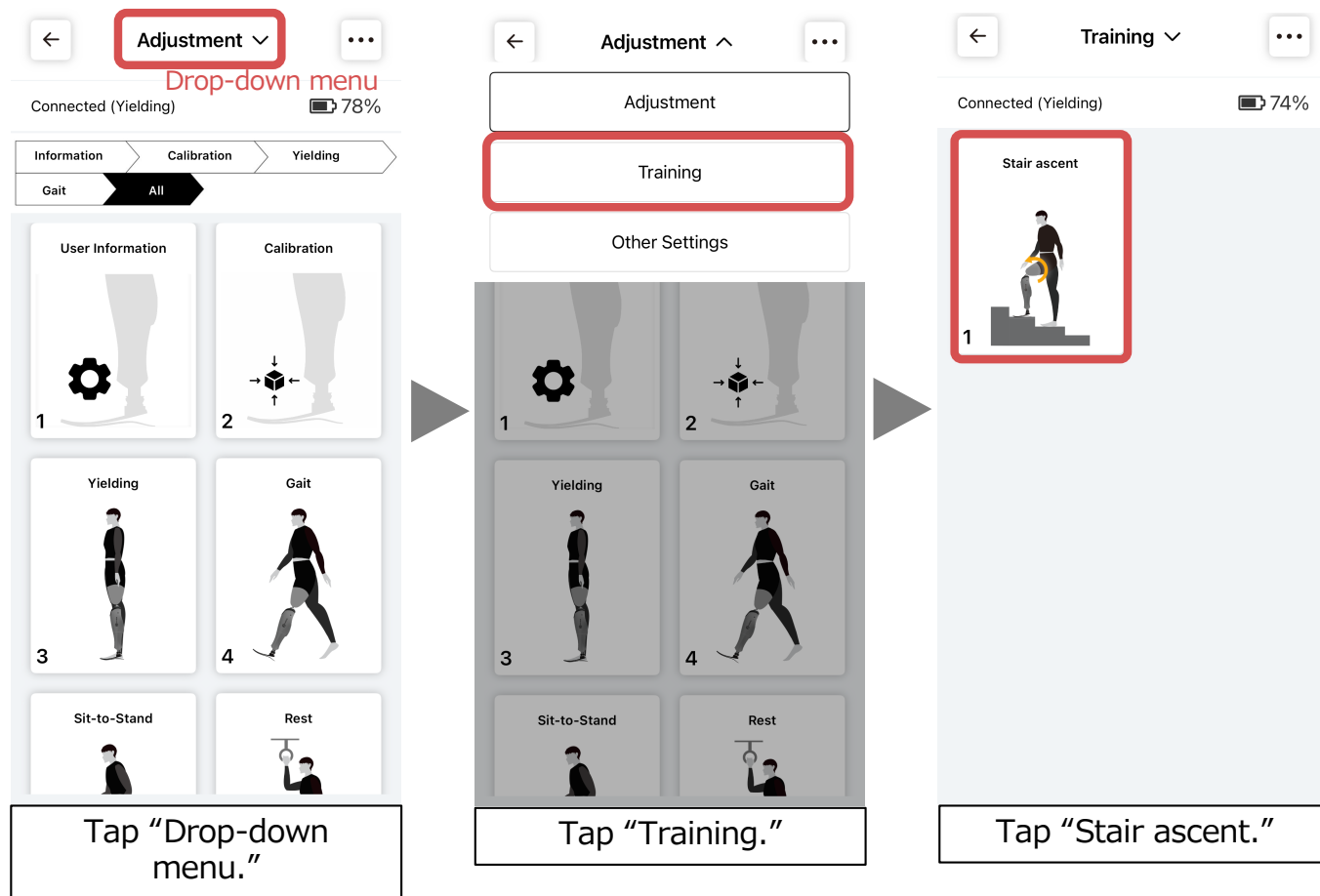
Motion Training

This is used to practice getting accustomed to the behavior of the Bio Leg® after Stair Ascent Mode has been initiated. In this mode, the Bio Leg® automatically enters Stair Ascent Mode, and the user practices coordinating the timing of knee extension assistance with their prosthetic-side hip extension.

- Stair Ascent Mode requires sufficient joint range of motion, muscle strength, and practice.
- To reduce the risk of falling, perform this activity in an environment with a nearby assistant and follow all precautions.
- Depending on individual physical abilities, the user may not reach a practical level even with training.



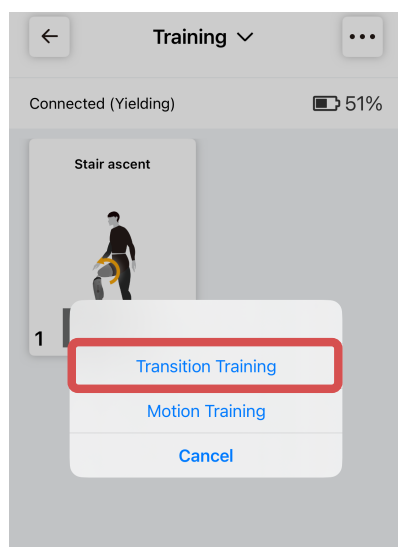
Bio Leg® & MoPro™



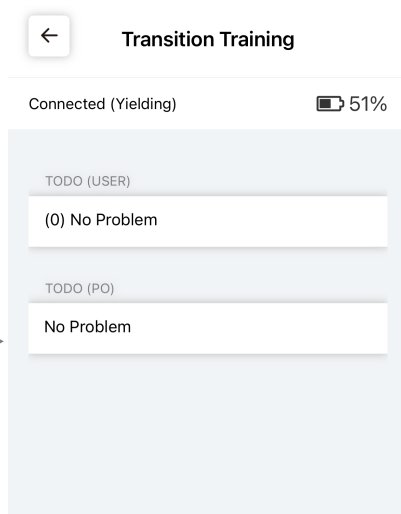
Training mode

Bio Leg® & MoPro™

4.1 Transition Training



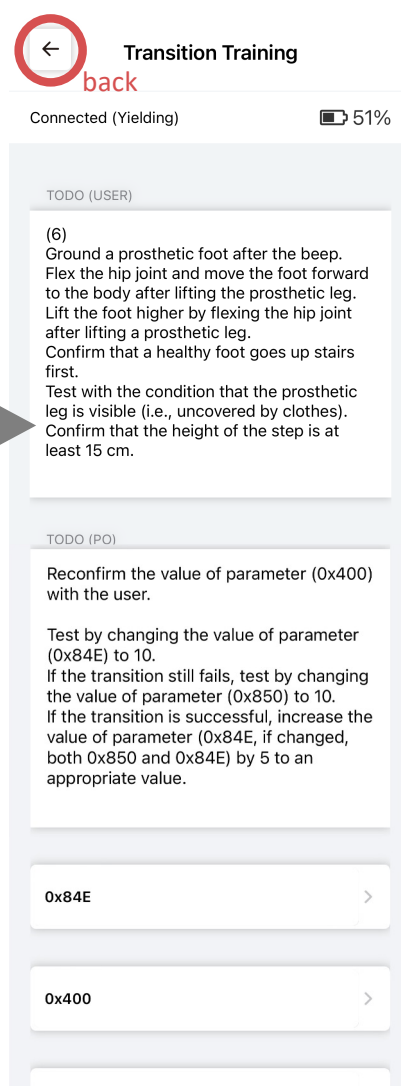
Tap "Transition Training."



Confirm that the screen above is displayed and that the LED light on the rear of the Bio Leg® body is lit green as shown in the photo.



Perform the trigger movement (see p.30).



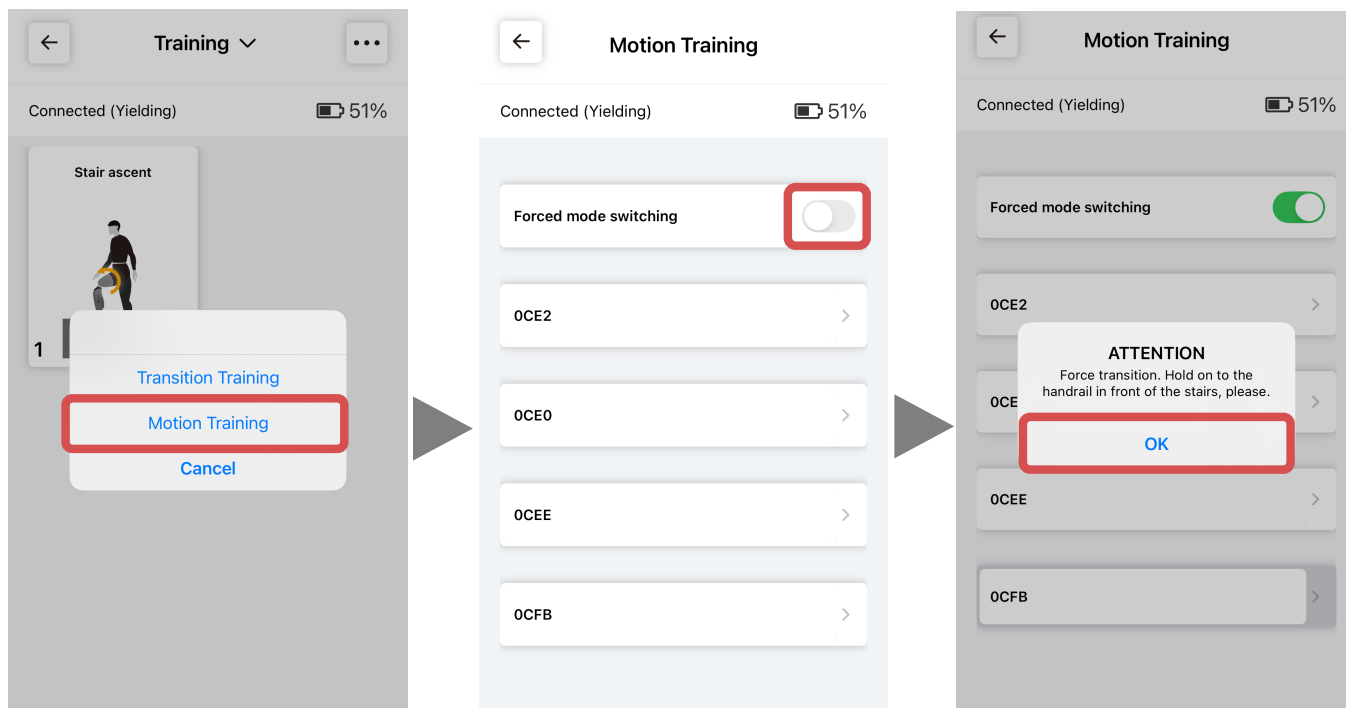
When an issue is detected by the Bio Leg® during the Trigger movement, the LED light on the back of the device temporarily turns off.

The device screen will display information similar to the example on the left. Instructions for the user and parameters to be adjusted in MoPro are shown as **"TODO."** Take appropriate actions and repeat practice until a smooth transition to Stair Ascent mode is consistently achieved. When exiting Transition Training mode, tap the **"Back"** button in the upper-left corner of the screen.

** No history of detected issues is retained. Adjust as needed each time.*

Training mode

4.2 Motion Training



Tap "Motion Training."

Tap the **"Forced Mode Switching"** toggle button.

Review the contents of **"ATTENTION"**, then tap **"OK."**



Confirm that the LED light on the rear of the Bio Leg® body has turned green, as shown in the left photo.

When the LED illuminates successfully, the Bio Leg® transitions to Stair Ascent mode.

In Stair Ascent mode, lifting the prosthetic leg upward causes the knee to swing and the foot to be placed on the step. When weight is loaded onto the prosthetic leg, the extension assistance activates, lifting the body upward.

If the Trigger movement cannot be completed for any reason, but the user wants to experience or practice Stair Ascent mode, this mode can be used. Be sure to set the toggle button to **OFF** to exit Motion Training.

** If the user starts walking without performing this procedure, there is a risk of falling due to unexpected movements of the Bio Leg®.*

Training mode

5. Create / Recover an Adjustment Record

To back up settings in case of device replacement (e.g., exchanging to a loaner unit for maintenance) or to preserve the user's adjustment history, it is necessary to create a record.

5.1 How to Create a Record

Step 1: Tap "option."

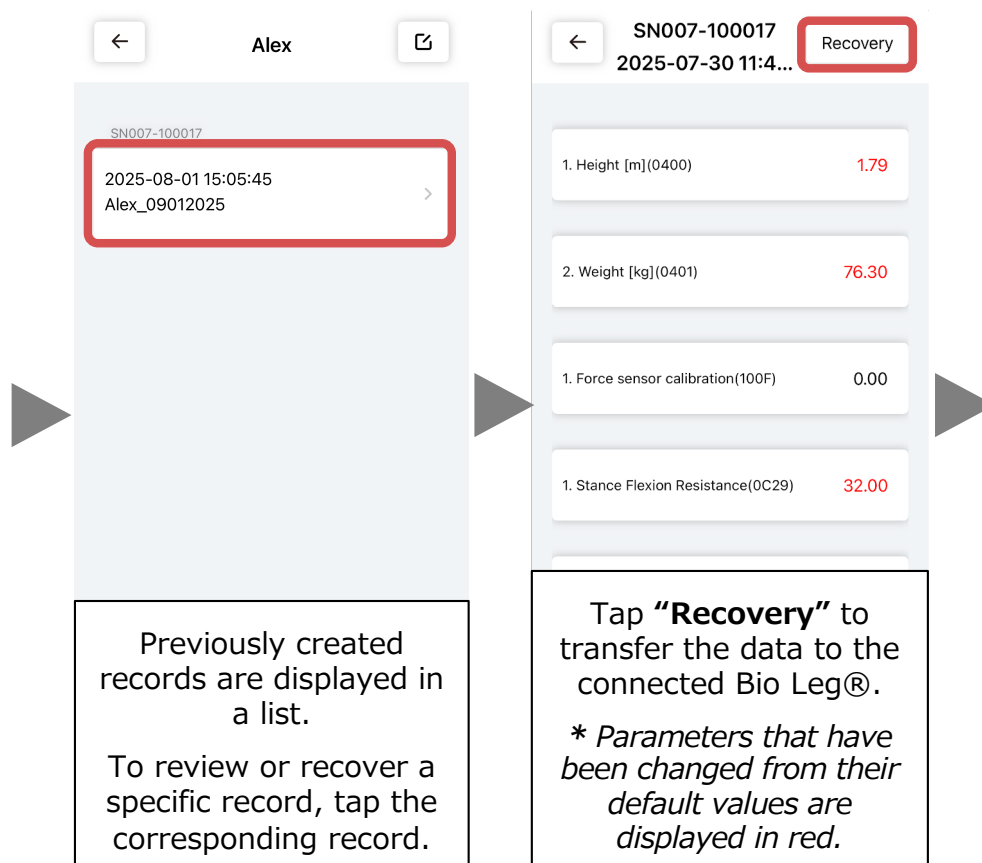
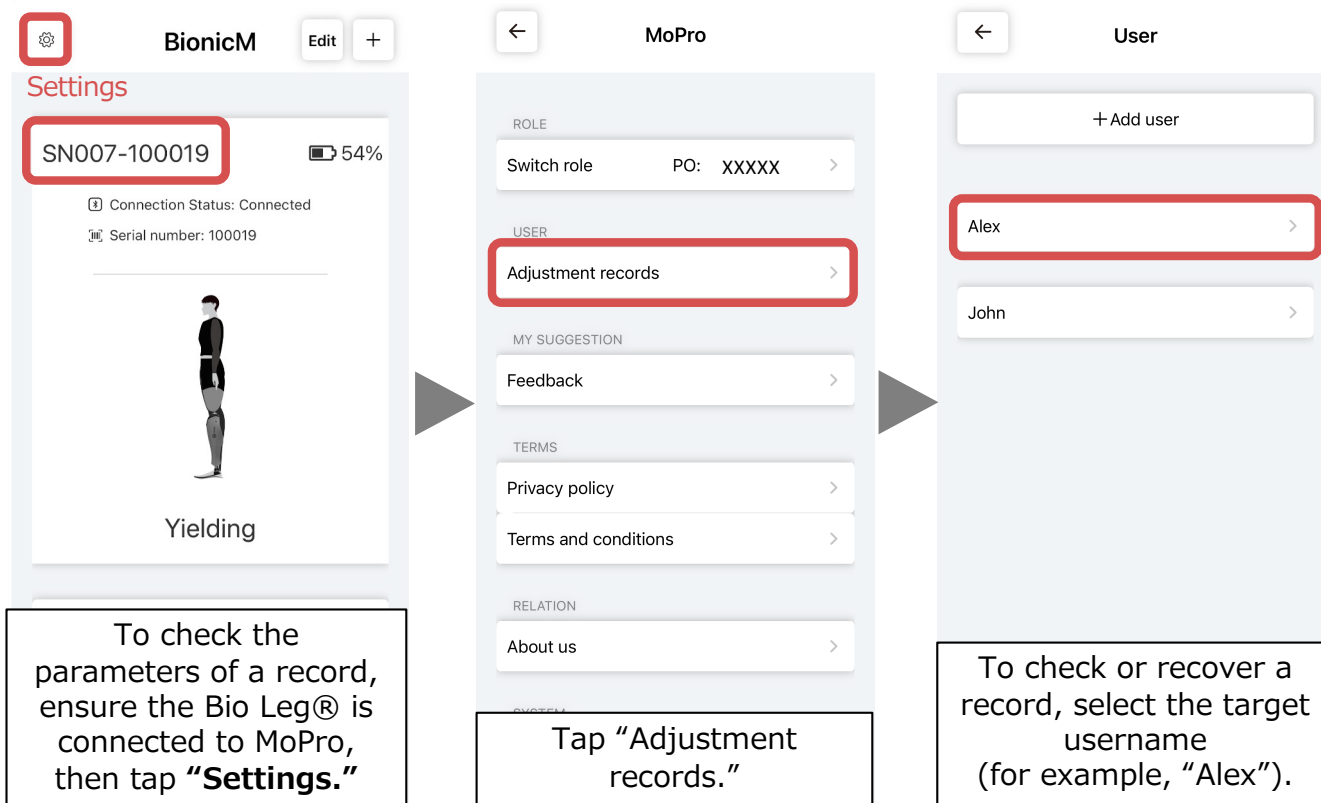
Step 2: Tap "Create an adjustment record."

Step 3: Enter an appropriate name in the text box, then tap **"Create Record."**

Step 4: The loading will begin. If the above tips are displayed, the record has been created successfully. Tap **"OK"** to finish.

Step 5: The record has been created successfully. Tap **"OK"** to finish.

5.2 How to check and recover (rewrite) a created record



Bio Leg® & MoPro™

← SN007-100017 2025-07-30 11:4... Recovery

1. Height [m](0400) 1.79

2. Weight [kg](0401) 76.30

1. Force sensor calibration(100F) 0.00

Please choose a device.

SN007-100019

Recovery

Cancel

Check the serial number of the device on which the record will be overwritten, then tap **“Recovery.”**



← SN007-100017 2025-07-30 11:4... Recovery

1. Height [m](0400) 1.79

2. Weight [kg](0401) 76.30

1. Force sensor calibration(100F) 0.00

1. Fo Retrieval completion 00

OK

1. Stance Flexion Resistance(0C29) 32.00

2. Stance Flexion Resistance (Stair Descent)(0D0F) 32.00

Stance Flexion Resistance(0C2A) 0.00

Stance Flexion Resistance (Down Stair) (0D1B) 0.00

If the data transfer is successful, two beeps will sound from the Bio Leg®, then tap **“OK.”**

6. Reset All Adjustment Values

Reset all adjusted parameter values to their default settings.

- Perform a reset before the Bio Leg® is used by another user or in different circumstances.

Step 1: Tap "Option."

Step 2: Tap "Reset all adjustment values."

Step 3: Confirm the contents and then tap "Reset."

Step 4: The loading will begin.

Step 5: If the above tips are displayed, the reset of values has been completed successfully. Tap "OK" to finish.

7. Example of Advanced Adjustments

Depending on the user's physical abilities and preferences, basic adjustments may not provide sufficient benefits.

The following are example adjustments for reference:

- Solutions may involve both MoPro settings and modifications to the prosthetic leg.

Issue: Unable or Difficult to Transition to the Swing Phase During Gait

Recommended actions:

1. **If the user has difficulty flexing the knee during Pre-Swing**, consider using a softer prosthetic foot, or adjust the alignment by shifting the socket posteriorly, or by extending the socket and shifting it posteriorly, to facilitate knee flexion.
2. **If the user does not fully extend the knee during Terminal Stance**, consider using a more rigid prosthetic foot, or adjust the alignment by shifting the socket anteriorly, or by flexing the socket and shifting it anteriorly, to enhance the knee extension moment.
3. Encourage sufficient hip extension and ensure the user places weight on the forefoot during Terminal Stance.
4. If any gait deviations are observed, such as circumduction, vaulting, or hip hiking, attempt to correct them.
5. Even after adjusting items 1–4, if the user still has difficulty initiating swing due to bilateral amputation or low activity level, adjust the following parameters in MoPro at the **Yielding Expert** level:
 - **If the user cannot place enough weight during Terminal Stance**, decrease **"Load Ratio to Initiate Swing."**
 - **If the user cannot flex the knee during Pre-Swing**, decrease **"Knee Velocity to Initiate Swing."**

Issue: Increasing the extension assistance still delays the swing-out timing during gait.

Recommended actions:

1. Decrease **"4. Knee Angle to Initiate Flexion Resistance [deg]."**
2. Increase **"3. Flexion Resistance [%]"** by 2–3%.
3. Decrease **"10. Extension Resistance [%]."**
4. Decrease **"11. Knee Angle to Initiate Extension Resistance [deg]."**

Issue: Inadvertently entering Rest mode

Recommended actions:

1. To prevent unintended slight knee flexion, increase the socket flexion angle and shift it anteriorly.
2. In **Rest** settings, increase the value of **"1. Minimum Knee Flexion to Initiate Rest [deg]"**

To disable Rest mode:

1. Set **"1. Rest condition (knee bent) [deg]"** higher than **"2. Rest condition (knee overly bent) [deg]"**. (e.g., 40 > 30).
2. Decrease the value of **"4. Knee Velocity to Initiate Rest"** to 0.01.

Issue: Unable to initiate Sit-to-Stand or Stair Ascent due to insufficient weight loading on the Bio Leg®.

Recommended actions:

1. During Sit-to-Stand, lowering the load threshold makes it easier to trigger the movement.
** Be careful when lowering the threshold too much, as the extension assistance may activate unintentionally while seated. → Lifting the prosthetic limb will deactivate it.*
2. Use hands on the top of the Bio Leg or the distal end of the socket to assist weight-bearing when initiating Sit-to-Stand.
** Be careful not to pinch fingers in moving parts, especially around the top pyramid of the Bio Leg.*

Issue: Stair Ascent mode exits unexpectedly during stair ascent.

Recommended actions:

1. Increase the value of **"4. Hip Angle to Exit Stair Ascent [deg]"** in MoPro's "Stair ascent" settings.
** If this value is set too high, it may require greater hip extension after ascending stairs, making it difficult to exit Stair Ascent mode.*
** Note that if there is no movement for 5 seconds during stair ascent, Stair Ascent mode will automatically exit.*

Notes:

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