



VERSION 5.2

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SYSTEM STARTUP



STEP 1 - CHARGE SENSOR

- Connect sensor(s) to the provided charging cord and any 5V USB power adapter.
- Power light is RED while charging.



Charging light will shut off when complete

STEP 2 - POWER SENSOR ON

- PRESS the power button to turn the sensor on.
- Light will FLASH alternating YELLOW/ORANGE.



STEP 3 - CALIBRATE SENSOR

• Light will turn BLUE when auto-calibration is complete.

NOTE: IF SENSOR CONTINUES TO FLASH YELLOW/ORANGE, WAVE SENSOR IN A FIGURE 8 MOTION.



PAIR SENSOR

STEP 4 - PAIR SENSOR TO DEVICE

- Go to Settings/Bluetooth on your iOS device.
- Turn on Bluetooth.
- Select "BioMech-XXXX"
- Select "ALLOW" when prompted.

Your device is now paired with your sensor.

NEED TO PAIR SENSOR TO ANOTHER DEVICE?







The sensor ID name is located on bottom of the sensor

UNPAIR SENSOR

UNPAIR BLUETOOTH

- Go to Settings/Bluetooth on the iOS device paired with the sensor.
- Tap (i) next to the corresponding sensor.
- Tap "Forget This Device"

RESET SENSOR

- Press and HOLD Clear Pairing button on top of sensor while turning sensor ON.
- Continue holding Clear Pairing button until sensor light begins FLASHING BLUE/WHITE.
- Follow steps to pair sensor to device (device must have BioMech Lab pre-installed).

SENSOR ATTACHMENT

To facilitate optimal data capture it is imperative sensors are securely attached, NOT over loose clothing, to minimize shifting or movement. Attach sensor consistently in the same spot for all assigned locations.

SENSOR ATTACHMENT METHODS

- BioMech skin-safe, single-use, double-sided tape that attaches to the back of the sensor and is placed directly on the skin. (BioMech provides a starter-roll of tape with each subscription. Refills are available for purchase).
- BioMech sensor clips that attach to a stable waistband for Gait tests. (BioMech provides three clips with each subscription. Additional clips are available for purchase).
- Traditional attachment methods such as tape or bandages.



SOFTWARE NAVIGATION

LOGIN

Log into BioMech Lab with the username provided by BioMech.

NOTE: TAP FORGOT PASSWORD TO RESET OR CHANGE YOUR PASSWORD FOR SECURITY REASONS.



HOME

BioMech Lab testing is patient-centric. To begin testing, retrieve results and run reports select an existing patient or add a patient to the directory.

NOTE: LAB AT HOME PATIENT ACCOUNTS AUTOMATICALLY OPEN TO THEIR TEST OPTIONS.

1234 MIL FIL JANE 27 TO BIOMECH LAB	
Master BioMech	
Create new patient	CREATE NEW PATIENT If the patient is not in the Patient Directory, create a
Existing patients	new patient.
	EXISTING PATIENT Select a patient in the Patient Directory.
Loggod in as James Bond - Version 5.1	
LOGOUT Sign out of the BioMech Lab app.	APPLICATION DATA BioMech Lab user and version reference.
HELP OPTIONS	
SUPPORT	

Submit a ticket for assistance or to provide feedback.

USER GUIDE

Access manuals and frequently asked questions.

TEST OPTIONS

8:27 AM Mon Bep 12	© ВіоМесн Lab	1	÷ 30% ∎	NOTE: LAB AT HOME PATIENT ACCOUNTS OPEN DIRECTLY
Pat	tient: Doe, Jane / Date of Birth: 02/01/	n990 (j)		TO THEIR TEST OPTIONS
	TEST OPTIONS	;		
Run Test	Test Reports	Test History		— Select appropriate task.
🛧 Gait	*	Balance	ĺ	
Cognitive		Angles Freeform Angles		Select the test category.
(Logout) (Help) (Home)		-	Next	← Step 3:Tap NEXT.

RUN TEST

Define and perform tests.

ORDER | RESULTS | REVIEW

Set the appropriate test criteria, execute the test, review the results and access past tests.



MENU Patient Name: JANE DOE (1) Date of Birth: 02/04/940 Angles: 829087

Last 30 Day

TEST REPORTS

Generate test reports.

REPORT SETUP CRITERIA

Set the appropriate filters to run the report.

TEST HISTORY

Access past tests.

SORT CRITERIA

Tap the table headers to organize the test list.

Argles I	LAIL M.						
							N REPORT
Dettitiet	10009						history
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0518/22 5-25 PM	Shoulder .	External Relation					
05/16/22 9:30 PM							
	Stration .	Abbacter				Constant of	

Cancel Ne

TESTING WORKFLOW

ORDER

Define test parameters.

RESULTS

Run test and view results.

REVIEW

Review previous test.



Generate single test report.

Patient DOIE Patient ID	Jane Doe 1980-00-01 1981-1915-1918	Date of Senato Okent.	e 202 Mai	5-01-27 11.49AM An BioMech		Accession	B-ONE-851
ANGLI	ES - SHOULDER						
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	Biat Ande	Carross	2		-		-
N Date		Barrant	47				

CUMULATIVE REPORTS

Generate multiple test reports.

ANGLE	S Inc Ment - Mark, Ment - Left						
Senser Local 2023-01-27- EXTERNAL	ion: Wrat - Right, What - Left						
2023-01-27- EXTERNAL				Page	5. Duration: (10.38 Sec. Prenary Pt	we Explu
EXTERNAL	TT AB AM - Accession BICME-86187	UNITS	HESIAT	TARGET RANGE	STATUS	NORMAL REALOR	STATUS
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PATIENT SELECTION



STEP 1 - SELECT CREATE NEW PATIENT

Tap to access the New Patient Form.





EXISTING PATIENT



EXISTING PATIENT (CONTINUED)



TEST MENU



Evaluate Critical Properties of Motion in Real Time



ASSIGNING SENSOR(S) TO TESTS



ASSIGN AVAILABLE SENSORS TO LOCATIONS

DRAG AND DROP an available sensor to the preferred location, or tap desired sensor and then tap preferred location.



REQUIRED SENSORS —— Identifies the number of sensors needed for the specific test.



SHOW/HIDE LOCATION IMAGE Tap Sensor Location Image to show/hide an image detailing correct placement for the selected location.



UNASSIGN SENSOR

Tap the X to unassign a sensor. The sensor will then appear in the list of Available Sensors to assign to a location.

ACCEPT OR DELETE TEST RESULT



RESULTS indicates a test was attempted, not completed and the reason. These results will be available within the application and via the web portal for review and reporting.



GAIT TESTS

COMPREHENSIVE MEASUREMENT OF KEY GAIT PARAMETERS

Sensor Quantity: 1, Sensor Location: Lower Back, Recommended Starting Position: Standing Up Straight

GAIT TESTS



GAIT TEST ORDER

DISTANCE DURATION Set test distance. Default setting N/A (i.e. no Set test duration. set distance will be applied to the test). Tap Default setting is N/A OTHER to specify a different distance. Tap (unlimited time). FEET or METERS to set unit accordingly. P 🕻 67% 🗖 NEXT Patient Name: DOE, JANE () Date of Birth: 02/01/1990 Gait: ORDER MENU Tap NEXT when DURATION: AID: 🛈 DISTANCE: finished. Yes No Seconds N/A 28 29 AID Identify if an assistive device/person is used for the test (e.g. crutches, walker, cane, walking belt, etc.). NOTES ORDER

GAIT TEST CONTROLS

ELAPSED TIME

Displays test time. If duration is specified, the test will stop once the duration is reached.



START STOP

START/STOP

Make sure the patient is standing up straight, still and facing the direction they will be walking prior to pressing START.

Tap START to begin a test. START displays when not recording; STOP displays while a test is being performed.

Tap STOP to stop/pause a test.

TIP: LONG-PRESS START TO INITIATE 5 SECOND TIMER.

ASSIGN SENSOR(S)

Sensor(s) must be assigned to enable the Start button.

REPEAT

Tap REPEAT to perform a new test with the same criteria.

NEW

Tap NEW to return to ORDER to set up a new test.

DELETE RESULT

Tap to DELETE the test result.



REPORT

MENU

Tap REPORT to generate a detailed PDF report for the displayed test.

Patient Name: DOE, JANE ① Date of Birth: 02/01/0990 Gail: Distance: N/A. 30 SEC, Aid: NO Date / Time: 04/04/23 12:38 PM (Run by Anne Cunningham)

NOTES

Tap NOTES to add/edit test notes. Multiple notes may be saved to a test.

Elapsed Time

00:30

GAIT TEST RESULTS



Percent of time the trailing foot is in contact with the ground during Double Support.

the ground.

the ground.

DOUBLE: Percent of time

both feet are in contact with



Sensor Quantity: 1 Sensor Location: Front of Head (default), Base of Neck, or Lower Back Recommended Starting Position: Standing Up Straight

BALANCE TESTS



BALANCE TEST ORDER

STANCE

Options for feet placement include PARALLEL, SEMI-TANDEM, TANDEM, SINGLE LEFT and SINGLE RIGHT. If Parallel is selected, define if the feet will be together or apart. If Semi-Tandem or Tandem is selected, define which foot is forward (LEFT/RIGHT).

() () (₎ () () ()	
2:59 PM. Wei Apr 8 Patient Name: DOE, JANE ① MENU Date of Birth: 02/01/1990 Balance: ORDER NEXT STANCE: ① Parallel Semi-tandem Tandem Single Left Single Right DURATION: EYES: ① Seconds Minutes N/A Open	Tap NEXT when finished.
SURFACE: ① 28 29 30 31 32 32 32 32 33 31 32 32 33 32 33 32 33 32 33 34 35 35 35 35 35 35 35 35 35 35	DURATION Set test duration. Default setting is 30 seconds. Select N/A to test for an unlimited time.
ORDER RESULTS REVIEW	EYES Select whether the patient's eyes will be OPEN or CLOSED. SURFACE

Select whether the patient will be standing on a STABLE or UNSTABLE surface.

BALANCE TEST CONTROLS

ELAPSED TIME

Displays test time. If duration is specified, the test will stop once the duration is reached.



START STOP

START/STOP

Make sure the patient is in the desired starting position prior to pressing START. Tap START to begin a test. START displays when not recording; STOP displays while a test is being performed.

Tap STOP to stop a test.

TIP: LONG-PRESS START TO INITIATE 5 SECOND TIMER.

ASSIGN SENSOR(S)

Sensor(s) must be assigned to enable the Start button.

ZOOM

Tap + / - to zoom in / out or tap \bigoplus to autofit charts

CHARTS

Tap RECOVERY, DEVIATION, or TIMELINE to view respective graphs.



REPEAT

Tap REPEAT to perform a new test with the same criteria.

NEW

Tap NEW to return to ORDER to setup a new test.

DELETE RESULT

Tap to DELETE the test result.

REPORT

Tap REPORT to generate a detailed PDF report for the displayed test.

NOTES

Tap NOTES to add/edit test notes. Multiple notes may be saved to a test.

BALANCE TEST RESULTS

DEVIATION

AVERAGE DISPLACEMENT: Magnitude and direction of deviation from the starting position in three dimensions (xyz).

% NEUTRAL: Amount of deviation compared to a 20° maximum threshold, expressed as a percentage.

AVG DEVIATION: Average amount of deviation from the starting position with respect to direction, measured in degrees.

GRAPH: Charts the displacement value and provides the maximum degrees of deviation for each direction.







TIMELINE

GRAPH: Charts a timeline of the displacement throughout the test.

STABILITY

TOTAL SCORE The measurement of velocity when returning to the initial balance position, measured in degrees per second.

DIRECTION Measurement of Left/Right, Front/ Back and Rotational movements.

GRAPH Charts the measurement of velocity when returning to the initial balance position, measured in degrees per second.



SYMMETRY TESTS

ASSESS SYMMETRY/ASYMMETRY BETWEEN TWO LOCATIONS

Sensor Quantity: 2 Sensor Location: Multiple Supported Locations

- Location 1 Shoulder (Right) Elbow (Right) Wrist (Right) Knee Above (Right) Knee Below (Right) Foot (Right)
- Location 2 Shoulder (Left) Elbow (Left) Wrist (Left) Knee Above (Left) Knee Below (Left) Foot (Left)

SYMMETRY TESTS



SYMMETRY TEST ORDER



SYMMETRY TEST CONTROLS

ELAPSED TIME

Displays test time. If duration is specified, the test will stop once the duration is reached.



START STOP

START/STOP

Make sure the patient is in the desired starting position prior to pressing START. Tap START to begin a test. START displays when not recording; STOP displays while a test is being performed.

Tap STOP to stop/pause a test.

TIP: LONG-PRESS START TO INITIATE 5 SECOND TIMER.

ASSIGN SENSOR(S)

Sensor(s) must be assigned to enable the Start button.



REPORT

Tap REPORT to generate a detailed PDF report for the displayed test.

FLASH SENSOR

NOTES

Tap NOTES to add/edit test notes. Multiple notes may be saved to a test.

REPEAT

Tap REPEAT to perform a new test with the same criteria.

NEW

Tap NEW to return to ORDER to set up a new test.

DELETE RESULT

Tap to DELETE the test result.

SYMMETRY TEST RESULTS

RELATIVE PERCENTAGE

Compares percent of total angular velocity for each sensor (measured in degrees/second).

While running a test, the current value is displayed. Once the test is complete the average amount of movement over the course of the test is displayed.



GRAPH

Charts the proportional contributions of movement changes over time.





ANGLES TESTS STRUCTURED RANGE OF MOTION ANALYSIS

Sensor Quantity: 1 - 2, Sensor Location: Test Specific

ANGLES TEST MOTIONS

ABDUCTION Arms resting at side, palm facing body, bring arm laterally over head. **Normal Range of Motion:** 160 - 180¹ (Coronal)



CROSS-BODY ADDUCTION Arms extended laterally, parallel to the ground, palm facing down, rotate inward across chest. **Normal Range of Motion:** TBD (Transverse)





EXTENSION Arms at side, palm facing inward, extend arm backward. **Normal Range of Motion:** 50 - 60¹ (Sagittal)





EXTERNAL ROTATION (HUMERUS

ABDUCTED) Arms extended laterally, parallel to the ground, flex the elbow at 90°, palm facing down, rotate shoulder upward. **Normal Range of Motion:** 90 - 100¹ (Transverse)



EXTERNAL ROTATION (HUMERUS

ADDUCTED) Arms at side, flex elbow to 90°, palm facing body, externally rotate shoulder. **Normal Range of Motion:** 90 - 100¹ (Transverse)





FORWARD FLEXION Arms resting at side, palm facing body, bring forward over head. **Normal Range of Motion:** 165 - 180¹ (Sagittal)





INTERNAL ROTATION (HUMERUS

ABDUCTED) Arms extended laterally, parallel to the ground, flex the elbow at 90°, palm facing down, rotate shoulder downward. **Normal Range of Motion:** 70 - 90¹ (Transverse)



INTERNAL ROTATION (HUMERUS ADDUCTED)

Arms at side, flex the elbow at 90°, palm facing body, internally rotate shoulder. **Normal Range of Motion:** 65 - 75¹ (Transverse)



INTERNAL ROTATION (POSTERIOR IRB)

Arms resting at side, palm facing back, raise hand to internally rotate the shoulder. **Normal Range of Motion:** TBD (Coronal)





ANGLES TESTS



ANGLES TEST ORDER

REGION

Select the body region to be evaluated.

MOTION Select the motion to be evaluated.

LOCATION

Select a location to perform a unilateral or bilateral evaluation.



TARGET RANGE (SAGITTAL, CORONAL & TRANSVERSE PLANES)

Set minimum and maximum range of motion thresholds for primary plane movement. The target range is visible on the test graph when defined. Default setting is n/a (no target range set). TIP: THE PRIMARY PLANE IS INDICATED FOR THE SELECTED MOTION.

ANGLES TEST CONTROLS

ELAPSED TIME

Displays test time. If duration is specified, the test will stop once the duration is reached.



START STOP

START/STOP

Make sure the patient is in the desired starting position prior to pressing START. Tap START to begin a test. START displays when not recording; STOP displays while a test is being performed.

Tap STOP to stop/pause a test.

TIP: LONG-PRESS START TO INITIATE 5 SECOND TIMER.

WATCH MOTION DEMO

View a simulation for selected motion.

ASSIGN SENSOR(S)

Sensor(s) must be assigned to enable the Start button.

REPEAT

Tap REPEAT to perform a new test with the same criteria.

NEW

Tap NEW to return to ORDER to set up a new test.

DELETE RESULT

Tap to DELETE the test result.

DATA DISPLAY

Toggle between table and graph data for Left and/or Right datasets.



REPORT

Tap REPORT to generate a detailed PDF report for the displayed test.

NOTES

Tap NOTES to add/edit test notes. Multiple notes may be saved to a test.

ANGLES TEST RESULTS



- GRAPH

Charts motion repetitions in degrees from the starting position.

ustent Jane Doe Kitte 1980-02-01 Istent ID: 1131-1111 Jender: Female	Date of Service Client	e 202 Ma	3-04-05 3:33PM ster BioMech		Accession	BIOME-6672
NGLES - SHOULDER						
Sensor Location: What - Left			Reps: 11.	water: 00:	30 Sec. Primary Pla	ne: Transverse
023-04-05 3:33PM - Accession: 8/05/E-86736	UNITS	RESULT	TARGET RANGE	STATUS	N DRMAL RANG	E STATUS
STERNAL ROTATION (HUMERUS ADOUG	CTRID)	1 - 28				
LEFT Average	Degrees	54	90 - 100	Delow	90 - 100 (7	Below
Start Angle	Degrees	-3				
			1		- Run By: C	unningham, Anne
EFERENCES: Bander for south of the south of	annuel, la Conne C. V autoret este este	edes, G. Joyce maintene publi	When the same final to approximate the same same to approximate the same same to approximate the same same same	wheel 2018, For JP 1999	e parques el Tau analys	
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MINIMUM RANGE OF MOTION

Motion with the smallest recorded angle.

AVERAGE RANGE OF MOTION

Average value of results across repetitions performed.

MAXIMUM RANGE OF MOTION

Motion with the greatest recorded angle.

START ANGLE

Records sensor orientation with respect to the ground.

Positive value: Tilt at start of test is in the same direction as the intended motion. (e.g. Start of 2° with Max of 47° = total movement of 45°).

Negative value: Tilt at start of test is in the opposite direction of the intended motion. (e.g. Start of -3° with Max of 93° = total movement of 96°).

TARGET RANGE

On Graph: Identifies whether the repetition is below, within or above the set Target Range. (Applicable when a target range is defined on the order screen).

On Report: Identifies whether the average deviation is below, within or above the selected target range.

NORMAL RANGE

Identifies whether the average deviation is below, within or above the normal range. Applicable when an established normal range has been referenced.



FREEFORM ANGLES TESTS

USER-DEFINED RANGE OF MOTION ANALYSIS

Sensor Quantity: 1, Sensor Location: Anywhere

FREEFORM ANGLES ANALYSES



FROM STARTING POSITION

Place a sensor anywhere to evaluate and report three-dimensional changes in position. The results are displayed in an X,Y, Z table to communicate the three planes. This allows the user flexibility to perform any test in any position. Positive and negative values indicate the directionality.

USE CASES

- Testing range of motion (beyond those provided in the structured angles test menu) in a variety of positions (standing, sitting, prone, supine, etc.)
- Measuring dynamic and functional activities
- Training patients to perform appropriate rehabilitative movements while they observe the real-time data feed, such as:
 - Maintaining proper alignment under load and/or during movement
 - Stabilizing unwanted movements
 - Reaching a suggested degree of rotation
 - Quantifying strengthening/stretching exercises

RELATIVE TO GROUND

Place a sensor anywhere to compare its orientation "relative to the ground" using the sensors gravity-sensing feature. The results displayed are the angle perpendicular and parallel to the horizon. Movements in the plane parallel to the ground (horizon) display an N/A (not applicable).

USE CASES

- Tilt, slope, levelness and plumb analysis
- Positioning (static or dynamic)
- Posture, symmetry and rotation/tilt in the anterior, lateral or posterior views
 - Head, shoulder, pelvic, hip, knee and ankle alignment and symmetry
 - Cervical, thoracic and lumbar curvature
 - Standing, sitting, prone, supine, etc.
 - With different footwear, walking aids, orthotics, braces, etc.
- Range of motion relative to the ground
- Biofeedback training:
 - Maintaining proper alignment under load and/or during movement (e.g. neutral alignment while walking)
 - Stabilizing unwanted movements
 - Reaching a suggested degree of rotation

FREEFORM ANGLES TESTS



FREEFORM ANGLES TEST ORDER



FREEFORM ANGLES TEST CONTROLS



START STOP

START/STOP

Make sure the patient is in the desired starting position prior to pressing START. Tap START to begin a test. START displays when not recording; STOP displays while a test is being performed.

Tap STOP to stop/pause a test.

TIP: LONG-PRESS START TO INITIATE 5 SECOND TIMER.

ASSIGN SENSOR(S)

Sensor(s) must be assigned to enable the Start button.



Tap REPEAT to perform a new test with the same criteria.

NEW

Tap NEW to return to ORDER to set up a new test.

DELETE RESULT

Tap to DELETE the test result.



REPORT

Tap REPORT to generate a detailed PDF report for the displayed test.

NOTES

Tap NOTES to add/edit test notes. Multiple notes may be saved to a test.

FREEFORM ANGLES TEST RESULTS

Affix any of the six sides of the sensor against a patient or object and tap "Start."

NOTE: WHEN TESTING THE SAME MOVEMENT AT DIFFERENT TIMEPOINTS, AFFIX THE SENSOR USING THE SAME ORIENTATION SO THE RESULTS CORRESPOND WITH THE SAME X,Y, Z COLUMN AND SIGN.



FROM STARTING POSITION

RELATIVE TO GROUND



N/A (RELATIVE TO GROUND ONLY)

Movements in the plane parallel to the ground (horizon) display an N/A (not applicable).

XYZ

Results are displayed in an X, Y and Z table, allowing the user flexibility to perform any test in any position.

POSITIVE/NEGATIVE SIGN

Positive and negative values indicate directionality.



COGNITIVE TESTS

TIME METRICS FOR A VARIETY OF CUSTOMIZABLE REACTION TESTS

Sensor Quantity: 0, Sensor Location: Not Applicable Recommended Starting Position: Sitting at a table, facing iPad, both hands flat on the table.

COGNITIVE TESTS



COGNITIVE TEST ORDER

TEST TYPE

Set test type.

Simple

Provides a single object (Letter A) as the stimulus in a circle in the middle of the screen.

If **CHOICE** or **DISCRIMINATION** are selected, additional options appear.

TEST TYPE: ()				
Simple	Choice Discrimination			
HAND PERFORMI	NG TEST: ()	INTERVAL (SECONDS	i): (I)	
Left	Right	Equal	Random	
REPEATS: (1)				
ner exis. ()				
	9			
	10		6	
		A		

Choice

A OR B Provides either the letter A or B as the stimulus in a circle in the middle of the screen. If an A is shown, the patient is expected to respond using the left button on the screen, if the letter B is shown the patient is expected to respond using the right button on screen.

A AND B Provides both the letter A and B as the stimuli in two predesignated circles on the screen. The patient is expected to respond using the button on the side of the screen corresponding to the side of the screen where the A appears.

Discrimination

A "ONE" Provides either A or B as the stimulus in a circle in the middle of the screen. The patient is expected to respond only when an A appears.

AA "TWO" Provides a combination of As and Bs in three circles on the screen. The patient is expected to respond only when more As than Bs appear.

HAND

Identify the hand used to perform the test.

REPEATS

Set the number of times the stimuli will appear.

INTERVAL (SEC)

Set the duration between stimuli appearances. This can either be equal or random.

COGNITIVE TEST CONTROLS



START

Tap START to begin a test.



EXIT TEST

If no response for three times the set interval length, the EXIT TEST icon will appear. Tap to end and exit the test.

(e.g. interval = 5s, EXIT TEST appears after no response for 15s.)



TAP HERE

Instruct the patient to tap the corresponding button immediately upon seeing the stimuli, when applicable.



CONTINUE

If a Choice or Discrimination test has been selected, the correct response may be no response. In this case, the patient will be prompted with a continue button to continue the test.

Test Results

TEST RESULTS

Once a test is completed, the "Test Completed" screen will display. Tap TEST RESULTS to view results.



COGNITIVE TEST RESULTS

TEST DETAILS

TEST: Displays the test type and stimulus used.

STATUS: Complete or Incomplete.

DATE: Date and time the test was performed with the name of the user running the test in brackets.

METRICS

AVERAGE: Sum of all correct response times / number of correct responses.

MEDIAN: Median value from the set of correct responses.

RESULT: Percentage of correct responses.

MINIMUM: Shortest correct response time recorded (in ms).

MAXIMUM: Longest correct response time recorded (in ms).

STANDARD DEVIATION: Standard Deviation value from the set of correct responses.



CHART

Bar graph of reaction times with AVERAGE and MEDIAN reaction times noted. Incorrect Repeats and/or those that did not require a response are not graphed.

REPEAT TABLE

Each repeat is listed, noting the response time in milliseconds and response time versus both the average and median response times. The most recent is shown first by default.

- ↓ Shortest response time
- ↑ Longest response time
- \times Incorrect response
- Correct and did not require a response

REVIEW & REPORT

REVIEW

4:39 Ph	Patient N Date of B Angles: R	iame: JANE DOE iirth: 02/01/1960 :EVIEW	3					\$ 88% -)	
÷	- Swipe any row	LEFT to see mo	re options.				RU		
-								TARGET RANGE	
1	06/14/22 4:34 PM	Shoulder	Abduction	Left & Right			Coronal	←160 - 180 —	- SWIPE LEFT
	05/18/22 5:52 PM	Shoulder	Forward Flexion	Left		N/A	Sagittal	N/A	Swipe a row LEFT to reveal options
	05/18/22 5:50 PM	Shoulder	Forward Flexion	Left		N/A	Sagittal	N/A	• Re-assign test to another nation
	05/18/22 5:32 PM	Shoulder	Abduction	Left	200	N/A	Coronal	N/A	• Netes can be added to the test
	05/18/22 5:26 PM	Shoulder	External Rotation	Right	N/A		Transverse	90 - 100	Notes can be added to the test
	05/18/22 5:25 PM	Shoulder	External Rotation	Right	N/A		Transverse	90 - 100	• Report the individual test
	05/18/22 5:25 PM	Shoulder	External Rotation	Right		84	Transverse	90 - 100	• View the test results
	05/18/22 5:25 PM	Shoulder	External Rotation	Right	N/A	N/A	Transverse	90 - 100	 Delete the test
	05/18/22 5:20 PM	Shoulder	Abduction	Left	170	N/A	Coronal	50 - 75	
	05/18/22 5:18 PM	Lef	ft & Right	171	13	Coror	al (1)		Re-assign Notes Report View Delete

TEST DETAILS Metrics for each test performed are provided in rows. DOUBLE TAP a row to view the Test Results / Test Execution screen.

REPORTING

RUN SINGLE TEST REPORT

• From Review Swipe test row LEFT and tap REPORT to generate a report for a specific test.



RUN MULTI-TEST REPORT

Tap to generate test reports for all tests. The Report Filter dialog box will appear. Select a date range and data to display.

	Dates			D	isplay	_		
		May 2	022					
Last 30 Days		(1	2	3	4	5	6	7
		8	9	10	11	12	13	14
Today			16					
Custom Range								
All History								

REPORTING (CONTINUED)

PDF REPORT OPTIONS

Reports display instantly on screen for saving or exporting.

And the second s		DOB 1990-02-01	Date of Service	e: 202 Ma	23-01-27 11:49AM		Accession	BICME-86187
ANGLES - SHOULDER	MURCLES - SHOULDER Non-Landon Ward - Ray Ward - Landon Bard - Ray B	Patient ID: 1111-1111 Gender Female	Com.					
Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	Providuce Color - Carl Color	ANGLES SHOULDER						-
Benefic Laboration Voids Tage: Non-Robit Voids No-Robit Void	Bener Looken UNU - Bigl X UNU - LINE A BURK	ANGLES - SHOULDEN						
Party Party Party <thparty< th=""> Party</thparty<>	Algo and Processing Room Room (1997) Algo and Room Room (1997) Algo and Room Room (1997) Algo and Room (1997)<	Sensor Location: Wrist - Right, Wrist - Left			Rep	e: 5. Duration: 0	0.38 Sec. Primary P	tane: Sopital
Normality Normality <t< td=""><td>Data Data Second Description <thdescription< th=""></thdescription<></td><td>2023-01-27 11-49AM - Accession BIOME-BITS7</td><td>UNITS</td><td>RESULT</td><td>TARGET ROVICE</td><td>SUATE</td><td>NUMBER FORE</td><td>STATUS</td></t<>	Data Data Second Description Description <thdescription< th=""></thdescription<>	2023-01-27 11-49AM - Accession BIOME-BITS7	UNITS	RESULT	TARGET ROVICE	SUATE	NUMBER FORE	STATUS
Stark Arge Organse	Sport Auge Copyers 3 Copyers 4 Sport Auge Oppers 2 Oppers 0 Oppers 0 % Oppersdy Packet 0 Oppersdy 0 Oppersdy 0 % Oppersdy Packet 0 Oppersdy 0 Oppersdy 0	LEFT Average	Degrees	- 91	60 - 100	- strange	90 - 100 (1)	to Ranger
Right Average Opgers 2 41 08-100 Mont 91-100 (r) Amm Start Argin Opgers 2 2 -	Right Coupers 2 00-100 More 90-100 More Not days Coupers 2 -	Start Angle	Degrees	-3				
Star Augin Dogens 2 S. Symmetry Pacael 47 - Aller By: Conception, Accord	Biol Arge Dagent 2 % Bymmely Pecade 47 - All By Classifier, According to the start of the star	RIGHT Average	Degrees	43	80 - 100	Beirw	90 - 100 (1)	Beire
% Symoley Pecer: 47 -Rei By Compton, Ann	Sciences Parcent 47 -Alter By: Converginane, Alter -Alter By: Converginane, Alter EVENTION: Source Science S	Start Angle	Degrees	2		_		
- Alla By Compton. Ann	An By Complete Aver	% Symmetry	Percent	47				and the second second
	EFERENCES: Nauverant / Jan Nailes & Juans II formary (M. Status II or Cyston C. Nailes, D. Juger Winds, Nailes Nailes, Postford (2016).							
solution (a science as common as a probability of the start of the start (a science) is a science of the start of the star		REFERENCES: Massached as induces formation of selections of the selection	L By Cystelia C. N More and State and State	SHEN, D. Joyce - Security J. Chys. Security 1		Nord 2016		



Tap SHARE and choose an option for sharing.

AirPrint-enabled printer.

METRIC CALCULATIONS

GAIT METRICS

METRIC	UNITS	DESCRIPTION	FORMULA	REPORTABLE RANGE	NORMAL
Functional Gait Index	N/A	Comprehensive calculation of gait symmetry and normalcy.	= (Cadence % Normal + Support Ratio % Normal+Single Support Symmetry+Impact Symmetry+Pelvic Deviation % Neutral) / 5	0 - 100	
Total Steps	Steps	Number of steps performed.	= Total steps		
Cadence	Steps/min	Average number of steps per minute. Duration is defined by start and end of movement instead of elapsed time.	= (Total Steps / Gait Time) * 60		
Cadence % Normal	dence % Normal Percent Cadence compared to a cadence of 100 steps per Tudor-Locke C, Han H, Aguiar E is fast enough? British Journal c 2018;52:776-788.	Cadence compared to a normal walking cadence of 100 steps per minute.	=IF((Cadence/100)*100) > 200, 0, ((Cadence/100)*100) > 100, 100 - (((Cadence/100)*100)-100), ((Cadence/100)*100)	0 - 100	100 Steps/min
		Tudor-Locke C, Han H, Aguiar EJ, et al How fast is fast enough? British Journal of Sports Medicine 2018;52:776-788.			
Average Step Length	Feet	Average distance walked per step measured in feet.	= Selected Distance / Total Steps NOTE: 1) Distance must be selected to calculate value (N/A reported if no distance set). 2) Meters are converted to feet when applicable.		2.1 - 2.5 ft
		Perry, Jacquelin. Gait Analysis: Normal and Pathological Function. Slack, 2010.			
Double Support	Percent	Percent of time both feet are in contact with the ground.	= (Double Support / (Single + Double Support)) * 100	0 - 100	
Impact Left/Right	Percent	Percent of total impact for each foot (measured in meters/second²).	LEFT = (Left Impact Total / Total Impact) * 100	0 - 100	
			RIGHT = (Right Impact Total / Total Impact) * 100		
Impact Symmetry	Percent	Symmetrical analysis of Left and Right Impact.	= IF(OR(Impact Left =0,Impact Right=0),0, 100 - ((Impact Difference / Maximum Impact) * 100)	0 - 100	
Single Support Left	Percent	Percent of time only the left foot is in contact with the ground.	LEFT = (Left Single Support / (Single + Double Support)) * 100	0 - 100	
Single Support Right	Percent	Percent of time only the right foot is in contact with the ground.	RIGHT = (Right Single Support / (Single + Double Support)) * 100	0 - 100	

GAIT METRICS (CONT.)

METRIC	UNITS	DESCRIPTION	FORMULA	REPORTABLE RANGE	NORMAL
Single Support Symmetry	Percent	Symmetrical analysis of Left and Right Single Support time.	= IF(OR(Single Support Left=0,Single Support Right=0),0, (100 - ((Single Support Difference / Maximum Single Support) * 100))	0 - 100	
Support Ratio % Normal (Single:Double)	Percent	Single vs. Double Support compared to a normal ratio of 4:1 (80/20 Single/Double).	=IF(Double=0,0,IF(OR((((Single Left+Single Right)/Double)/4)*100>200,(((Single Left+Single Support Right)/Double)/4)*100<12.5),0,IF((((Single Left+Single Right)/Double)/4)*100>100,100- (((((Single Left+Single Right)/Double)/4)*100)- 100),(((Single Left+Single Right)/Double)/4)*100)))	0 - 100	4:1
		Whittle, M.W. Gait Analysis: An Introduction; Butterworth-Heinemann: Oxford, UK, 2014.			
Toe-off Left	Percent	Percent of time during Double Support the left foot is trailing (pushing-off).	= (Left Toe-off / Double Support) * 100	0 - 100	
Toe-off Right	Percent	Percent of time during Double Support the right foot is trailing (pushing-off).	= (Right Toe-off / Double Support) * 100	0 - 100	
Toe-off Symmetry	Percent	Symmetrical analysis of Left and Right Toe-off.	=IF(OR(Toe-off Left=0,Toe-off Right=0),0,100-((Toe- off Difference/Toe-off Maximum)*100))	0 - 100	
Average Pelvic Deviation Left/Right	Degrees	Average pelvic tilt left and right measured in degrees from starting position.	= Sum (Coronal Plane Measurements) / Total Number of Measurements)		
Average Pelvic Deviation Front/Back	Degrees	Average pelvic tilt forward and backward measured in degrees from starting position.	= Sum (Sagittal Plane Measurements) / Total Number of Measurements)		
Average Pelvic Deviation Displacement	N/A	Average pelvic displacement from zero.	= SQRT ((Average Pelvic Deviation Left/Right) ² + (Average Pelvic Deviation Front/Back) ²)		
Pelvic Deviation % Neutral	Percent	Percent deviation on a scale of 0 - 20°.	=IF(Average Pelvic Deviation Displacement > 20, 0, 100-((Average Pelvic Deviation Displacement /20)*100))	0 - 100	0 - 20°
		Murtagh, Ryan D; Quencer, Robert M; Uribe, Juan. Pelvic Evaluation in Thoracolumbar Corrective Spine Surgery: How I Do It. PubMed, 2016-03-01.			

SYMMETRY METRICS

METRIC	UNITS	DESCRIPTION	FORMULA	REPORTABLE RANGE	NORMAL
Percent Symmetry	Percent	Percentage of total angular velocity for	LEFT = (Sensor 1 / Total Angular Velocity) * 100	0 - 100	
		each sensor (measured in degrees/second).	RIGHT = (Sensor 2 / Total Angular Velocity * 100		



BALANCE METRICS

METRIC	UNITS	DESCRIPTION	FORMULA	REPORTABLE RANGE	NORMAL
Average Deviation Displacement	N/A	Average displacement from zero.	= SQRT ((Average Deviation Left/Right) ² + (Average Deviation Front/Back) ² + (Average Deviation Rotation) ²)		
Deviation % Neutral	Percent	Percent deviation on a scale of 0 - 20°.	= IF(Average Pelvic Deviation Displacement > 20, 0, 100-((Average Pelvic Deviation Displacement/20)*100))	0 - 100	0 - 20°
		Murtagh, Ryan D; Quencer, Robert M; Uribe, Juan. Pelvic Evaluation in Thoracolumbar Corrective Spine Surgery: How I Do It. PubMed, 2016-03-01.			
Average Deviation Left/Right	Degrees	Average tilt left/right measured in degrees from starting position.	= Sum (Coronal Plane Measurements) / Total Number of Measurements)		
Average Deviation Front/Back	Degrees	Average tilt forward/ backward measured in degrees from starting position.	= Sum (Sagittal Plane Measurements) / Total Number of Measurements)		
Average Deviation Rotation	Degrees	Average rotation left/right measured in degrees from starting position.	= Sum (Transverse Plane Measurements) / Total Number of Measurements)		
Stability Score	N/A	The measurement of velocity when returning to the initial balance position, measured in degrees per second.	= Sum (Right/Left, Front/Back and Rotation Average Angular Velocity)		

ANGLES METRICS

METRIC	UNITS	DESCRIPTION	FORMULA	REPORTABLE RANGE	NORMAL
Maximum, Minimum & Average Range of Motion	Degrees	Total deviation from initial starting position (measured in degrees).	= IMU measurement		
Start Angle (Relative to the Ground)	Degrees	Sensor orientation with respect to gravitational force.	= IMU measurement		
% Symmetry	Percent	Symmetrical analysis of Left and Right range of motion.	= IF(OR(Average Deviation Left=0,Average Deviation Right=0),0, (100 - ((Average Deviation Difference / Maximum Deviation) * 100))	0 - 100	



SUPPORT

CUSTOMER SUPPORT

ONLINE

Access help tools through Main Menu > Help

CLIENT ADMINISTRATOR

The Clinical/Site Admin is the primary support for data collection issues within the organization. If additional support is needed please contact your organization's designated BioMech administrator for assistance.

BIOMECH CONTACTS

CUSTOMER SUPPORT

BIOMECH: (866) 246-9999 EMAIL: support@BioMechHealth.us

Telephone and email response within 24 hours Monday through Friday 8:30 a.m. – 4:30 p.m. Eastern Time.

SENSOR CARE

- The sensors can be cleaned with rubbing alcohol or alcohol wipe.
- Do not immerse the sensor in any liquids.
- Turn the sensor off when not in use.
- Do not disassemble the sensor.
- Do not use or leave the sensor near a heat source.
- Use only UL Listed or CE Approved or equivalent 5V USB chargers.



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