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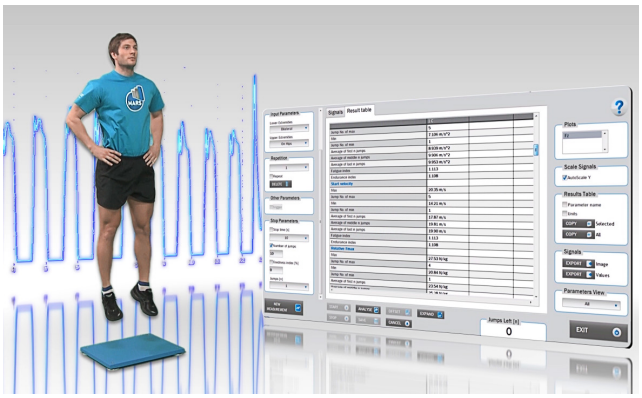
Kistler MARS

Type 2875A...

Measurement, Analysis and Reporting Software

Kistler MARS is innovative, comprehensive and user-friendly software for the complete analysis of force plate measurements. It supports routine diagnostics and research work in biomechanics, performance analysis, motor control behavior, rehabilitation medicine and other related fields.

- 20 different analysis modules
- User-friendly and intuitive
- Complete analysis of force measurements
- Uni- und bilateral Analysis
- Extensive data management
- Efficient preparation of reports



Description

Kistler MARS is a routine diagnostics and research software for Kistler force plates. The 'Measurement, Analysis and Reporting Software' (MARS) supports Kistler data acquisition systems Types 5691A... and 5695B...
It analyzes the acquired force plate signals, calculates a large range of significant parameters, and provides graphical presentations of the measurements.

The software is based on a management unit that provides operational functions (add, edit, delete, assign, search, filter) to structure the data (projects, visits and subjects). The data is stored and managed in a database where it is accessible for comparison and reporting.

In each of the 20 different measurement modules the data is analysed for relevant output parameters. The input parameters and acquisition setup can be edited for each test separately.

The individual software functions are arranged intuitively and easy-to-use. All functions are well supported with extensive help information including how-to examples and with online video trainings on the MARS website.

Application

Kistler MARS can been used for the evaluation of human movement such as static balance (Body Sway), dynamic balance (Tracking Shapes, Limits of Stability, etc.) locomotion and body transfer (Step Analysis, Forward Lunge, etc.), fast alternating movements (Tapping, Stamping, etc.) and strength and power (all vertical jumps, etc.). MARS additionally enables the user to carry out a free acquisition of signals coming out of the force plate, perform analysis and export data in different formats (raw signal, signal graph and parameters values).

The software calculates the standard parameters and many more evidence-based parameters to provide the details immediately. Detailed conclusions about muscular imbalances are possible when using two force plates.

Kistler MARS includes 20 modules to evaluate physical performance in the fields of power, anaerobic endurance, coordination and balance (see table page 2).

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Name of the Test Module	Short Description	Full Version	Power Version	Balance Version
Squat Jump	Vertical jump test of concentric power for the lower extremities.	X	X	
Counter Movement Jump	Vertical jump test of eccentric-concentric power for the lower extremities.	X	X	
Drop Jump	Vertical drop jump test of eccentric-concentric power for lower legs. Testing is performed using progressively higher drop heights.	X	X	
Jumps with Additional Weights	3 consecutive vertical concentric and eccentric-concentric jumps. The test is performed using progressive loading with weights.	X	X	
Repetitive Counter Movement Jumps	Vertical jump test of endurance in eccentric-concentric conditions for lower extremities.	X	X	
Repetitive Hopping	Vertical jump test of endurance in eccentric-concentric conditions for lower legs.	X	X	
Long Jump	Situational horizontal jump test of eccentric-concentric power for lower extremities.	X	X	
Squat	Vertical movement test of concentric power for the lower extremities.	X	X	
Stamping	Test of maximal frequency and endurance of stamping for lower and upper extremities.	X	X	
Tapping	Test of maximal frequency, endurance and accuracy of tapping for lower and upper extremities.	X		X
Forward Lunge	Test for strength, good range of motion, balance and coordination.	X		X
Sit-To-Stand	Clinical test where the subject needs to rise from a seated to a standing position.	X		X
Turn	Clinical test, where the subject has to make two forward steps and then quickly turn for 180°.	X		X
Step Analysis	Situational test of vertical, anterior-posterior and medio-lateral load of the lower extremity during locomotion.	X		X
Body Sway	Test of body sway during sustaining static posture (quiet stance or any other). Typical applications: sport performance, lower extremity injuries, brain concussion, etc.	X		X
Tracking Shapes	A set of tests which involve precise active tracking of the centre of pressure way defined by a matrix shape that is displayed on a screen as a feed back to the subject.	X		X
Tracking Curves	A set of tests which involve precise active tracking of the centre of pressure way defined by a matrix curve that is displayed on a screen as a feed back to the subject.	X		X
Limits of Stability	A test of maximal range of voluntary body leaning in different directions.	X		X
Landing	Dynamic balance test of postural stability for different types of landing.	X		X
Symmetry	Test of postural symmetry in weight bearing function of the lower extremities during upright stance and (semi)squat.	X		X

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Application Examples and Screenshots

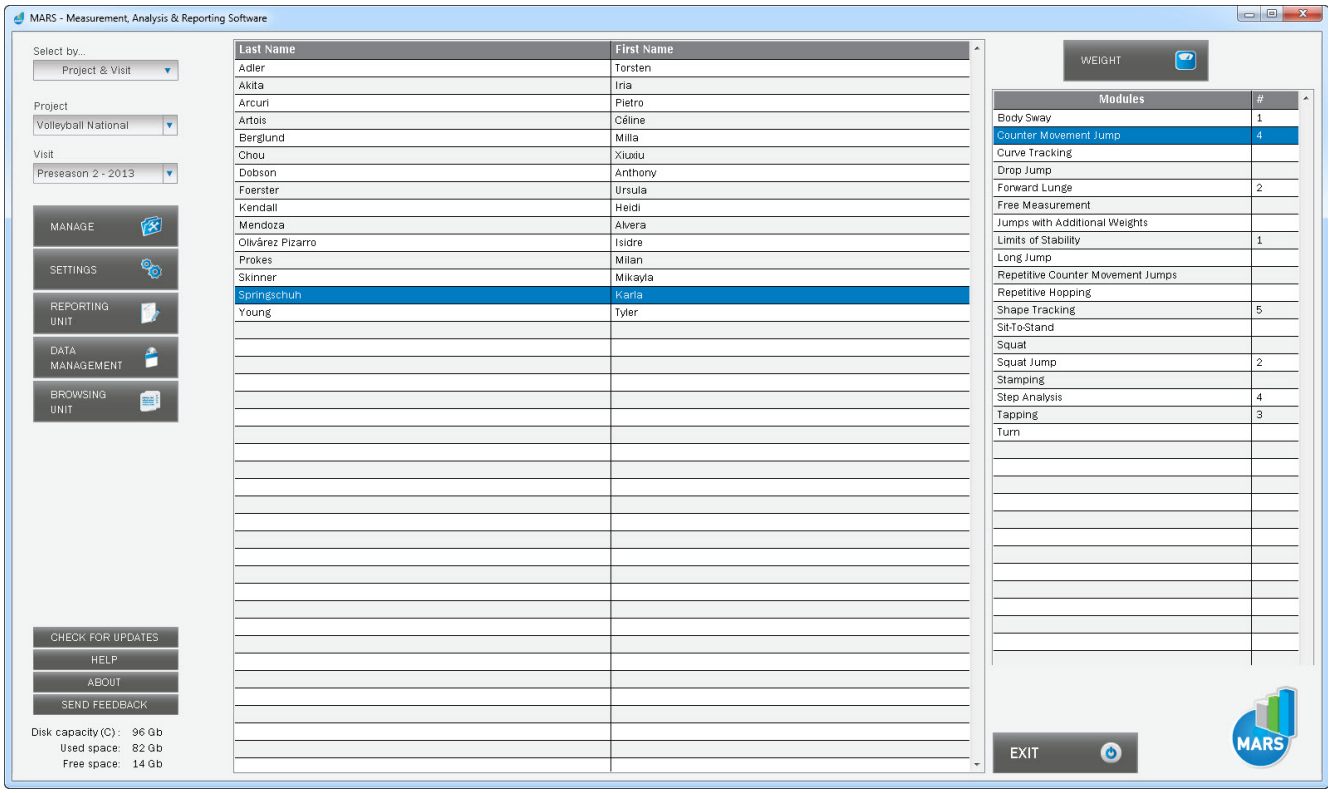

Fig. 1: Main window with management tools on the left side and module selection on the right

Fig. 2: The Balance Version provides all modules related to locomotion, movement control and balance

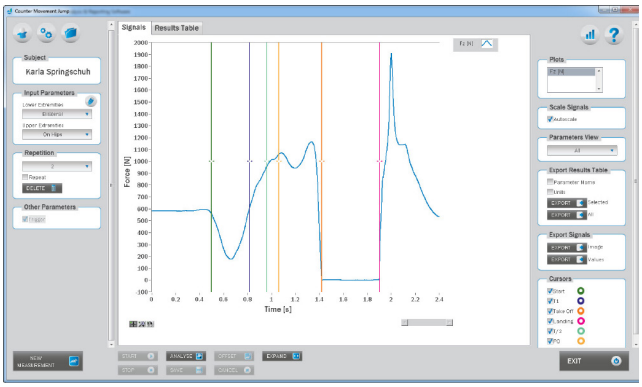

Fig. 3: Example: Counter Movement Jump with automatic event detection

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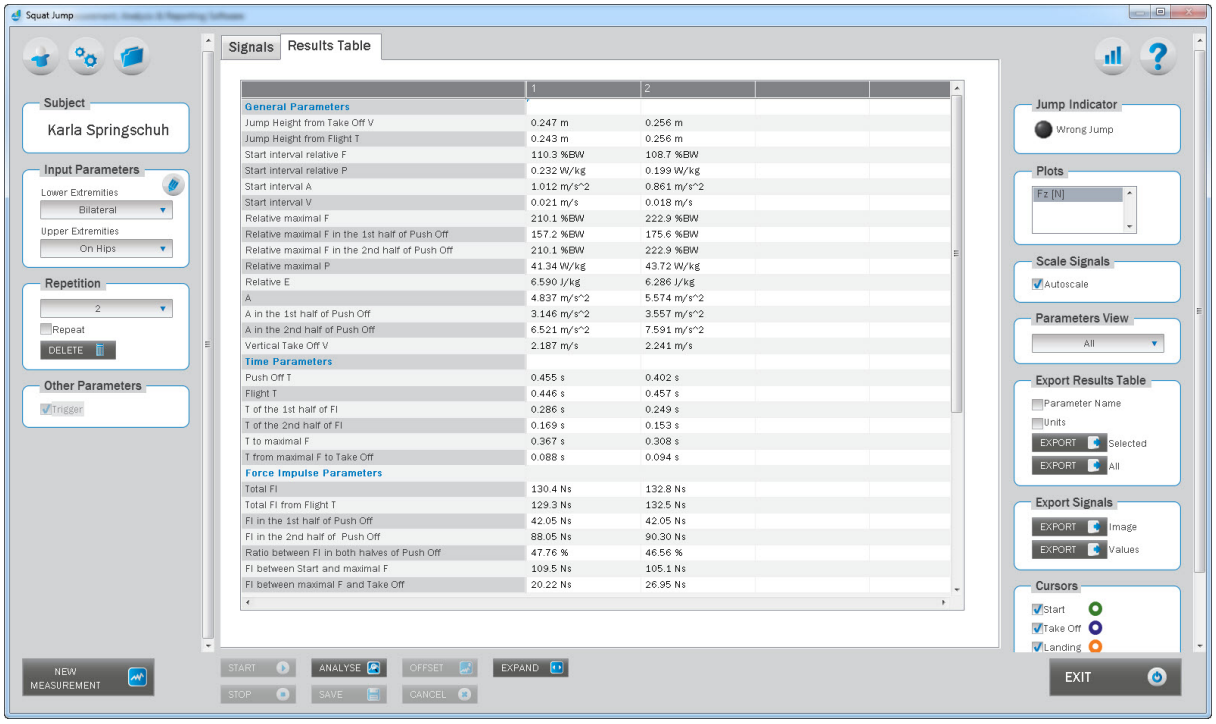

	1	2
General Parameters		
Jump Height from Take Off V	0.247 m	0.256 m
Jump Height from Flight T	0.243 m	0.256 m
Start interval relative F	110.3 %BW	108.7 %BW
Start interval relative P	0.232 W/kg	0.199 W/kg
Start interval A	1.012 m/s^2	0.861 m/s^2
Start interval V	0.021 m/s	0.018 m/s
Relative maximal F	210.1 %BW	222.9 %BW
Relative maximal F in the 1st half of Push Off	157.2 %BW	175.6 %BW
Relative maximal F in the 2nd half of Push Off	210.1 %BW	222.9 %BW
Relative maximal P	41.34 W/kg	43.72 W/kg
Relative E	6.590 J/kg	6.286 J/kg
A	4.837 m/s^2	5.574 m/s^2
A in the 1st half of Push Off	3.146 m/s^2	3.557 m/s^2
A in the 2nd half of Push Off	6.521 m/s^2	7.591 m/s^2
Vertical Take Off V	2.187 m/s	2.241 m/s
Time Parameters		
Push Off T	0.455 s	0.402 s
Flight T	0.446 s	0.457 s
T of the 1st half of FI	0.286 s	0.249 s
T of the 2nd half of FI	0.169 s	0.153 s
T to maximal F	0.367 s	0.308 s
T from maximal F to Take Off	0.088 s	0.094 s
Force Impulse Parameters		
Total FI	130.4 Ns	132.8 Ns
Total FI from Flight T	129.3 Ns	132.5 Ns
FI in the 1st half of Push Off	42.05 Ns	42.05 Ns
FI in the 2nd half of Push Off	88.05 Ns	90.30 Ns
Ratio between FI in both halves of Push Off	47.76 %	46.56 %
FI between Start and maximal F	109.5 Ns	105.1 Ns
FI between maximal F and Take Off	20.22 Ns	26.95 Ns

Fig. 4: Example: Squat Jump result table

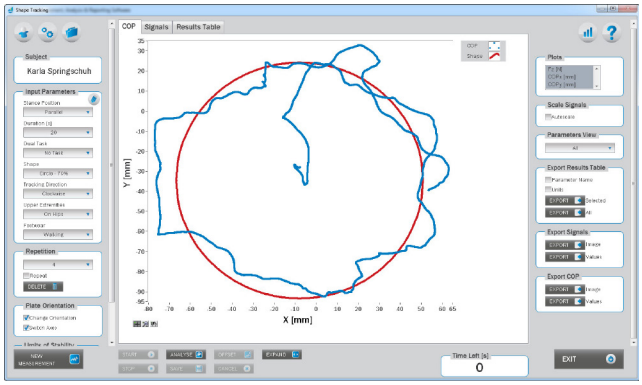

Fig. 5: Example: Shape Tracking

Included Accessories

- License on USB Key

Optional Accessories

	Type/Art. No.
• Kistler force plates	9260…
	9286…
	9281…
	9287…
• Kistler DAQ systems	5691A…
	5695B…

Ordering Key

Type 2875A ☐

Kistler MARS

Full Version Measurement, Analysis and Reporting Software	**1**
Power Software Measurement, Analysis and Reporting Software Power modules only	**3**
Balance Software Measurement, Analysis and Reporting Software Balance modules only	**4**

The software is developed by S2P.

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