The only system that isolate single joints for functional diagnosis and exercise

The CES Back machine

Code	**adi-pub-01085**
Title	The only system that isolate single joints for functional diagnosis and exercise
Subtitle	The CES Back machine
Name	The Ariel Computerized Exercise System-Back
Author	Unknown
Published on	Tuesday, January 1, 1980
Subject	ACES; APAS; Brochures; EMG; Exercise Machine; Media; Performance Analysis; Science
URL	https://arielweb.com/articles/show/adi-pub-01085
Date	2013-01-16 15:40:45
Label	Approved
Privacy	Public

The article discusses the Ariel Computerized Exercise System (CES) 5000 Back, a system designed to isolate the lumbar spine for functional diagnosis and exercise. The system features interactive, closed-loop biofeedback, bidirectional exercise velocity and resistance, hydraulic resistance, and safety adjustments. It is user-friendly, versatile, cost-effective, and increases productivity. The system also stores patient protocols on a 120 MB hard disk, which can be transferred to individual floppy diskettes. The Ariel CES 5000 Back is ergonomically designed for lumbar extension and abdominal flexion, and it can control, record, and evaluate movement, strength, and endurance. The system's software displays functional information for rehabilitation and training.

Below find a reprint of the 2 relevant pages of the article "The only system that isolate single joints for functional diagnosis and exercise" in "The Ariel Computerized Exercise System-Back":

The Ariel Computerized Exercise System

CES 5000 Back

The only system that isolates the lumbar spine for functional diagnosis and exercise.

No other computerized system adjusts to the patient to ensure optimum programming and safety, instead of having the patient adjust to the system.

• Interactive, Closed Loop Biofeedback - Senses and automatically responds to patient performance up to 16,000 times per second to produce precise control of resistance and speed during performance of the chosen range of motion.

• Bidirectional - Exercise velocity and resistance in each direction are independently programmed and controlled. Allows training and comparison of antagonistic muscle groups. Conditions both the musculoskeletal and cardiovascular system.

• Hydraulic Resistance - No mechanical system breakdown. Smooth, even movement throughout the range of motion.

• Safe - Equipment continually adjusts to patient for safe, complete rehabilitation. No emergency stop control necessary.

• Simple to Operate - User friendly computer screen menu with formatted exercise and test protocols or customized programs. Help screens always accessible.

• Versatile - Can program an exercise separately or in any combination for **isotonic, isokinetic, isometric** or variable dynamic loads and speeds. Personalized exercise programs are geared to the physical needs and requirements of the individual.

• Multiple Capabilities - Controls, records and evaluates movement, strength and endurance on a continuous basis while storing information on easy to read color graphs, charts, and tables.

• Cost Effective - Expands treatment capabilities, minimizes set up time, and increases earning potential with minimal capital investment.

• Increased Productivity - Interactive capability allows less patient supervision.

• User Files - Patient protocols for testing and exercise are stored on a 120 MB hard disk and can be transferred to individual floppy diskettes. Large amounts of data can be easily stored, retrieved or compared. Ariel users may develop customized data bases based on normative data or their own patient population. Research files may be transferred between Ariel users by modem.

• EMG Data Acquisition Package (optional) - Simple, non-invasive procedure with pre-amplified surface electrodes. Helps identify malingerers and substantiate workers' compensation claims by integrating muscle activity with muscle function.

The **Ariel CES 5000 Back** is ergonomically designed for **lumbar extension** and **abdominal flexion.** It specifically isolates the abdominal-lumbar areas with simple adjustments.

The **Ariel Back** is easy to use. Electric motors adjust the seat to its optimum position, allowing quick and efficient patient positioning.

Lumbar extension and abdominal flexion can be tested, quantified and exercized independently.

The **Ariel Back** has an adjustable range of motion and programmable stops, which allows specific safety in testing and rehabilitation according to patient needs.

A minimal equipment footprint reduces space requirement.

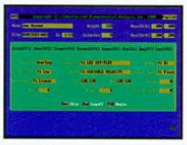
It is designed for additional attachments, such as lift testing and lateral back flexion/extension.

Protocols can be designed to mimic specific lifting situations.

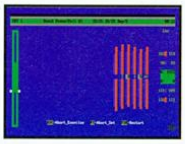
The Ariel CES 5000 Operating System

The Ariel CES 5000 software displays functional information for rehabilitation and training which no other system can provide.

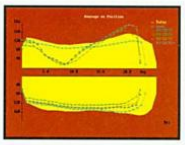
The **Ariel CES 5000** uniquely controls, records, evaluates and modifies functional performance with programmed parameters that are user defined. The system can integrate and display numerous forms of information, such as range of motion, strength, velocity and endurance. The **CES 5000** can be equipped with a color printer for obtaining a hard copy of all graphs for total performance evaluation. Reports may be customized for third party reimbursement.



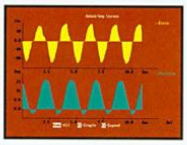
Exercise Parameter Screen displays exercise mode, velocity, resistance and repetition for each exercise parameter.



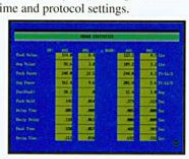
Bar Screen displays the average and maximum values of each repetition, force, velocity, work, fatigue, exercise time and protocol settings.



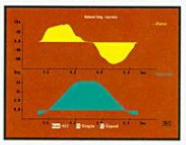
Average Force Curve combines all repetitions into an upstroke curve in the upper half of the screen and a downstroke curve in the lower half.



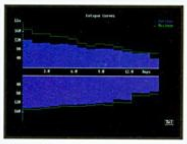
Repetition Display shows performance (upper curve) in conjunction with range of motion (lower curve).



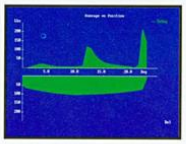
Data Display Table presents statistical information on velocity, resistance, and work load.



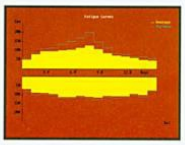
Curve Expansion identifies details of a repetition not otherwise easily distinguishable.



Fatigue Curve indicates endurance parameters for total performance analysis.



Isometric Stops can be positioned at any point for any length of time.



Pyramid Curve displays performance as a function of controlled changes in speed or resistance.

The Ariel CES 5000 Hardware (single computer may operate more than one station.)

The **Ariel CES 5000** is controlled by an enhanced AST 386 computer with the following features:

- 4 MB RAM
- 120 MB Hard Disk
- 3.5" 1.44 MB Disk Drive
- 5.25" 1.2 MB Floppy Drive
- 120 MB Back-up Tape Drive
- Monochrome Display Monitor
- High Resolution Color Display Monitor
- Math Co-processor
- Mouse
- Multi-Channel Analog Board
- Analog Module for EMG and/or Force Plate (optional)

Ariel LIFE SYSTEMS, INC.

1299 Prospect Street, Suite 303
La Jolla, California 92037
Mailing Address:
P.O. Box 1169
La Jolla, California 92038
Telephone: (619) 459-6659
(800) 542-5553
FAX: (619) 459-0320