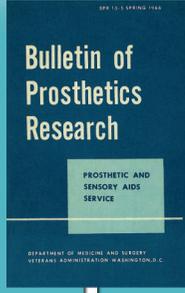
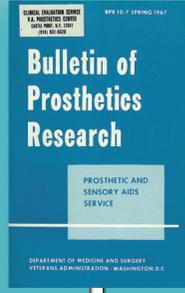


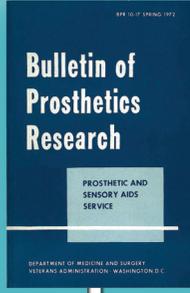
1964



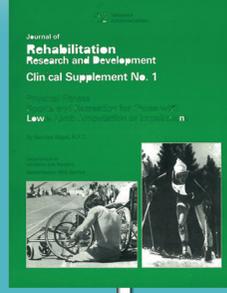
1966



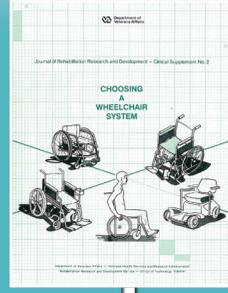
1967



1972



1985



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1994

THEN & NOW

2001

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BIOENGINEERING EVALUATION AND FIELD TEST OF THE STAND-ALONE THERAPEUTIC AID

EDWARD PEIZER, PHD; WILLIAM M. BERNSTOCK, AM

INTRODUCTION

Early in 1963, laboratory evaluations of the Stand-Alone Therapeutic Aid were conducted by the Bioengineering Laboratory, the Testing and Development Laboratory, and the Limb and Brace section—all sections of the VA Prosthetics Center in New York, N.Y. Findings based upon evaluations of two early models were made known to a representative of the manufacturer, Corporation for Medical Engineering, 8472 East Garvey Avenue, South San Gabriel, Calif.

A newer model (Model FVA 2100) was submitted by the manufacturer for laboratory evaluation. In May 1963, five additional devices of this design were obtained for use in a field test to be administered by the Research and Development Division of the Prosthetic and Sensory Aids Service, located in New York, N.Y.

Five Veterans Administration hospitals having Spinal Cord Injury Services were selected for participation in the field test. We are grateful to the personnel who cooperated in the study at the following hospitals: VAH, Hines, Ill.; VAH, West Roxbury, Mass.;

VAH, Long Beach, Calif.; VAH, Memphis, Tenn.; and VAH, Richmond, Va.

The cooperation of the Area Medical Offices in Atlanta, Ga., Boston, Mass., Columbus, Ohio, San Francisco, Calif., and Trenton, N.J., is also acknowledged.

The independent experience which the Brooklyn Outpatient Clinic had with one patient using the device for approximately a 10-month period was also utilized in our study, and it too is covered in this report. In addition, the report includes data provided by the VA Hospital in Coral Gables, Fla., covering the use of one subject of the Stand-Alone for a 3-month period.

Also appreciated were the efforts of Mr. Earl A. Lewis of the Research and Development Division, PSAS, in the conduct of the study and the writing of the report.

BIOENGINEERING EVALUATION OF STAND-ALONE THERAPEUTIC AID

Description

The Stand-Alone is a device designed for the use of paraplegic and incomplete quadriplegic patients for whom standing erect is of therapeutic value. It purports to offer them a relatively wide range of mobility while they stand, thus permitting them to carry on part of their normal activity, which might otherwise

be curtailed if they were to stand in bars or with braces and crutches. The Stand-Alone may be considered a mobile, portable, collapsible set of standing bars.

An earlier version of the model was initially submitted for evaluation. A mechanical analysis at that time brought out the following problems:

1. An extension of the frame designed to prevent tipping made it impossible to climb or descend a curb. It was also difficult to roll over a door threshold for the same reason.
2. There was a possibility of getting clothing caught in the exposed sprockets, locking handle, and hub nuts.
3. Locking handles interfered with the spokes of the handwheels when the locks were released.
4. It was difficult to insert the detent pins on the back crossbar assembly and to extract the pins when under load. The detent pins were too tightly fitted to the holds which received them.
5. It was difficult for the occupant to remove and detach seat.
6. The operating manual required further clarification.

To continue reading, please visit <http://www.rehab.research.va.gov/jour/64/1/2/1.pdf>.



REFLECTIONS ON “BIOENGINEERING EVALUATION AND FIELD TEST OF THE STAND-ALONE THERAPEUTIC AID”

RONALD J. TRIOLO, PHD

Our thinking and approach to research and assistive technologies have evolved significantly since the publication 50 years ago of “Bioengineering evaluation and field test of the Stand-Alone Therapeutic Aid.” The most striking change is in the value placed on basic discovery and knowledge generation, in addition to device development and verification testing. This evolution from a “Consumer Reports” mentality, where assistive technologies are field tested, to prospective, controlled trials of fundamental concepts and mechanisms as well as therapeutic and technical interactions is a paradigm shift in rehabilitation. We put a much higher premium on investigator-initiated (or “Department of Veterans Affairs [VA]-initiated”) research today, in contrast to “VA-evaluated” studies. This sea change in the role of the VA as a ready source for test subjects to a research-driven organization capable of generating new theories, planning, and executing sound methods for testing hypotheses and conducting world-class science and interpreting the results in the context of both clinical practice and their effects on new fundamental understanding of underlying physiological, functional, and societal implications is profound. *JRRD* has grown up and successfully transitioned from a journal of product development, anecdote, and speculation to

one dedicated to evidence-based practice and data-driven conclusions.

One interesting aspect of the last half century evident from this article is the maturation and development of a systematic approach to spinal cord injury classification and treatment. Written before international standards for neurological classification or identification of the continuum of measurement domains that discriminate between physiology, capacity, performance, and societal impact, the article, if carefully read, should engender gratitude in those working in spinal cord injury research in particular and rehabilitation research in general. The time, energy, and detail expended to describe the clinical presentations of the study cohort by the authors is astounding, especially in light of the relatively easy methods now at our disposal because of the hard work of numerous people over the intervening years to develop standards and classification systems that allow us to speak the same language without having to reinvent it. Our research subjects and the general consumers of rehabilitation services and technologies are also probably far more accepting of novel approaches and sensitive to the capabilities provided by revolutions in computing power, material science, wireless communications, and control. It’s difficult to image finding volunteers who would be willing to use a device such as the stand-alone therapeutic

aid today, even in a short-term trial like the one described in the article.

One aspect that hasn’t changed is the emphasis on multidisciplinary and multicenter trials. The report is truly impressive in its emphasis on collaborative work and inclusion of contributions from clinical sites around the country. This kind of research is still extremely difficult to organize and do, perhaps even more so today than at the time of publication. But its value has only increased in recent years as the burden of proof for generalizability and effectiveness of our interventions increases. Even so, *JRRD* has become much less VA centric than is evident in this contribution, which pooled data from five VA hospitals. The broader net currently cast by the journal only serves the greater clinical needs of veterans with disabilities today.

It’s hard to imagine *JRRD* publishing an article this long or this detailed of an analysis of a single piece of existing equipment today. It’s an extremely comprehensive and thorough analysis from mechanics through subjective perceptions and user feedback, including detailed case histories and user feedback that border on anthropological or ethnographic study. What is lacking in statistical analysis, hypothesis-driven methods, and controls is certainly complemented by its scope. Maybe we can learn to recapture some of this dedication to the big picture to flesh out our new-found reductionist tendencies.

