

BASELINE[®] EVALUATION INSTRUMENTS

Hydraulic Hand Dynamometer

Instruction Manual

REF

- 12-0240 **Standard**
- 12-0241 **LITE™**
- 12-0221 **HD™**
- 12-0243 **Hi-Res™**
- 12-0246 **ER™**
- 12-0247 **Digital**



Standard Hydraulic Hand
Dynamometer
(12-0240)

FEI
FABRICATION
ENTERPRISES INC.

Manufacturer and Master
Distributor of Physical Therapy
and Rehabilitation Products

Parts/Specifications



Specifications
Grip adjust range
Weight

200 lb / 90 kg capacity
1.35 in / 3.35 cm
22.6 oz / 638 gm



Hydraulic Hand Dynamometer

Usage

Set handle to comfortable grip for patient. Reset max indicator to zero. Have patient squeeze with maximum force, note reading. Reset to zero for next test.

Calibration

The Baseline® Hydraulic Hand Dynamometer is a sealed unit and calibrated at the factory. However, if indicator needle is out of “zero-range” it may be reset. Remove the clear cover by turning counter clockwise. Adjustment pin located by 90 kg marking. Turn pin to reset to zero.

If unit is leaking hydraulic fluid it should be returned to the factory for evaluation.

Components

- Machined aluminum handle, post and body
- Bronze bellows
- Stainless steel hydraulic tubing
- Teflon bushings
- Non-toxic mechanical hydraulic pump fluid
- Gauge-Bourdon tube element with spring suspended movement. Constructed to ASME B 40.1 standards. Accuracy greater than 98%.

Data

The Baseline® Hydraulic Hand Dynamometer can utilize same of data pertaining to the Jamar® Hydraulic Hand Dynamometer. The internal workings of both are hydraulic and bellows-operated.

Norms for Adult Grip Strength

A recent study by Dr. Virgil Mathiowetz indicates that "... individuals using the Baseline[®] dynamometer are justified in using the normative data collected with the Jamar[®] dynamometer..."

For each test of grip strength, the subject was seated with shoulder adducted and neutrally rotated with the elbow between 0° and 15° ulnar deviation.

The standard test protocol used the mean of three strength tests as a resultant score. A score was taken with both the dominant (right) and non-dominant (left) hands.

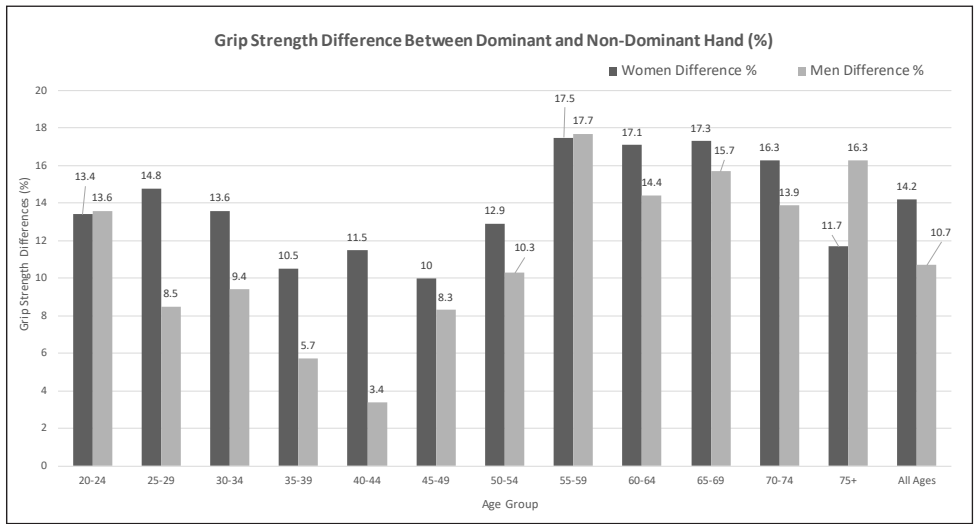
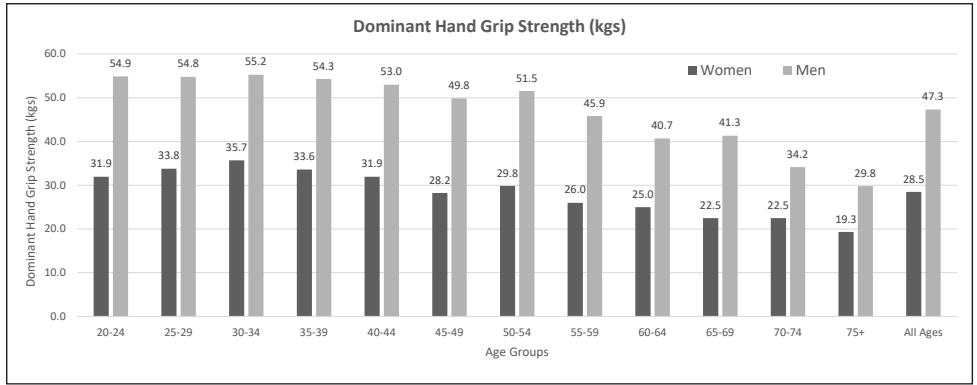
The rest results show a relationship between:

- hand strength vs. age
- hand strength of men vs. hand strength of women
- dominant hand strength vs. non-dominant hand strength

Average Performance of all Subjects on Grip Strength (kilograms) - Test results (Level 1)										
		Men				Women				
age	hand	mean	SD	SE	low-high	mean	SD	SE	low-high	
20-24	dominant	54.88	9.34	1.72	41.3 - 75.7	31.93	6.58	1.27	20.9 - 43.1	
	non-dominant	47.40	9.89	1.81	32.2 - 68.0	27.67	5.94	1.18	15.0 - 39.9	
25-29	dominant	54.79	10.43	2.00	35.4 - 71.7	33.79	6.30	1.22	21.8 - 44.0	
	non-dominant	50.12	7.35	2.00	34.9 - 63.0	28.80	5.53	1.09	21.8 - 44.0	
30-34	dominant	55.25	10.16	1.95	31.8 - 77.1	35.70	8.71	1.72	20.9 - 62.1	
	non-dominant	50.08	9.84	1.91	29.0 - 65.8	30.84	8.03	1.59	16.3 - 52.2	
35-39	dominant	54.30	10.89	2.18	34.5 - 79.8	33.61	4.90	1.00	22.7 - 44.9	
	non-dominant	51.21	9.84	1.91	33.1 - 71.2	30.07	5.31	1.04	22.2 - 41.3	
40-44	dominant	52.98	9.39	1.86	38.1 - 74.8	31.93	6.12	1.09	17.2 - 46.7	
	non-dominant	51.17	8.48	1.68	33.1 - 71.2	28.26	6.26	1.13	15.9 - 42.6	
45-49	dominant	49.85	10.43	1.95	29.5 - 70.3	28.21	6.85	1.36	17.7 - 45.4	
	non-dominant	45.72	10.34	1.95	26.3 - 72.6	25.40	5.76	0.95	16.8 - 37.6	
50-54	dominant	51.53	8.21	1.63	35.8 - 68.5	29.85	5.26	1.04	17.2 - 39.5	
	non-dominant	46.22	7.71	1.54	31.8 - 64.9	25.99	4.85	0.95	15.9 - 34.5	
55-59	dominant	45.86	12.11	2.63	26.8 - 64.9	25.99	5.67	1.13	15.0 - 39.0	
	non-dominant	37.74	10.61	2.31	19.5 - 58.1	21.45	5.40	1.09	14.1 - 34.5	
60-64	dominant	40.69	9.25	1.91	23.1 - 62.1	24.99	4.58	0.91	16.8 - 34.9	
	non-dominant	34.84	9.21	1.86	12.2 - 52.6	20.73	4.58	0.91	13.2 - 29.9	
65-69	dominant	41.32	9.34	1.81	25.4 - 59.4	22.50	4.40	0.82	15.9 - 33.6	
	non-dominant	34.84	8.98	1.72	19.5 - 53.1	18.60	3.72	0.68	13.2 - 28.6	
70-74	dominant	34.16	9.75	1.91	14.5 - 49.0	22.50	5.31	1.00	15.0 - 35.4	
	non-dominant	29.39	8.21	1.68	14.5 - 42.2	18.82	4.63	0.86	10.4 - 30.4	
75+	dominant	29.80	9.53	1.91	18.1 - 61.2	19.32	4.99	1.00	11.3 - 29.5	
	non-dominant	24.95	7.71	1.54	14.1 - 54.0	17.06	4.04	0.77	10.9 - 27.7	
ALL	dominant	47.31	12.84	0.73	14.5 - 79.8	28.49	7.71	0.44	11.3 - 62.1	
	non-dominant	42.23	12.52	0.73	12.2 - 72.6	24.45	7.12	0.40	10.4 - 52.2	

References:

1. Gill D, Reddon J, Renney C, Stefanyk W: Hand Dynamometer: Effects of Trials and Sessions, Perpetual and Motor Skills 61: 195-8, 1985.
2. Everett P, Sils F: The relationship of Grip Strength to Stature, Somatotype Components, and Anthropometric Measurements of the Hand. The Research Quarterly 23: 161-6, 1952
3. Mathiowetz V, Federman S, Wierner D: Grip and Pinch Strength: Norms for 6 to 19 Year Olds. The American Journal of Occupational Therapy 40: 705-11, 1986
4. Mathiowetz V, Donahoe L, Renells C: Effect of Elbow Position on Grip and Key Pinch Strength. The Journal of Hand Surgery 10A: 694-7, 1985
5. Mathiowetz V, Kashman N, Volland G, Weber K, Dove M, Rogers S: Grip and Pinch Strength: Normative Data for Adults. Archives of Physical Medicine and Rehabilitation 66: 69-74, 1985.



* charts generated from data published in Mathiowetz's article "Grip and Pinch Strength: Normative Data for Adults", Archives of Physical Medicine and Rehabilitation 66: 69-74, 1985

THE COLLEGE OF
ST. CATHERINE
2004 Randolph Avenue
St. Paul, Minnesota 55105
(612) 690-6000 FAX(612) 690-6024

Virgil Mathiowetz, PhD, OTR
Associate Professor
Department of Occupational Therapy
College of St. Catherine
2004 Randolph Avenue
St. Paul, MN 55105-1794

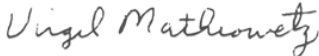
March 18, 1993

Mr. Elliott Goldberg,
Marketing Director
Fabrication Enterprises Inc.
Trent Building
South Buckout Street
Irvington, NY 10533

Dear Mr. Goldberg,

Recently, I completed the study to determine whether the Baseline and Jamar hydraulic dynamometers can be used interchangeable. A draft of the report has been completed and sent to you. In the summary, I concluded that, "The data from this study suggest that the Jamar and Baseline hydraulic hand dynamometers measure equivalently for practical purposes. As a result, individuals using the Baseline Dynamometer are justified in using the normative data, which was collected with the Jamar dynamometer (Mathiowetz et al., 1985; 1986)." This conclusion assumes that the same standard procedures are followed as were used in the original normative data studies.

Sincerely,



Virgil Mathiowetz, Phd, OTR
Associate Professor &
Research Consultant

BASILINE[®] EVALUATION INSTRUMENTS

Hydraulic Hand Dynamometer

WARRANTY

The Baseline[®] Hydraulic Hand Dynamometer is warranted for parts and labor from date of purchase. If unit needs repair, contact your local dealer or Fabrication Enterprises, Inc.

Fabrication Enterprises, Inc.
3 Westchester Plaza Suite 111
Elmsford, NY 10523
Tel: 800-431-2830, 914-345-9300

1
year
warranty



12-0241
LITE™ Hydraulic
Hand Dynamometer

2
year
warranty



12-0240
Standard Hydraulic Hand
Dynamometer

5
year
warranty



12-0221
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Hand Dynamometer

2
year
warranty



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Fabrication Enterprises Inc.
250 Clearbrook Rd, Suite 240
Elmsford, NY 10523 (USA)
tel: +1-914-345-9300 • 800-431-2830
fax: +1-914-345-9800 • 800-634-5370
FabEnt.com



AJW Technology Consulting GmbH
Breite Strasse 3
40213 Düsseldorf (Germany)

