DynEx
the new generation of electronic dynamometers for measuring hand strength
for clinical and rehabilitative use

Related Literature:

Technical Specifications:
Weight: 0.3 kg
Size: 6.35 x 4.72 x 19.68
Display: Liquid crystal
Power Supply: 9 Volt, alcaline
Precision/Accuracy: 0.05 kg (≤ 1.0% of the strength)
Maximum Capacity: 90 kg
Operating Temperature: -20 °C / + 50 ° C

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Product of
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An assessment of the contractile strength of the hand’s flexor muscles using DynEx handgrip may be used:
- for setting up a rehabilitation treatment,
- for assessing nutritional status,
- for establishing a mortality risk index in patients with acute diseases,
- as a prognostic factor for progression of diseases with high metabolic impact
- as an indicator of the general muscle strength.

Numerous studies have shown that the “hand grip” test may be used as a nutritional assessment technique (Wang, 2015) and is also useful for assessing short term changes in the nutritional status.

The DynEx Hand-Grip provides three Dynamometer modes:

- Max Grip-Strength Test that can also be performed on a series of consecutive measurements (up to 10). DynEx provides automatic calculation of the statistics: Average strength, Standard Deviation and Coefficient of Variation. The updated statistics is displayed after each acceptable measurement and saved to memory.
- Endurance Grip-Strength Test: allows you to compare the right/left hand exchange in a time period of 0.8 or 1.5 seconds, in order to measure the capacity to immediately close both hands sequentially, in a series of 10 or 20 exchanges. At the end of the test, each measurement can be viewed individually, with the statistics related to the series.

Sarcopenia is a syndrome characterized by a progressive and generalized loss of muscle mass and strength with a risk of adverse outcomes such as physical disabilities, poor quality of life and death. Early diagnosis of Sarcopenia is crucial in terms of prevention and treatment.

The EWGSOP (European Working Group on Sarcopenia in Older People) recommends using the presence of both low muscle mass and low muscle function (an assessment of muscle strength with the Hand Grip Test) for the diagnosis of Sarcopenia, reduced muscle strength associated with reduced muscle mass values are useful clinical markers for early detection, as well as an evaluation tool for the management of Sarcopenia.

Analysis of body composition through bioelectrical impedance (BIA) has been recommended for the evaluation of the total muscle mass. The combination of BIA and BIA 101 (Akern/RJL Systems) was proposed as both a nutritional surveillance tool and for assessing motor efficiency.

**Figure:**

- VARIATION OF HAND STRENGTH IN THREE YEARS FOR ALBUNEMIA CLASSES
- NO SARCOPENIA
- SARCOPENIA

**Table:**

<table>
<thead>
<tr>
<th>Albumin (g/L)</th>
<th>Variation in three years</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-40</td>
<td>-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-45</td>
<td>-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-50</td>
<td>-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-55</td>
<td>-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-60</td>
<td>-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;60</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

- Hand grip strength (kg)

**Notes:**

(EWGSOP A.J. Cruz-Jentoft et al. 2010)

**Recommended algorithm for diagnosing the presence of Sarcopenia in the elderly**

1. Measurement of the muscular mass
2. Measurement of the muscular strength
3. Evaluation of the general muscle strength
4. Diagnosis of Sarcopenia

**Statistics:**

- Average strength
- Standard Deviation
- Coefficient of Variation

**Diagnosis of Sarcopenia:**

- Low muscle mass
- Low muscle function (Hand Grip Test)

**References:**

Janssen I, Heymsfield SB, Baumgartner RN et al.; 2000 - (9)