Measurement of Physical Fitness
in Anorexia Nervosa inpatients
with adapted Eurofit Battery test

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Objectives

• **To investigate:** effects of cognitive behavior treatment (CBT) on Physical Fitness (PF) in anorexia nervosa (AN)

• **To evaluate:** feasibility of Eurofit Physical Fitness Battery Test

• **To compare:** levels of scores (pre and inpatient post CBT) with control group
It’s a widely held clinical opinion that patients with AN have lower level of fitness than the general population (Bratland-Sanda S. & al., 2010)

However... no systematic data have been collected before and after weight restoration.
The hypothesis

AN patients are less fit than the healthy age-matched population, both before and after weight restoration.
Eurofit Battery Test Adapted

1. Flamingo test: balance
2. Sit-and reach test: flexibility
3. Standing broad jump test: leg power
4. Handgrip test: arm strength
5. Sit-up test: abdominal endurance
6. Six-minute walk test: aerobic fitness
Methods:

**Participants:** 24 female patients (BMI 14.4±1.5 kg/m²; age 23.3±9.2 years) **58 healthy age-matched females**

**Treatment protocol:** 20 weeks - 13 weeks of inpatient treatment and 7 weeks of day-hospital

**Assessment and measurements:** second day of admission and last week of day-hospital treatment
Results

**BMI**
- **PRE**: 14,4
- **POST**: 18,8
- **CONTROL**: 21,1

**Weight**
- **PRE**: 37,33
- **POST**: 49,82
- **CONTROL**: 58,2
Results

6’ walking test

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>537.2</td>
<td>580.2</td>
<td>685.1</td>
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</table>

Hand Grip

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
<th>CONTROL</th>
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<tbody>
<tr>
<td>Kg</td>
<td>24.7</td>
<td>27.7</td>
<td>32.8</td>
</tr>
</tbody>
</table>
Results

**Sit Up**

- **Rep/30 sec.**
  - PRE: 8
  - POST: 13.9
  - CONTROL: 14.4

**Standing broad jump**

- cm
  - PRE: 115
  - POST: 119.2
  - CONTROL: 162.3
Results

Flamingo balance

- PRE: 12.7
- POST: 12.6
- CONTROL: 8.4

Sit and reach

- PRE: 5
- POST: 8
- CONTROL: 12.6
## Significance of the data

<table>
<thead>
<tr>
<th></th>
<th>Comparison pre-treatment and control group</th>
<th>Comparison post-treatment and control group</th>
<th>Comparison pre- and post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>0.224</td>
<td>--</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
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<tr>
<td>Aerobic fitness (6’ w. t.)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.008</td>
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<tr>
<td>Arm strength (Hand grip)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.018</td>
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<tr>
<td>Abdominal endurance (Sit up)</td>
<td>&lt;0.001</td>
<td>--</td>
<td>0.599</td>
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<td>Leg power (S b. j.)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.175</td>
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<td>Balance (F.)</td>
<td>0.001</td>
<td>0.003</td>
<td>0.530</td>
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<tr>
<td>Flexibility (S &amp; R)</td>
<td>&lt;0.001</td>
<td>0.022</td>
<td>0.025</td>
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</table>
Discussion: the study presents two main findings

1. Weight restoration improved physical fitness in AN

2. After weight restoration, AN patients showed lower physical fitness than control
Discussion (cont.):

- Assessment of PF can be safely implemented in patients with AN.

- Discussion on PF might help to engage patients in treatment.

- Nutritional rehabilitation and weight restoration are NOT SUFFICIENT for complete recovery of PF.
Conclusions:

A need to associate specific therapeutic strategies with standard treatment to improve PF.
GRAZIE !