Goal Attainment Scaling after Knee Arthroplasty in younger, active patients, a new individualized rehabilitation intervention resulting in goal achievement and improved satisfaction for activities: a cohort study

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Disclosure slide

Suzanne Witjes, MD, PhD
I have no financial conflicts to disclose

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Online available at:
Objectives

- To investigate activity goals of younger Knee Arthroplasty (KA) patients;
- To investigate intensity (METs) and achievement of those activity goals:
- To identify differences in goals between Total Knee Arthroplasty (TKA) and Unicondylar Knee Arthroplasty (UKA) patients
- To investigate whether an individualized Goal Attainment Scaling (GAS)-based rehabilitation improves satisfaction for activities in these younger patients.

**ACTION trial:**

‘goAl attainment sCaling for knee arThrplasty In yOunger patieNts’
Methods

• **Design:** Prospective cohort study: intervention group of ACTION trial ¹

• **Setting:** Department of orthopedic surgery and physiotherapy practices.

• **Participants:** 48 patients aged 65 and younger, who underwent KA.

• **Intervention:** Goal Attainment Scaling (GAS)-based rehabilitation.

• **Main outcome measures:**
  - GAS activity goals for activities of daily life (ADL), work and leisure time
  - corresponding metabolic equivalent of task (MET) values
  - GAS scores at three and six months
  - Visual Analogue Scales (VAS) for satisfaction with activities
Goal Attainment Scaling (GAS)

- Measurement tool developed in rehabilitation medicine \(^2,^3\)
- Rehabilitation medicine: high diversity in patient’s wishes and expectations
- Standardized outcome measures mostly not ideal for the *individual* patient
- GAS scale: individual outcome measure, aiming to set quantifiable patient-centered rehabilitation goals, to measure improvement in attaining those goals \(^4\)
- Goals described according to the International Classification of Functioning (ICF): \(^5\)
  - Specific
  - Measurable
  - Attainable
  - Realistic
  - Time-specific
Results – Baseline characteristics

Table 1. Baseline characteristics (N=48)

<table>
<thead>
<tr>
<th>Variable</th>
<th>TKP (N=26)</th>
<th>UKP (N=22)</th>
<th>Total (N=48)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13 (50%)</td>
<td>6 (27%)</td>
<td>19 (40%)</td>
<td>0.109a</td>
</tr>
<tr>
<td>Female</td>
<td>13 (50%)</td>
<td>16 (73%)</td>
<td>29 (60%)</td>
<td></td>
</tr>
<tr>
<td>Age, years (median (IQR))</td>
<td>61 (56-63)</td>
<td>59 (55-63)</td>
<td>60 (56-63)</td>
<td>0.533b</td>
</tr>
<tr>
<td>BMI, kg/m^2 (mean, SD)</td>
<td>31 (5.8)</td>
<td>32 (6.2)</td>
<td>31 (5.921-50)</td>
<td>0.684c</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Light work</td>
<td>8 (31%)</td>
<td>11 (50%)</td>
<td>19 (40%)</td>
<td>0.349a</td>
</tr>
<tr>
<td>- Medium work</td>
<td>8 (31%)</td>
<td>6 (27%)</td>
<td>14 (29%)</td>
<td></td>
</tr>
<tr>
<td>- Heavy work</td>
<td>10 (39%)</td>
<td>5 (23%)</td>
<td>15 (31%)</td>
<td></td>
</tr>
</tbody>
</table>

a Chi-Square Test; b Mann-Whitney U Test; c Unpaired T Test; BMI, Body Mass Index
## Results - Goal setting

### Table 2. Activity goals, according to Compendium of Physical Activities

<table>
<thead>
<tr>
<th>Activity Types</th>
<th>ADL (N=48)</th>
<th>Work (N=48)</th>
<th>Leisure (N=48)</th>
<th>Total (N=144)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycling</td>
<td>2 (4%)</td>
<td>2 (4%)</td>
<td>16 (33%)</td>
<td>20 (14%)</td>
</tr>
<tr>
<td>Conditioning exercises</td>
<td>0 (0%)</td>
<td>6 (13%)</td>
<td>6 (13%)</td>
<td>12 (8%)</td>
</tr>
<tr>
<td>Home activities</td>
<td>6 (13%)</td>
<td>2 (4%)</td>
<td>0 (0%)</td>
<td>8 (6%)</td>
</tr>
<tr>
<td>Home repair</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (2%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Inactivity</td>
<td>1 (2%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Lawn and garden</td>
<td>1 (2%)</td>
<td>1 (2%)</td>
<td>1 (2%)</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2 (4%)</td>
<td>2 (4%)</td>
<td>0 (0%)</td>
<td>4 (3%)</td>
</tr>
<tr>
<td>Occupation</td>
<td>0 (0%)</td>
<td>15 (31%)</td>
<td>0 (0%)</td>
<td>15 (10%)</td>
</tr>
<tr>
<td>Running</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>2 (4%)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Self-care</td>
<td>1 (2%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Sports</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>3 (6%)*</td>
<td>3 (2%)*</td>
</tr>
<tr>
<td>Walking</td>
<td>35 (73%)</td>
<td>20 (42%)</td>
<td>17 (35%)</td>
<td>72 (50%)</td>
</tr>
<tr>
<td>Water Activities</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>2 (4%)*</td>
<td>2 (1%)*</td>
</tr>
</tbody>
</table>

*golf, table tennis and volleyball; *i.e. swimming (N=2)
## Results - Goal intensity (METs)

### Table 3. Goal activity intensity in METs and corrected METs for ADL, work, and leisure time

<table>
<thead>
<tr>
<th>METs (median (IQR))</th>
<th>TKA (N=26)</th>
<th>UKA (N=22)</th>
<th>Total (N=48)</th>
<th>p-value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>METs ADL</td>
<td>4.0 (3.5 - 4.6)</td>
<td>3.5 (2.9 - 5.8)</td>
<td>3.5 (3.5 - 5.0)</td>
<td>NS</td>
</tr>
<tr>
<td>Corrected METs ADL</td>
<td>5.2 (4.4 - 6.8)</td>
<td>5.3 (3.6 - 8.1)</td>
<td>5.3 (4.4 - 6.9)</td>
<td>NS</td>
</tr>
<tr>
<td>METs work</td>
<td>3.8 (3.4 - 4.1)</td>
<td>4.0 (3.5 - 4.9)</td>
<td>4.0 (3.5 - 4.2)</td>
<td>NS</td>
</tr>
<tr>
<td>Corrected METS work</td>
<td>5.0 (4.4 - 5.8)</td>
<td>5.3 (4.6 - 6.4)</td>
<td>5.1 (4.5 - 6.2)</td>
<td>NS</td>
</tr>
<tr>
<td>METs leisure</td>
<td>5.8 (5.0 - 8.0)</td>
<td>5.8 (5.0 - 8.0)</td>
<td>5.7 (5.0 - 8.0)</td>
<td>NS</td>
</tr>
<tr>
<td>Corrected METS leisure</td>
<td>8.0 (6.6 - 9.5)</td>
<td>8.1 (6.7 - 11.0)</td>
<td>8.0 (6.7 - 10.4)</td>
<td>NS</td>
</tr>
</tbody>
</table>

Abbreviations: IQR, interquartile range; NS, not significant

* Comparison between TKA and UKA cohort using chi-square tests.

- Neither MET nor corrected MET score showed differences between TKA and UKA
Results - Goal attainment (ADL, work, leisure time)

< 3 months:

- ADL: 54%
- Work: 64%
- Leisure time: 45%

< 6 months:

- ADL: 91%
- Work: 93%
- Leisure time: 89%
Results - Goal attainment (TKA versus UKA)

< 3 months:
- TKA: 47%
- UKA: 82%

< 6 months:
- TKA: 82%
- UKA: 100%

p=0.052

p<0.001
Results – Satisfaction (for activities and with physiotherapy)

- High satisfaction for physiotherapy (both effect and coaching)
- VAS satisfaction 6 months after UKA and TKP >80/100
  ⇒ More satisfied when goals were attained
Conclusions

• Younger patients aim to perform many different activities of varying metabolic intensity; 6

• METs intensity of activity goals did not differ between TKA and UKA patients; 6

• After six months of rehabilitation with GAS, around 90% of the preoperatively formulated activity goals were attained, independent of the METs intensity level; 6

• Within six months, UKA patients attain significantly more activity goals than TKA patients; 6

• KA followed by GAS-based rehabilitation also results in improvement of satisfaction for activities of ADL, work and leisure time in younger patients, especially when goals are attained;

• This GAS-based individualized rehabilitation leads to satisfaction of both patients and physiotherapists;

• Lastly, GAS might be a useful objective outcome measure in evaluating clinical outcomes of individual KA patients (and perhaps also a useful tool in other orthopaedic disciplines?). 6
References


5. https://apps.who.int/iris/handle/10665/42407


Any questions or comments? Please send to: suzanne.witjes@gmail.com