United Kingdom
R. Duncan, G. Peat, E.M. Hay

LMJC were as expected not responsive.
for separate counts of PIP and DIP joints (table). BSJC and
AUSCAN measures, TJC and SJC were also responsive (Table).
The responsiveness was higher for combined joint counts than
for separate counts of PIP and DIP joints (table). BSJC and
LMJC were as expected not responsive.

Standardized response means (SRM) and p-values

<table>
<thead>
<tr>
<th>Measure</th>
<th>SRM</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSCAN pain</td>
<td>0.85</td>
<td>0.006</td>
</tr>
<tr>
<td>AUSCAN physical</td>
<td>0.41</td>
<td>0.081</td>
</tr>
<tr>
<td>AUSCAN stiffness</td>
<td>0.65</td>
<td>0.023</td>
</tr>
<tr>
<td>DIP TJC</td>
<td>0.45</td>
<td>0.044</td>
</tr>
<tr>
<td>PIP TJC</td>
<td>0.35</td>
<td>0.065</td>
</tr>
<tr>
<td>DIP+PIP+CMC TJC</td>
<td>0.50</td>
<td>0.049</td>
</tr>
<tr>
<td>DIP SJC</td>
<td>0.19</td>
<td>0.142</td>
</tr>
<tr>
<td>PIP SJC</td>
<td>0.28</td>
<td>0.039</td>
</tr>
<tr>
<td>DIP+PIP+CMC SJC</td>
<td>0.31</td>
<td>0.042</td>
</tr>
</tbody>
</table>

Conclusions: These results suggest that counts of finger joints
with tenderness/pain on motion and soft tissue swelling are
responsive measures in HOA, and that the joint counts should
combine PIP and DIP joints. Patient reported pain measures had
the highest responsiveness. Further studies are required for a
full validation of joint counts as potential outcome measures in
HOA.

P218
RELIABILITY OF DIGITAL IMAGES FOR SCORING
CLINICAL FEATURES OF HAND OSTEOARTHRITIS (OA)
E. Nichols, K. Dziedzic, K. Vohora, H. Myers, M. Marshall,
R. Duncan, G. Peat, E.M. Hay
Primary Care Musculoskeletal Research Centre, Staffordshire,
United Kingdom

Purpose: Previous studies have proposed that hand digital im-
ages could be used as an efficient screening tool to identify
suitable patients for population-based research studies of hand
OA. However, the reliability of scoring digital images for clinical
features of hand OA has not been fully established

Methods: Digital images of the hands were taken for 1442 symp-
tomatic and asymptomatic participants in two population-based
cohort studies of adults aged 50 years and over. Images were
taken of the dorsal aspect of the hand and wrist using stan-
dardised hand positioning and an Olympus Camedia camera
(resolution 2272 x 1704 pixels). Fifty-five images were sampled
to represent a range of hand features (OA and non OA). Images
were scored for presence of nodes, deformities and bony en-
largements for the 14 target joints included in the American
College of Rheumatology (ACR) classification of hand OA. Each
image was also classified according to whether ACR criteria (1)
to (3) were met:
1) Hard tissue enlargement (nodes or bony enlargement) of two
or more of 10 selected joints (2nd and 3rd DIP joints, 2nd and
3rd PIP joints and the 1st CMC joint for each hand)
2) Hard tissue enlargement (nodes or bony enlargement) of two
or more DIP joints
3) Deformity of at least one of 10 selected joints

Scoring was completed by three independent observers (A, B,
and C) using a standardised hand atlas. The atlas contained
elements for OA features seen on digital images and a written
description of each feature. Observers were blind to the scores
of other observers. The observers had different allied health
professional backgrounds and experience of assessing features
of hand OA either from digital images, physical assessments or
from radiographic data. Observer A developed and piloted the
hand atlas. Observers B and C were involved in a pilot only. To
assess intra-observer reliability, observer A re-scored images 4
weeks later, blind to their previous scores.

Agreement between observer A and the remaining observers
was examined using the kappa statistic and percentage agree-
ment (%). To summarise agreement for scoring features (either
nodes, enlargements and deformities) on individual joints, the
mean and standard deviation (SD) of the kappa values and %
agreement across the 14 joints were presented. Single kappa
and % agreement values were calculated for scoring each ACR
criterion

Results: Participants in the sample had a mean age 65 years
(SD 8.9) and 67% were female. Intra- and inter-observer agree-
ment has been moderate for assessment of individual joint features
(Table 1: mean kappa values range from 0.34-0.57; mean %
agreement 67%-82%). Substantial intra-observer agreement was
found for each ACR criterion (Table 2: all intra-observer kappa
values > 0.6), yet agreement between observers was lower
(Table 2: kappa values ranging from 0.13-0.54; % agreement
55-94%)

Conclusions: Moderate intra-observer agreement has been
demonstrated for assessment of individual joint features (when
criteria values are averaged over 14 joints) and for key ele-
ments of the ACR criteria. Agreement was lower for independent
observers and appeared to reflect differences in frequency of
positive findings between observers. The extent to which training
of observers influences agreement warrants investigation. Digital
images should be used with caution if they are scored without
prior training of health professionals and form the sole basis of
case inclusion for future studies of hand OA

<table>
<thead>
<tr>
<th>Stage</th>
<th>Observer A vs B</th>
<th>Observer A vs C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Kappa (SD)</td>
<td>% Agreement (SD)</td>
<td>Mean Kappa (SD)</td>
</tr>
<tr>
<td>Nodes or bony enlargement</td>
<td>0.46 (0.17)</td>
<td>79 (8)</td>
</tr>
<tr>
<td>Defomity</td>
<td>0.57 (0.13)</td>
<td>82 (5)</td>
</tr>
</tbody>
</table>

P218 – Table 2. Intra- and inter-observer agreement for clinical features of hand OA