

## Correlation of Function with Deformity in Dupuytren Disease: The Condition-Specific Southampton Scoring Scheme Outperforms the Generic QuickDASH

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accurately reflect the underlying condition. The *QuickDASH* (QD) score (Beaton et al. 2005, Fig. 26.1) is widely used in hand surgery, but it is a generic score to cover all upper limb problems and so many of the domains (e.g. tingling, pain, sleep) are not affected in DD which will dilute its validity (Budd et al. 2011). Other schemes are more specific to DD such as the *Unité Rhumatologique des Affections de la Main scale* (URAMS) (Beaudreuil et al. 2011) but whether this captures all the relevant aspects of Dupuytren disease has been challenged (Rodriguez et al. 2015).

In an effort to find a scale which is more valid in DD, we developed the Southampton Dupuytren's Scoring Scheme (SDSS). This was derived by reducing many functional problems associated with DD into just five domains (Fig. 26.2), each relevant to DD (Mohan et al. 2014). In this study, we found that the SDSS had good internal consistency (Cronbach's alpha 0.87) and high test-retest reliability ( $r=0.79$ ). In comparison with QD, it had favourable field characteristics and greater sensitivity to change (Standardised Response Mean SDSS  $-1.8$ ; QD  $-1.2$ ). Neither correlated well with goniometric deformity.

### 26.1 Background

*Range of movement*, which might have the advantage of objectivity and reproducibility, does not correlate well with function in Dupuytren disease (DD) (Degreef et al. 2009; Engstrand et al. 2009; Zyluk and Jagielski 2007). Therefore in Dupuytren research, angular deformity has only limited value as an outcome.

Thus, patient-related outcome measures (PROMs) should now be an integral part of research and hand surgery practice, but they must

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<b>QuickDASH</b>					
<b>Please rate your ability to do the following activities in the last week by circling the number below the appropriate response.</b>					
	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. Open a tight or new jar.	1	2	3	4	5
2. Do heavy household chores (e.g., wash walls, floors).	1	2	3	4	5
3. Carry a shopping bag or briefcase.	1	2	3	4	5
4. Wash your back.	1	2	3	4	5
5. Use a knife to cut food.	1	2	3	4	5
6. Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.).	1	2	3	4	5
	NOT AT ALL	SLIGHTLY	MODERATELY	QUITE A BIT	EXTREMELY
7. During the past week, <i>to what extent</i> has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbours or groups?	1	2	3	4	5
	NOT LIMITED AT ALL	SLIGHTLY LIMITED	MODERATELY LIMITED	VERY LIMITED	UNABLE
8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?	1	2	3	4	5
<b>Please rate the severity of the following symptoms in the last week. (circle number)</b>					
	NONE	MILD	MODERATE	SEVERE	EXTREME
9. Arm, shoulder or hand pain.	1	2	3	4	5
10. Tingling (pins and needles) in your arm, shoulder or hand.	1	2	3	4	5
	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	SO MUCH DIFFICULTY THAT I CAN'T SLEEP
11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (circle number)	1	2	3	4	5

**QuickDASH DISABILITY/SYMPTOM SCORE** =  $\left( \frac{\text{sum of } n \text{ responses}}{n} - 1 \right) \times 25$ , where n is equal to the number of completed responses.

A QuickDASH score may **not** be calculated if there is greater than 1 missing item.

**Fig. 26.1** QuickDASH

How much trouble do you have with:	No problem	Minor inconvenience	Modest inconvenience	Definitely troublesome	Severe problem
Discomfort					
Personal activities, eg: washing face, dressing, washing hands, washing hair, putting on gloves.					
Domestic activities, eg: holding a glass/cup, opening jars, eating, cooking.					
Work/Social interaction, eg: using the computer, writing, shaking hands, cosmetic appearance.					
Hobbies, eg. driving/cycling, racket sports, DIY, playing musical instruments, gardening.					
SCORE (Staff to complete)					

**Fig. 26.2** Southampton Dupuytren's Scoring Scheme

## 26.2 Aim

The aim of this study is to correlate function with deformity in a different and larger cohort of patients with DD and in particular to determine which of the SDSS and QD fare better.

## 26.3 Materials and Methods

We studied the functional problems associated with 298 cords in 237 patients with Dupuytren contracture who had chosen, following a full explanation of the choices, collagenase *Clostridium histolyticum* (Warwick et al. 2015).

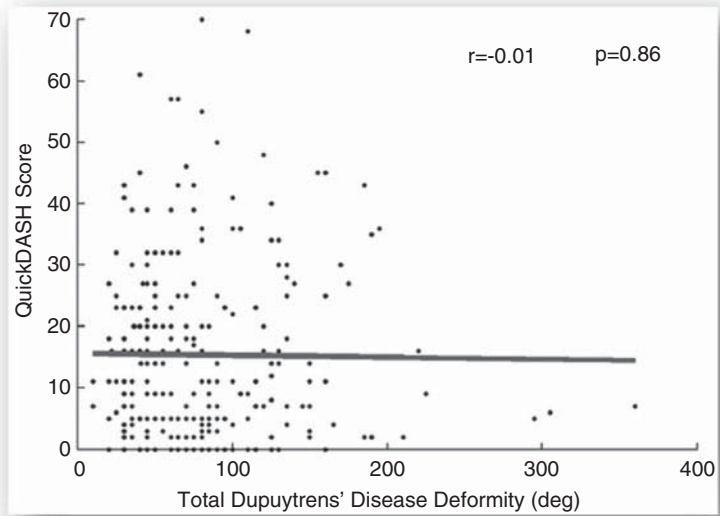
We measured the angle of deformity (i.e. extension loss) with a standard goniometer just

prior to injection. 99 patients had an MCP contracture, 56 a PIP contracture, 47 a natatory cord (i.e. one palmar cord contracting two digits) and 96 cords with combined MCP and PIP contracture. In those with natatory and combined contractures, we summated the extension loss in each cord. Immediately prior we also asked the patient to complete the SDSS and the QuickDASH.

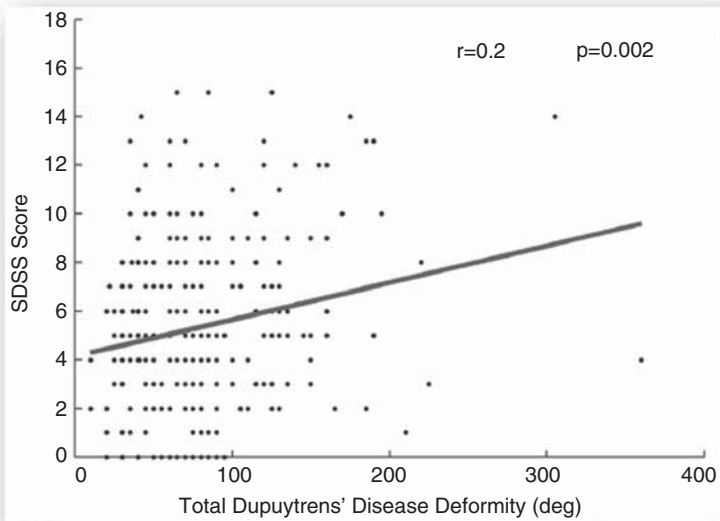
## 26.4 Results

We found that whereas there was no correlation between the QuickDASH and angular deformity (Fig. 26.3,  $r=0.01$ ;  $p=0.86$ ), there was a modest correlation between SDSS and angular deformity (Fig. 26.4,  $r=0.2$ ;  $p=0.002$ ).

**Fig. 26.3** Correlation between deformity and QuickDASH



**Fig. 26.4** Correlation between SDSS and deformity



## 26.5 Discussion

We have confirmed our previous observation in the development phase, with a new and larger set of patients that the Southampton Dupuytren's Scoring Scheme correlated better with deformity than the generic QuickDASH score. Nevertheless we are concerned that the score does not correlate very well with angular deformity. There are various reasons for this:

- Disability is multifactorial and so the angular deformity alone is probably not sufficiently sensitive.
- Patients may have several affected digits or other hand problems.
- Loss of flexion can be more of a problem than loss of extension in DD, particularly after surgery.
- Surgical complications can adversely affect a PROM even if the extension is corrected.
- Different digits have different effect on function – a flexion deformity of the little and ring fingers may have little effect on grip.

We would welcome independent validation of the SDSS which we believe may have a useful role in assessing the functional problems associated with DD. We would also encourage comparison with other condition-specific scores such as the URAM. We do not know the clinically important difference. And this demands further study before the real utility of a scheme such as SDSS is understood. Given the difficulties with generic scoring schemes in DD or specific DD scores, an alternative outcome measure in DD may be development of a patient-generated instrument in which the patient selects tasks with which they have difficulties due to DD and then rescores these after treatment.

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Figures 26.3 and 26.4 are reproduced with permission from the Journal of Hand Surgery European, in which they were published in a letter to the editor (*J Hand Surg Eur* 2015;40:544).

The author has no conflicts of interest to declare.

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