

# BMJ Open Sickness absence after carpal tunnel release: a multicentre prospective cohort study

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## ABSTRACT

**Objectives** To describe when patients return to different types of work after elective carpal tunnel release (CTR) surgery and identify the factors associated with the duration of sickness absence.

**Design** Multicentre prospective observational cohort study.

**Setting and participants** Participants were recruited preoperatively from 16 UK centres and clinical, occupational and demographic information were collected. Participants completed a weekly diary and questionnaires at four and 12 weeks postoperatively.

**Outcomes** The main outcome was duration of work absence from date of surgery to date of first return to work.

**Results** 254 participants were enrolled in the study and 201 provided the follow-up data. Median duration of sickness absence was 20 days (range 1–99). Earlier return to work was associated with having surgery in primary care and a self-reported work role involving more than 4 hours of daily computer use. Being female and entitlement to more than a month of paid sick leave were both associated with longer work absences. The duration of work absence was strongly associated with the expected duration of leave, as reported by participants before surgery. Earlier return to work was not associated with poorer clinical outcomes reported 12 weeks after CTR.

**Conclusions** There was wide variation in the duration of work absence after CTR across all occupational categories. A combination of occupational, demographic and clinical factors was associated with the duration of work absence, illustrating the complexity of return to work decision making. However, preoperative expectations were strongly associated with the actual duration of leave. We found no evidence that earlier return to work was harmful. Clear, consistent advice from clinicians preoperatively setting expectations of a prompt return to work could reduce unnecessary sickness absence after CTR. To enable this, clinicians need evidence-informed guidance about appropriate timescales for the safe return to different types of work.

## INTRODUCTION

Carpal tunnel syndrome (CTS) occurs when the median nerve becomes compressed within the carpal tunnel at the wrist. Typical

## Strengths and limitations of this study

- This multicentre prospective study, with a large sample size, provides robust evidence to understand return to work issues after carpal tunnel release surgery.
- Participants were recruited from primary care, secondary care and private practice sites, representing the breath of locations where carpal tunnel release is performed in the UK.
- Work absence was the primary outcome and a clear definition was used for its duration with data collected contemporaneously to limit recall bias.
- A standardised method was used to categorise occupations and measure occupational exposures, although this relied on job title, which may not be a true reflection of actual occupational activity.
- All participants underwent open carpal tunnel release, however, the method of carpal tunnel syndrome diagnosis was not independently verified and different case definitions for carpal tunnel syndrome may have been included.

sensory symptoms include pain, paraesthesia and/or numbness in the thumb, index, middle and radial half of the ring finger; motor symptoms include progressive wasting of the thenar muscles. CTS is often associated with marked functional difficulty<sup>1</sup> and treatment is targeted at reducing the median nerve compression by splinting, corticosteroid injection or carpal tunnel release (CTR) surgery.<sup>2,3</sup>

Recent estimates suggest that more than 90 000 CTR procedures will be performed annually in the English National Health Service (NHS) by 2025,<sup>4</sup> and as the peak incidence for CTS falls within the working lifetime,<sup>5</sup> many of these patients will need to return to work after their CTR. However, there is currently no evidence on which to base recommendations about when it might be safe to return to functional activities, including work, after CTR. Our previous survey of UK hand surgeons, primary care surgeons and hand therapists

found that clinicians recommended a wide range of times to return to three specified job roles after CTR: 0–30 days for desk-based work (eg, keyboard, mouse, writing and telephone); 1–56 days for repetitive light manual work (driving, delivery, stacking) and 1–90 days for heavy manual work (eg, construction).<sup>6</sup> However, there has not previously been a prospective study of CTR patients in the UK in which time to return to work was the primary outcome. Therefore, it is not known when UK patients return to different occupational activities after CTR or what influences the duration of work absence. It is also unclear whether earlier return to work has a detrimental effect on postoperative clinical outcomes. Possible consequences of returning to work too soon after CTR include wound dehiscence, infection and delayed healing. Conversely, delayed return to work may increase the risk of progression to long-term sick leave<sup>7</sup> and produce a financial burden for the individual, employer or state.

A systematic review of the prognostic factors associated with return to work after CTR identified 11 studies which evaluated more than 90 potential prognostic factors.<sup>8</sup> Longer durations of work absence after CTR were found to be associated with: receipt of workers' compensation<sup>9</sup>; manual work<sup>10–12</sup>; longer expected durations of work absence<sup>10</sup>; being on sick leave before CTR surgery<sup>13</sup>; self-blame for the hand problem<sup>13</sup> and beliefs that the symptoms were caused by work.<sup>12</sup>

Much of the existing research has been conducted at single sites and involved small numbers of participants. Furthermore, very few studies have specifically explored the influence of a range of occupational factors. The current multicentre prospective cohort study was designed to explore when patients returned to different types of work after CTR and the demographic, clinical and occupational factors associated with duration of work absence. We also investigated whether earlier return to work was associated with poorer clinical outcomes assessed at 12 weeks after CTR.

## METHODS

This was a prospective cohort study and a convenience sample of participants were recruited from 16 sites in England and Wales between March 2017 and August 2018. Recruitment took place before CTR surgery either at the time of listing for surgery, during preoperative screening, or on the day of surgery. At each site, the patient CTR pathway and treatment was carried out as usual. Sites were NHS secondary care (hospital setting), NHS primary care and private hand surgery facilities, representing the range of UK healthcare facilities where CTR is performed. Provision of CTR in the UK was explored through discussion with relevant national organisations (British Society for Surgery of the Hand and Association for Surgeons in Primary Care). Sites were recruited through National Institute for Health Research infrastructure.

Eligibility criteria are shown in [box 1](#). Baseline demographic, general health and occupational information

### Box 1 Study eligibility criteria

#### Self-selected by potential participants

1. Aged over 18 and referred for carpal tunnel release surgery.
2. Routinely work in paid employment for at least 20 hours per week.
3. Plan to return to work after carpal tunnel release surgery.
4. Have not previously had carpal tunnel release surgery on either hand.
5. Have not previously had a serious injury to the same wrist/hand.

#### Assessed by recruiting clinician

1. No planned surgical procedures for conditions other than carpal tunnel syndrome.

were collected via self-completed questionnaire at the time of recruitment. The questionnaire also included standardised measures of CTS symptoms<sup>14–16</sup> and hand function.<sup>17</sup> Questionnaire content was informed by the clinical, demographic and occupational factors previously identified in a systematic review of prognostic factors for return to work after CTR,<sup>8</sup> and developed in collaboration with our patient advisory group. The reasoning for item inclusion is provided in online supplemental material 1.

Follow-up questionnaires were completed four and 12 weeks after CTR and collected information about return to work, work functioning, scar symptoms, CTS symptoms and hand function. Study questionnaires are provided as online supplemental materials 2 and 3. Participants were also asked to complete a short weekly diary from the day after surgery until return to work, detailing whether they had returned to work that week, and if so, the date of return. Steps were taken to minimise lost to follow-up after recruitment. To maximise retention, we incentivised with a shopping voucher on completion of the study (£10) and sent up to three reminders using a combination of post, email and text.

Surgical information was collected from the medical records by a member of the participant's clinical team. This included: date of CTR, operated hand(s), nature of anaesthetic, incision size, additional procedures, unexpected findings and suture material. Date, side of CTR and anaesthetic (general/local) were also reported by participants for cross-checking.

### Public and patient involvement

This research was supported by a patient advisory group consisting of six individuals who had previously undergone CTR at different UK sites. Study questionnaires were developed in collaboration with the patient advisors and these individuals also provided their feedback on the preliminary findings.

### Statistical methods

Comparisons were made between those who dropped out of the study before providing any follow-up data and those in the final study sample using prespecified demographic, clinical and occupational variables ([table 1](#)).

**Table 1** Participant demographics assessed at baseline in comparison with those lost to follow-up

	Study participants n=201 (%)	Lost to follow-up n=53 (%)
Mean age in years [SD]	52.0 [9.16]	44.4 [9.55]
Sex		
Male	76 (37.8)	20 (37.7)
Female	125 (62.2)	33 (62.3)
Body mass index (kg/m <sup>2</sup> )		
Normal (18.5–24.9)	48 (23.9)	9 (17.0)
Overweight (25–29.9)	66 (32.8)	16 (30.2)
Obese (≥30)	73 (36.3)	22 (41.5)
Smoking status		
Never smoked	109 (54.2)	26 (49.1)
Current/ex-smoker	90 (44.8)	27 (50.9)
General health		
Excellent/very good/good	174 (86.6)	42 (79.3)
Fair/poor	26 (12.9)	11 (20.8)
Number of comorbidities		
None	54 (26.9)	21 (39.6)
1	70 (34.8)	13 (24.5)
2 or more	77 (38.3)	19 (35.9)
Number of disabling comorbidities		
None	138 (68.7)	35 (66.0)
1	41 (20.4)	9 (17.0)
2 or more	22 (11.0)	9 (17.0)
Mean SF-36 mental health score [SD] *	65.6 [17.20]	60.3 [20.41]
Mean bilateral CTS-6 score [SD] †	2.8 [0.77]	3.0 [0.73]
Mean MHQ bilateral activities of daily living score [SD] ‡	68.8 [23.64]	55.7 [28.62]
Mean MHQ work function score [SD] ‡	66.1 [22.26]	60.6 [22.61]
Type of job contract		
Employed (permanent contract)	164 (81.6)	37 (69.8)
Self-employed	31 (15.4)	13 (24.5)
Employed (temporary or 0 hours contract)	5 (2.5)	3 (5.7)
Type of work§		
Manual	77 (39)	31 (58)
Non-manual	123 (61)	22 (42)
Median level of job demand on hands/wrists [IQR] ¶	9 [7–10]	10 [7–10]
Job satisfaction		
Very satisfied	87 (43.3)	24 (45.3)
Satisfied/fairly satisfied	92 (45.8)	24 (45.3)

Continued

**Table 1** Continued

	Study participants n=201 (%)	Lost to follow-up n=53 (%)
Dissatisfied/very dissatisfied	20 (10.0)	5 (9.4)
Median expected work absence in days [IQR]	14 [7–28]	14 [5–21]
Expected availability of sick pay		
≤1 month	50 (24.9)	21 (39.6)
>1 month	94 (46.8)	11 (20.8)
Unsure	57 (28.4)	21 (39.6)
Study site**		
NHS primary care	73 (36.3)	13 (24.5)
NHS secondary care	101 (50.3)	32 (60.4)
Private hand surgery facilities	27 (13.4)	8 (15.1)

\*SF-36 mental health score ranges from 0 to 100, higher scores indicate better mental health.<sup>35</sup>

†CTS-6 symptom score ranges from 1 to 5, higher scores indicate more severe symptoms.<sup>14</sup>

‡MHQ ranges from 0 to 100, higher scores indicate better functioning.<sup>17</sup>

§Classified using the Office for National Statistics Standard Occupational Classification 2010.<sup>18 19</sup>

¶Job demand scale range 0–10, 10 indicating very demanding on hands/wrists.<sup>13</sup>

\*\*Location where the carpal tunnel release surgery was performed. Surgery in primary care was performed by general practitioners who had completed additional training.

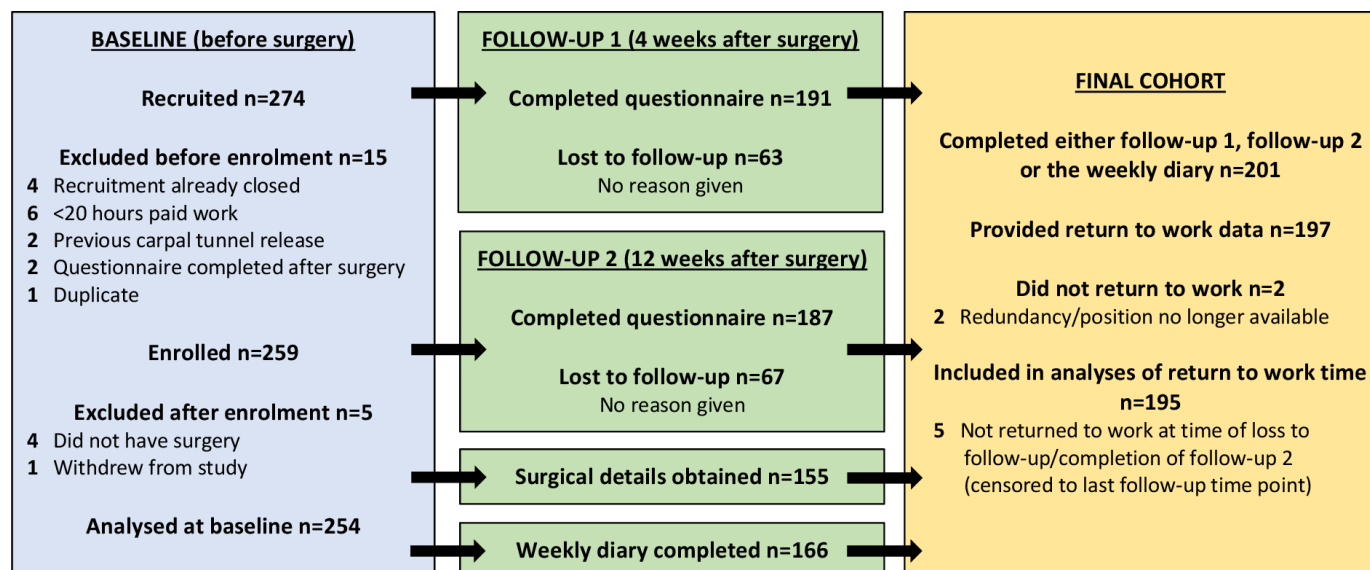
CTS, carpal tunnel syndrome; IQR, Interquartile range; MHQ, Michigan Hand Questionnaire; NHS, National Health Service; SF-36, 36-Item Short Form Health Survey

Manual and non-manual work was coded from job title and industry using the UK Standard Occupational Classification.<sup>18 19</sup> Return to work time was calculated from the date of surgery to the date of first return to work (as reported by participants).

A Cox proportional hazards model was used to explore the factors associated with return to work time, and the assumptions of the model were tested. Baseline and operative variables were assessed in univariable analyses and those which were significant ( $p < 0.05$ ) were included as covariates in the final model. All regression analyses were adjusted for age and sex.

Participants were defined as having a poor outcome if they reported one or more of the following: global rating of change score of 'worse', 'unchanged' or 'slightly improved' (12 weeks after CTR)<sup>20</sup>; scar symptoms described as 'unbearable', 'very troublesome' or 'fairly troublesome' (12 weeks after CTR); use of antibiotics for an incision site infection after returning to work and additional sick-leave related to the CTR after returning to work. The duration of work absence for those with/without poor outcomes were compared using Wilcoxon rank-sum test. In addition, participants were dichotomised to those who returned to work within/after seven,





**Figure 1** Participant numbers for each stage of the cohort study.

14 and 28 days of surgery and the prevalence rates of poor outcomes were compared using  $\chi^2$  for each time period. These time points were based on the median clinician-recommended return to work time that we reported previously.<sup>6</sup>

There was no imputation for missing data. Missing values were coded as a separate category for each of the variables included, and participant numbers are provided for each variable in the accompanying tables.

## RESULTS

A total of 254 individuals completed the baseline questionnaire and 201 (79%) provided follow-up data. Participant numbers and loss to follow-up for each study component are shown in figure 1. Participant demographics and comparisons between those who remained in the study and those who dropped out before follow-up are shown in table 1.

Eighty-six participants (43%) were recruited preoperatively on the day of their CTR. For the remaining 115 participants, the median time between recruitment and CTR was 14 days (IQR 5–40). The first follow-up questionnaire was completed a median of 32 days after CTR (IQR 29–38) and the final questionnaire was completed a median of 92 days after CTR (IQR 86–105). All participants underwent open CTR as a day case, and all but two had unilateral surgery. Another two participants required median nerve neurolysis, and one participant was noted to have a vascular abnormality. Sixty-two per cent of participants (n=125) were expecting to have a CTR for their other hand in the future. Other baseline demographic and surgical factors are shown in table 2.

The majority of participants (62%) worked 5 days per week (range 2–7) and the median number of weekly paid work hours was 37.5 (IQR 31–45). Two participants (1%) did not return to work during the 12-week study period: one reported that they had been made redundant and

the other that their job was no longer available. Four participants (2%) had incomplete data (missing return to work date or CTR date) meaning that the duration of work absence could not be calculated. These six individuals were not included in the analyses of return to work time, leaving a total sample size of 195. An additional five participants reported that they had not returned to work, but planned to do so in the future. These individuals were included in the return to work analysis, censored to the time of last follow-up.

The median duration of work absence after CTR was 20 days (IQR 12–33). Manual workers took longer to return than non-manual workers: 23.5 days (IQR 14–41) compared with 18 days (IQR 9–31). Those who were self-employed returned to work earlier than those who were employed: 13 days (IQR 6–19) compared with 22 days (IQR 14–38). Return to work times are shown in figure 2. The majority of participants returned to work on a Monday (43%). Approximately 15% returned each day between Tuesday–Thursday, then ~5% returned each day from Friday to Sunday. More than half of participants (59%) reported that they needed to modify their work duties to some extent when they first returned to work. Of these, 62% had resumed full duties within 5 weeks.

Univariable analyses of the relationship between baseline factors and the duration of work absence found 17 factors (age adjusted and sex adjusted) that were significantly associated with time to return to work and were entered into the multivariable model, in which five factors remained significant (table 3). Sensitivity analyses confirmed that these factors remained independently significant in the model. Non-significant findings in the univariable analyses are provided in online supplemental material 4. Having surgery in primary care and having a job with more than 4 hours of daily computer use were both associated with earlier return to work than their respective reference categories. Being female and having



**Table 2** Participant demographic and surgical factors

	No of participants n=201 (%)
Age (years)	
26–40	23 (11.4)
41–55	101 (50.3)
≥55	77 (38.3)
Hand dominance	
Right	178 (88.6)
Left	18 (9.0)
Ambidextrous	5 (2.5)
Side of surgery*	
Dominant hand	134 (66.7)
Non-dominant hand	65 (32.3)
Bilateral surgery	2 (1.0)
Surgical specialty and grade	
Consultant (plastics/orthopaedics)	64 (31.8)
Registrar (plastics/orthopaedics)	33 (16.4)
General practitioner	62 (30.9)
Not reported	42 (20.9)
Incision type†	
Mini open incision	129 (64.2)
Traditional incision	2 (1.0)
Not reported	70 (34.8)
Suture material	
Absorbable	24 (11.9)
Non-absorbable	126 (62.7)
Not reported	51 (24.4)

\*Considered as the non-dominant hand for those who reported ambidexterity.

†Mini open incision defined as distal to the distal wrist crease and traditional open excision extending proximally.

access to more than a month of paid sick leave were both associated with longer durations of work absence than their respected reference categories. Compared with those who expected to return within a week, there was a sequential increase in the likelihood of longer durations of work absence for those expecting to return between 7–14 days, 15–30 days and >30 days (table 3), which showed a significant gradient effect ( $p<0.001$ ). The assessment of  $R^2$  indicated that 46% of variation in the duration of work absence was explained by the model ( $R^2=0.46$ , 95% CI 0.37 to 0.53).

Clinical outcomes after CTR are shown in table 4. Using the definition outlined in the methods, a total of 46 participants (24%) were identified as having at least one poor outcome (CTS symptoms that were worse, unchanged or only slightly better; scar symptoms that were at least fairly troublesome; required postoperative antibiotics or

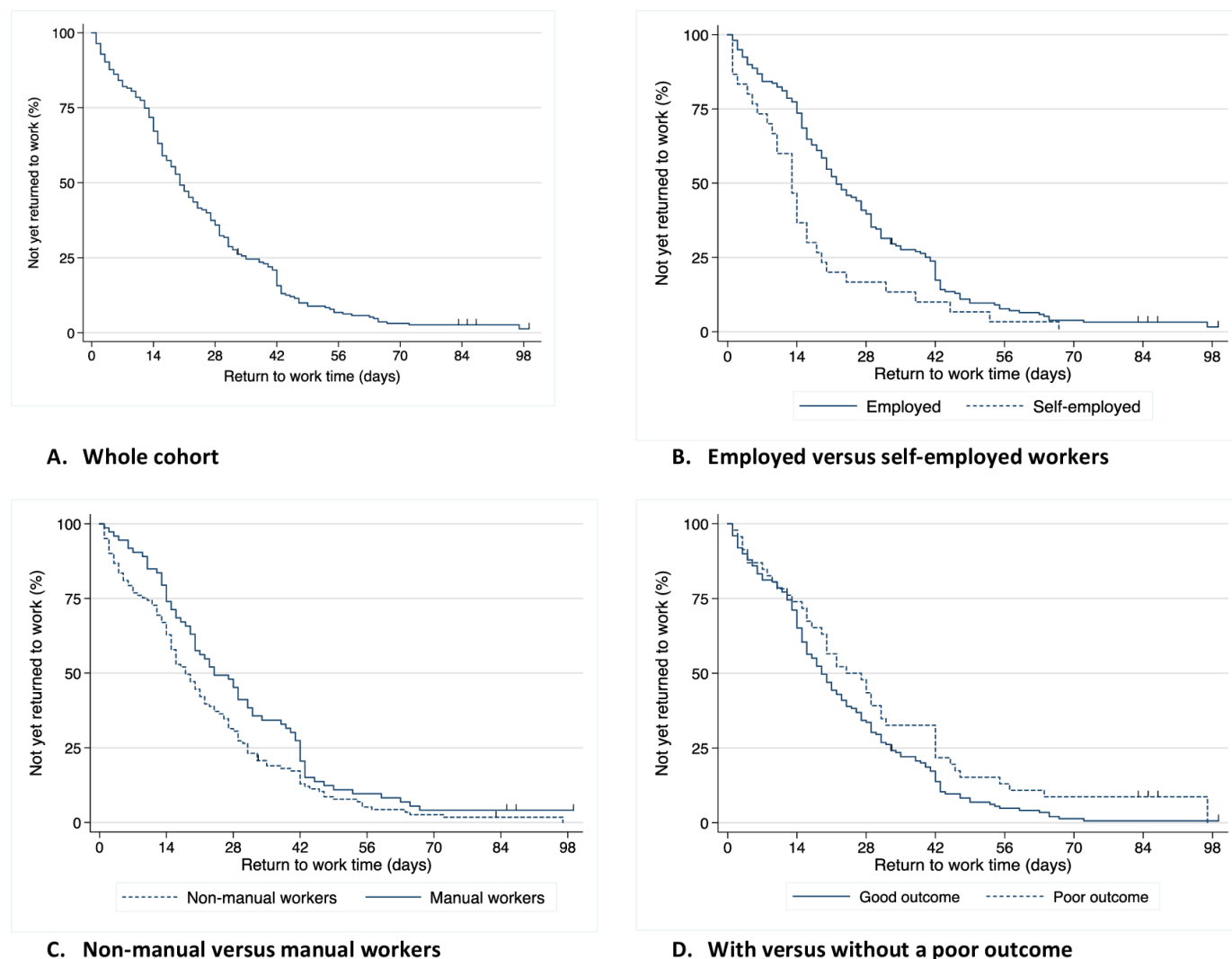
had additional time off work after first return). Of these participants, the majority ( $n=38$ , 83%) reported only a single component of poor outcome. Three individuals defined as having a poor outcome had not returned to work at the point of last follow-up (as compared with two individuals in the rest of the study sample). For those who had returned to work, the median duration of work absence for those with a poor outcome was 22 days (IQR 12–42) compared with 19 days (IQR 12–32) for those without (figure 2). This difference was not significant (Wilcoxon rank-sum test,  $p=0.24$ ).

There was no significant difference in the prevalence of a poor outcome among those who returned to work within or after 7 days of CTR (20% vs 24%,  $\chi^2$   $p=0.63$ ). Similarly, there was no significant difference in the prevalence of a poor outcome among those who returned to work within or after 14 days (19% vs 25%,  $\chi^2$   $p=0.31$ ), or within or after 28 days of CTR (21% vs 27%,  $\chi^2$   $p=0.33$ ).

## DISCUSSION

In this multicentre prospective cohort study, the median duration of work absence was 20 days (range 1–99), a duration similar to that reported by other European studies.<sup>21</sup> Earlier return to work was associated with typing for ≥4 hours at work (as compared with more physical workplace tasks) and undergoing surgery in primary care (as compared with secondary care or private practice). Preoperative expectations about return to work were important significant predictors of actual return to work times. We found no evidence of poorer clinical outcomes in the first 12 weeks among those who returned to work earlier. At each time point, fewer manual workers had returned to work than non-manual workers and fewer employed workers had returned than self-employed (figure 2). Both findings have been reported previously,<sup>10 11 22 23</sup> however, neither the type of work (manual/non-manual) nor the type of work contract (employed/self-employed) were significantly associated with the duration of work absence in the mutually adjusted model. These results illustrate the importance of considering the range of relevant demographic, clinical and occupational factors, which may have been confounders, moderators or mediators in previous studies. The reported model has not been developed to predict the duration of work absence for future CTR patients, rather to explore and identify important risk factors for consideration in future research.

Five variables remained statistically significantly associated with longer duration of work absence in the final model. Two were occupational factors: infrequent computer use and availability of sick pay. Cowan *et al*<sup>10</sup>, recorded earlier return to work after CTR for desk-based workers and we have shown previously that UK hand surgeons and hand therapists report that they advise earlier return to desk-based workers.<sup>6</sup> The relationship between longer duration of work absence and availability of sick pay has also been reported previously for those with and without worker's compensation.<sup>9 21</sup> It is plausible



Vertical lines indicate right censoring for those who had not returned to work at the point of last follow-up

**Figure 2** Duration of work absence after carpal tunnel release.

that financial necessity is driving earlier return to work for those with limited sick pay. Alternatively, those with access to paid leave might choose to take the maximum available duration.

Only one clinical factor was significantly associated with the duration of work absence: participants who had their CTR surgery in primary care were more likely to return to work earlier than those whose procedure took place in an NHS hospital setting. One possible reason is that patients with more complex disease may be more commonly referred to secondary, rather than primary, care for their CTR and these patients may require longer off work after their surgery. However, in the current study, the proportion and degree of comorbidities, and the extent of preoperative symptoms reported by participants were similar across all settings. Another possibility is that the patients' expectations of the surgery may be different: CTR performed in a primary care setting might be perceived by patients as being more minor than surgery in a hospital operating theatre. Alternatively, the general practice surgeons may have recommended

earlier return to work than those based in a hospital, although the median expected duration of work absence for participants in the current study was the same across all settings. The inclusion of CTR performed in primary care is a strength of the study. We acknowledge that hand surgeons may also provide CTR services in primary care, as visiting clinicians, however, in the current study, this was not the case. CTR and other surgical procedures, such as vasectomy and minor skin surgery, are regularly performed by trained general practitioners in the UK,<sup>24</sup> and all primary care surgeons in the current study were general practitioners who already provided a CTR service.

Only one demographic factor was statistically significant: women were more likely to take longer to return to work than men. While we found inconsistent data about the effect of gender on return to work after CTR in the literature,<sup>25 26</sup> female gender has been associated with longer periods of work absence for other health conditions.<sup>27</sup> Researchers should continue to include sex as a covariate in analyses of return to work outcomes, although there is currently insufficient evidence to support any difference

**Table 3** Cox proportional hazards analyses of the association between baseline demographic, clinical and occupational factors and the duration of work absence after carpal tunnel release

				Univariable analyses			Multivariable analysis		
	N	Median work absence (days)	IQR	HR	95% CI	P value	HR	95% CI	P value
Sex (censored: 5 females; no missing data)									
Male	72	17.5	8–31	1	–	–	1	–	–
Female	118	21.5	14–35	0.79	0.59 to 1.06	0.12	0.56	0.36 to 0.88	<b>0.01</b>
Age in years (censored: 1 aged 26–40, 3 aged 41–55, 1 aged >55; no missing data)									
26–40	21	20	15–30	1.01	0.63 to 1.63	0.96	1.44	0.82 to 2.55	0.21
41–55	94	20	9–33	1	–	–	1	–	–
>55	75	17	12–35	1.03	0.76 to 1.40	0.83	1.15	0.80 to 1.65	0.44
Smoking status (censored: 1 never, 4 current/ex; 2 missing)									
Never	105	16	12–31	1	–	–	1	–	–
Current/ex	83	23	13–41	0.74	0.56 to 1.00	0.046	0.75	0.51 to 1.09	0.13
Site (censored: 5 NHS secondary care; no missing data)									
NHS primary care	72	19.5	13–33	1.18	0.87 to 1.62	0.29	1.54	1.05 to 2.25	<b>0.03</b>
NHS secondary care	92	20	12–39.5	1	–	–	1	–	–
Private facilities	26	20	7–28	1.63	1.04 to 2.54	0.03	1.46	0.87 to 2.44	0.15
Afraid of long-term hand problems* (censored: 1 no, 4 yes; 3 missing)									
No	105	19	12–31	1	–	–	1	–	–
Yes	82	20.5	13–42	0.69	0.51 to 0.93	0.01	0.93	0.67 to 1.30	0.68
CTS-6 score for side of surgery (tertiles)† (censored: 2 intermediate, 3 poor; 8 missing)									
Good (1–3.0)	65	16	10–27	1	–	–	1	–	–
Intermediate (3.2–3.8)	58	21.5	14–35	0.77	0.54 to 1.10	0.15	1.19	0.77 to 1.84	0.44
Poor (3.8–5)	59	24	13–41	0.67	0.47 to 0.97	0.03	1.04	0.65 to 1.66	0.87
Type of work contract (censored: 5 employed, 1 missing)									
Employed (permanent)	154	22	14–38	1	–	–	1	–	–
Self-employed	30	13	6–19	1.72	1.13 to 2.61	0.01	1.19	0.67 to 2.14	0.55
Zero hours/temporary	5	12	3–31	2.01	0.81 to 5.00	0.13	0.73	0.25 to 2.14	0.56
Duration of available sick pay (censored: 4 >1 month, 1 unsure; no missing data)									
≤1 month	49	16	12–29	1	–	–	1	–	–
>1 month	88	27	15–42	0.59	0.41 to 0.85	0.004	0.46	0.28 to 0.76	<b>0.002</b>
Unsure	53	16	10–23	1.19	0.80 to 1.77	0.40	1.01	0.61 to 1.66	0.97
Access to occupational health at work (censored: 1 no, 4 yes; 1 missing)									
No	110	15.5	9–29	1.77	1.31 to 2.38	<0.001	1.42	0.91 to 2.19	0.12
Yes	79	25	16–42	1	–	–	1	–	–
Expected duration of leave after carpal tunnel release (days) (censored: 1 7–14, 2 15–29, 2 ≥30; no missing data)									
<7	35	4	2–12	1	–	–	1	–	–
7–14	75	16	13–26	0.23	0.15 to 0.36	<0.001	0.27	0.16 to 0.45	<b>&lt;0.001</b>
15–29	35	29	22–39	0.12	0.07 to 0.19	<0.001	0.19	0.10 to 0.37	<b>&lt;0.001</b>
≥30	45	42	21–44	0.08	0.05 to 0.14	<0.001	0.12	0.06 to 0.23	<b>&lt;0.001</b>
MHQ work functioning score (tertiles)‡ (censored: 3 poor, 2 intermediate; no missing data)									

Continued



Table 3 Continued

	N	Median work absence (days)	IQR	Univariable analyses			Multivariable analysis		
				HR	95% CI	P value	HR	95% CI	P value
Poor (0–55)	67	20	13–35	0.68	0.47 to 0.98	0.04	0.83	0.50 to 1.40	0.49
Intermediate (60–80)	72	21	12.5–39.5	0.77	0.53 to 1.10	0.15	0.81	0.50 to 1.31	0.39
Good (81–100)	51	17	10–29	1	–	–	1	–	–
Job satisfaction§ (censored: 5 satisfied; 1 missing)									
Satisfied	169	19	11–31	1	–	–	1	–	–
Dissatisfied	19	38	21–43	0.61	0.38 to 0.99	0.04	0.67	0.38 to 1.16	0.15
Believe that the hand problem was caused by work¶ (censored: 1 no, 4 yes; 2 missing)									
No	112	19	13–31	1	–	–	1	–	–
Agree/strongly agree	76	23	10–42	0.62	0.46 to 0.85	0.003	0.82	0.57 to 1.17	0.28
Job is demanding on hands/wrists* (censored: 5 yes; no missing data)									
No	35	16	6–27	1	–	–	1	–	–
Yes	155	20	13–38	0.61	0.42 to 0.89	0.01	0.68	0.42 to 1.12	0.13
Type of work** (censored: 2 non-manual, 3 manual; 1 missing)									
Non-manual	119	18	9–31	1	–	–	1	–	–
Manual	70	23.5	14–41	0.66	0.48 to 0.89	0.01	0.97	0.57 to 1.64	0.90
Work involves target-driven pay†† (censored: 3 no, 2 yes; 10 missing)									
No	149	19	12–31	1	–	–	1	–	–
Yes	31	22	13–45	0.61	0.41 to 0.91	0.02	0.97	0.59 to 1.61	0.91
Duration of computer use at work (hours)†† (censored: 5 <1; four missing)									
<1	69	28	17–42	1	–	–	1	–	–
>1 to <4	33	16	10–31	2.20	1.43 to 3.38	<0.001	1.01	0.56 to 1.81	0.98
≥4	84	16	7–27	2.38	1.67 to 3.38	<0.001	1.85	1.08 to 3.16	<b>0.03</b>
Work involves lifting or carrying ≥10 kg (censored: 4 no, 1 yes; 5 missing)									
No	108	18.5	11–30	1	–	–	1	–	–
Yes	77	24	13–40	0.61	0.42 to 0.86	0.01	0.80	0.48 to 1.33	0.39
Work involves pushing/pulling a heavy weight††† (censored: 2 no, 3 yes; 2 missing)									
No	104	16	8.5–28.5	1	–	–	1	–	–
Yes	83	26	16–42	0.51	0.37 to 0.70	<0.001	0.97	0.61 to 1.55	0.90

Total sample size n=195. Median work absence relates to the 190 non-censored events. All analyses were adjusted for age and sex. All significant variables in the univariable analyses ( $p<0.05$ ) were entered into the multivariable model. Significant variables in the multivariable analysis are indicated in bold.

\*Reported on a 0–10 scale, dichotomised to no (0–6) and yes (7–10).<sup>13</sup>

†CTS-6 score<sup>14</sup> with data-driven tertiles.

‡MHQ work performance subscale scored from 0 to 100, higher scores indicate better perceived work performance.<sup>17</sup> Data driven tertiles.

§Reported on a 5-point scale, dichotomised to satisfied (very satisfied/satisfied/fairly satisfied) and dissatisfied (dissatisfied/very dissatisfied).

¶Reported on a 5-point scale and dichotomised to agree/strongly agree and neither agree nor disagree/disagree/disagree strongly.<sup>36</sup>

\*\*Classified using the Office for National Statistics Standard Occupational Classification 2010.<sup>18 19</sup>

††As part of the normal working day.<sup>33</sup>

CTS, carpal tunnel syndrome; MHQ, Michigan Hand Questionnaire; NHS, National Health Service.

in return to work recommendations after CTR based on sex. Further qualitative investigation is required in order to understand the context for this.

Finally, those who expected to return to work more quickly were significantly more likely to do so. It has been shown previously that patient expectations are a

**Table 4** Clinical outcomes after carpal tunnel release

	Mean score (SD)	
	Before surgery	12 weeks after surgery
CTS-6 (operated hand) *	3.3 (0.87)	1.2 (0.54)
MHQ function (operated hand) †	50 (22.1)	79 (19.4)
MHQ satisfaction with function (operated hand) †	38 (25.7)	82 (21.3)
MHQ bilateral activities of daily living †	69 (23.7)	88 (13.8)
MHQ activities of daily living (operated hand) †	65 (28.1)	87 (18.5)
No of participants (%)		
Global rating of change score		
Completely cured	–	65 (33.3)
Much better	–	98 (50.3)
Slightly better	–	13 (6.7)
Unchanged	–	2 (1.0)
Worse	–	5 (2.6)
Scar symptom severity		
Not at all troublesome	–	99 (50.8)
A little troublesome	–	63 (32.3)
Fairly troublesome	–	18 (9.2)
Very troublesome	–	2 (1.0)
Unbearable	–	0
Required postoperative antibiotics	–	10 (5.1)
Additional sick leave after first returning to work	–	12 (6.2)

Grey shading indicates the categories, which were combined to define a poor surgical outcome.

\*CTS-6 assessment of carpal tunnel syndrome symptoms.<sup>14</sup> Range 1–5: 1 equals no symptoms.

†MHQ Michigan Hand Questionnaire.<sup>17</sup> Range 0–100: 100 equals no deficit or dissatisfaction.

CTS, carpal tunnel syndrome; MHQ, Michigan Hand Questionnaire.

prominent determinant of return to work time, or other return to work outcomes, for musculoskeletal or mental health conditions.<sup>27–29</sup> The role of expectations on outcomes, including the expected and actual timing for return to work and driving after hand and wrist surgery, requires further exploration, particularly because expectations are a potentially modifiable characteristic which could be influenced by the advice provided by clinicians preoperatively.

In total, approximately a quarter of participants in this study were considered to have a poor outcome using our composite definition. We chose to use a multicomponent definition, which was deliberately very stringent, to minimise the chances of missing any harm caused by early return to work. Our rates of poorer outcomes were in fact

similar to those reported in other CTR populations.<sup>20 30 31</sup> Importantly, we found no relationship between earlier return to work and occurrence of poor outcomes within 12 weeks of CTR in this cohort study. We acknowledge that a longer follow-up duration would have aided the assessment of postoperative symptom resolution, however, this was not possible with the resources available and was not a primary objective of the study.

There are a number of limitations of the current study, including the reliance on self-reported data. Work absence is not logged on a national database in the UK and therefore could only be obtained through self-report. To minimise errors of recall, date of return to work was determined contemporaneously. The recall duration for measures of function and symptoms was limited to a maximum of 4 weeks, consistent with the outcome measures used.<sup>14 17</sup> We set out to recruit a large sample of working-aged adults undergoing CTR. Our prospectively recruited sample from 16 sites is one of the largest reported in the literature to date, with a good follow-up response rate (79%), but it remains possible that we were underpowered to detect some of the factors which may have been associated with delayed return to work. Specifically, this could result where some levels of categorical variables of interest have lower prevalence, for example, the type of work contract (>80% of participants reported that they had a permanent work contract, compared with ~15% who were self-employed). Furthermore, we acknowledge that the inclusion of a large number of variables in the development of the final model may result in model overfitting, thereby potentially limiting generalisability.

We took the approach not to impute values where data were missing. Overall, the amount of missing data was small and at the individual item level (table 3 and online supplementary material 4). Missing data were coded as such, and included in the analysis. We acknowledge that the approach taken to missing data may have resulted in biased estimates, yet if such effects are present, they are likely to be minimal due to low levels of missing data.

Following our a priori analysis plan, the association between each baseline variable and the duration of work absence was individually assessed in separate age-adjusted and sex-adjusted analyses. Only those variables which reached significance at the 5% level ( $p < 0.05$ ) were included in the multivariable model. In order to test the stability of our model, and to identify whether any potential associations had been missed, this was tested using 1% and 20% cut-offs. In both test scenarios, the findings were similar to those presented in our final model (table 3), suggesting that our model is robust. However, we acknowledge that alternative methods of selecting variables for inclusion (such as forward inclusion or backward elimination) may have yielded slightly different results, particularly for variables that were close to our significance cut-off of 5%.

The findings may not be generalisable to working populations in regions outside of central and southern England and Wales, who are employed in other industries,

or managed with a different CTR patient pathway. Steps were taken to include the main settings where CTR is performed in the UK, but we acknowledge that CTR may also be performed by other specialties. Individuals who chose to participate in the study may not be fully representative of the wider CTR population, and the observed differences between those who completed the study and those who were lost to follow-up (younger, poorer mental health, more likely manual workers) also limit generalisability. Furthermore, we acknowledge that our model explained only 46% of variation in the duration of work absence.

Endoscopic CTR has been associated with earlier return to work than open CTR,<sup>32</sup> however, it was not possible to assess this in the current study. At present, endoscopic CTR is not routinely performed in the UK.<sup>6</sup> Anecdotally, most providers will not fund the extra cost of endoscopic CTR, which requires extra equipment, longer operating times and more experienced surgeons. Recruitment to the current study was not limited to patients undergoing open CTR, but no endoscopic procedures were performed during the study at any of our sites.

All participants were presumed to have CTS as diagnosed by their treating clinician. Many studies of CTS include nerve conduction study (NCS) findings as part of their eligibility criteria, although this was not possible in the current study because NCS are not routinely recommended for pre-operative diagnosis of CTS in the UK.<sup>2</sup> Our eligibility criteria required that only people undergoing their first CTR were included and reported on in this study (so that previous experiences with CTR were not potential confounders). However, more than three-quarters of the cohort reported bilateral symptoms. The possible impact of persisting CTS symptoms in the non-operated hand on return to work also needs to be considered.

For the current study, we considered both occupational title and self-reported occupational exposures collected in a standardised questionnaire format.<sup>13 18 19 33</sup> Categorisation based on job title and industry may not accurately reflect the physical and/or psychosocial aspects of job role. Furthermore, co-occurrence of occupational exposures may be more common in some types of jobs than in others, for example, lifting >10 kg and pushing or pulling a heavy weight.

There is a need for an agreed approach to identifying and recording key physical demands and psychosocial exposures of jobs to enable consistent exploration of their impact on work and clinical outcomes following surgery or other intervention. Approaches such as job exposure matrices<sup>34</sup> could facilitate this in future research.

In summary, this large multicentre prospective cohort study investigated when participants return to work after CTR. Expectations about return to work (reported before surgery) were strongly associated with actual work absence, regardless of the job role or self-reported upper limb activities involved. Patient expectations can be influenced by many factors, but one of the most important is the

advice provided by clinicians, in particular the surgeon. This suggests that clear, consistent advice could have an important effect on duration of sick leave. To date, there is no evidence-based guidance informing clinicians what to advise about returning to different types of work after CTR. Further research is required to reach a consensus and explore whether the provision of targeted, consistent and standardised advice can alter the expected duration of work absence, reducing unnecessary sick leave, without causing adverse effects on clinical outcomes.

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### **Development of the REACTS study questionnaire: Reasoning for item inclusion**

Questions were chosen to capture information on variables that might be expected to influence return to work after CTR.

#### **Demographic factors**

General demographic information was requested including date of birth, sex and hand dominance. Other studies have found that older age was associated with poorer work outcomes after CTR [1, 2], while no clear sex effect has been shown [3, 4]. Hand dominance in relation to side of surgery is rarely reported in CTR studies, however, surgery to the non-dominant hand has been linked to quicker and more complete resolution of CTS symptoms [5].

#### **Carpal tunnel release planning**

Information was collected on the expected date of CTR, side of surgery, availability of occupational health services and the patient's expectations about time off work post-surgery. Expected duration of work absence has been identified as a determinant of return to work time in previous CTR studies [2, 6].

#### **Occupational factors**

Participants were asked to list their main occupation and the industry in which they work (examples were provided to facilitate the response). This information was processed using the UK Office for National Statistics Standard Occupational Classification [7] and Computer Assisted Structured Coding tool (Cascot) [8] to generate manual and non-manual categories. Cases where the coding match was confirmed as less than 64% were reviewed by the lead researcher and coded by hand [8]. This was checked by the department data manager and any queries resolved through discussion.

Participants were asked to categorise their employment type as: employed (permanent contract), employed (temporary/renewable contract), zero hours contract and self-employed. Our systematic review found earlier return to work times for self-employed individuals compared to those who were employed [9]; but this was only investigated in two

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studies [10, 11]. The additional sub-categories for employment type listed above and a separate question about sick-pay entitlement were included to allow the impact of work contract type to be explored [12]. Participants were also asked how many hours they usually worked each week and over how many days; this information was collected for the participant's main job and any other routine paid work. The total number of work hours per week was calculated by combining the hours for main and additional jobs.

Occupational activities that load the upper limb and potential work stressors were asked as a series of yes/no questions following the format of a recent multi-centre RCT exploring management of non-specific distal arm pain [13]. These questions originated in the Job Content Questionnaire, designed to assess psychological and physical aspects of work [14]. Activities included: computer use, tasks involving repeated wrist/finger movement, holding vibrating tools, lifting more than 5 or 10kgs, pushing/pulling a heavy weight, working with the neck flexed or rotated, and driving. Our systematic review found that manual workers took longer to return to work than non-manual workers [9] and these questions were used to determine the self-reported level of upper limb manual activity involved in each participant's job.

Potential psychosocial work stressors were also assessed. These included piecemeal work, activity targets and bonuses, and tight deadlines. As the first three items all concerned payment for results, these were combined for the analyses. Participants were also asked whether they found their main job demanding on their hands/wrist and whether their boss/colleagues were supportive. Both questions were scored on a 0-10 scale as reported previously in a study of sick leave duration after endoscopic CTR [15]. These were dichotomised as supportive (7-10) and neutral/unsupportive (0-6). A question about general job satisfaction was also included later in this section of the questionnaire, with the Likert response options: very satisfied, satisfied/fairly satisfied, dissatisfied and very dissatisfied [15, 16]. The last two options were condensed to give three categories for the analyses.

To assess self-reported work function, participants were asked to complete the work performance section of the Michigan Hand Questionnaire (MHQ) [17]. This patient reported outcome measure is frequently used in upper limb clinical practice and research and has



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been validated for use with CTS and CTR populations [18]. Permission was granted for the MHQ to be used in the study. The questionnaire asked participants to recall how much difficulty they had with general work tasks over the past four weeks in relation to problems with their hands/wrists, for example: needing to shorten their working day, taking longer to complete tasks or needing to take breaks. Using the standard scoring, each question was completed on a Likert scale of: always, often, sometimes, rarely and never, and combined to give a score from 0-100, with 100 representing no problems with work functioning [19]. Participants were also asked whether they had taken any periods of sickness absence from work over the previous four weeks, both related to the hand/wrist problem, or for any other problem.

### **General health**

Seven general health questions were included to capture information on comorbidities, physical and mental health and somatisation. Self-reported health was assessed using the first SF-36 question: In general, would you say your health is – excellent, very good, good, fair, poor [20]. This was taken from the original SF-36 version, which is free from licence charges and was dichotomised as excellent/very good/good and fair/poor for the analyses.

Participants were asked their height and weight to enable the calculation of BMI (body mass index; weight in kilograms/height in metres squared). This was categorised using standard WHO classification: underweight (BMI <18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25.0-29.9) and obese (BMI ≥30.0) [21]. Smoking status was categorised as those who have never smoked regularly, those who have smoked in the past and those who regularly smoke, with the latter two categories combined for the analyses. Previous studies have found that obesity (BMI ≥30) was linked to poorer work outcomes [1] and smoking was linked to poorer clinical outcomes after CTR [22].

A list of common health problems and their impact on general activities was assessed using the Self-Administered Comorbidity Questionnaire [23]. Participants were asked first to select whether they have any of the 14 medical conditions and if so whether this limited their activities. All medical conditions were worded in an accessible format, as evaluated by the patient advisory group. Responses were analysed as the number of comorbidities and

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the number of disabling comorbidities using the scale: 0, 1,  $\geq 2$ . Mental health was assessed using the mental health and vitality questions from the licence-free version of the SF-36 [20]. One modification was made to change the wording of the question 'Did you feel full of pep?' to 'Did you feel full of get-up-and-go?' for the UK rather than US setting. The questions were used to calculate the summary score from 0-100 (where 100 represents no disability).

Somatisation was assessed using a subset of five questions from the Four-Dimensional Symptom Questionnaire [24] as previously reported in UK cohort studies of health and employment [25] and upper limb pain in primary care [26]. The number of symptoms that were rated by the participant as at least moderately distressing were used to create the analysis categories of: 0, 1,  $\geq 2$  symptoms.

#### **Hand and wrist symptoms and function**

Katz & Stirrat hand diagrams were included for the participants to indicate where on their hand(s) they experience pain and/or tingling and numbness [27]. This self-administered tool can be used clinically as part of the CTS diagnosis process using the scoring system modified by Calfee et al. [28]. A question on symptom duration was also included and categorised as less than 3 months, 3-6 months, 6-12 months and more than a year. This was dichotomised to  $\leq 1$  year and  $> 1$  year for analysis. All participants were expected to have clinically diagnosed CTS as they were undergoing CTR, but participants were asked to answer for both hands, so that symptoms in the non-operated hand were also assessed. This was used to define bilateral or unilateral symptoms. Hand diagram scores were dichotomised according to a stringent definition of CTS (classic and probable) and unlikely CTS (possible and unlikely).

The CTS-6 questionnaire was included to assess the severity of CTS symptoms [29]. This tool is a shorter version of the Boston Carpal Tunnel Questionnaire [30] and has been assessed for use pre- and post CTR surgery. The six questions explore the severity of pain and numbness, whether this occurs during the daytime or at night, and whether this wakes the individual. Participants were asked to complete these questions separately for each hand using a 5-point Likert scale. Using the standard scoring criteria, responses for each item

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were combined to give a mean score ranging from 1-5, with 5 representing the highest severity of symptoms. If one response was missing (per hand) this was imputed using the mean score of the remaining responses [29].

Hand function was assessed using the MHQ sub-sections on unilateral hand function (asked for each hand), satisfaction with hand function (asked for each hand), and ability to perform unilateral and bilateral activities of daily living (ADLs) [17]. The MHQ summary question relating to the level of satisfaction with the appearance of each hand was also included. All questions were scored on the 5-point Likert scales provided and used the standard wording and scoring to enable comparison with other study populations. Possible scores for each sub-section range from 1-100, with 100 representing no problems or the highest level of satisfaction. Missing data were imputed according to the MHQ guidelines, which allow the scale to be calculated if more than 50% of the questions for each sub-section have been completed [19].

#### **Health beliefs**

The remaining questions related to health beliefs. Beliefs about the cause of symptoms and likely prognosis have been identified as key themes in health-seeking behaviour for CTS [31] and upper limb pain [26], and blaming oneself for the hand problem has been associated with long durations of sick leave after endoscopic CTR [15]. The participant's expectations for being able to use the affected hand normally within 3 months of surgery, fear of long-term hand problems, blaming oneself for the hand problem and the perceived level of support available from friends and family were assessed. Responses were rated on a 0-10 scale as reported by Hansen et al. [15]. All responses were converted to a unidirectional scale with 10 being the best outcome, and were dichotomised as neutral/negative response 0-6 and positive response 7-10.

Participants were also asked to agree/disagree (via a 5-point Likert scale) with a series of seven questions about the believed cause of their symptoms. Using previously reported methods, the responses were dichotomised to those who agreed (agree/strongly agree) and those who did not agree (neither agree nor disagree/disagree/disagree strongly) with each statement [26]. The first two questions were combined to generate six items: 1) I think I was



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born with a weakness in this part of my body/problems like this run in my family; 2) my problem was caused by work; 3) my problem probably wasn't caused by work, but work made it worse; 4) I have a lot of stress in my life and that has made my problem a lot worse; 5) a lack of exercise probably contributed to my problem; 6) as you get older, parts of the body wear out and problems like mine are likely [26].

Finally, the abbreviated Pain Catastrophizing Scale was included, which provides insight about the participant's pain beliefs [32]. Responses were dichotomised to those who reported catastrophising pain thoughts and feelings to at least a moderate degree in response to all questions, and those who did not.

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Site

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Please fill in today's date

d	d	m	m	y	y

## Before Your Carpal Tunnel Release Surgery



## Return to Employment After Carpal Tunnel Release Surgery (REACTS)

**ln@mrc.soton.ac.uk | 023 8077 7624**Arthritis Research UK – MRC Centre for Musculoskeletal Health and Work  
MRC Lifecourse Epidemiology Unit, University of Southampton  
Southampton General Hospital (MP 95), SO16 6YD

IRAS reference: 209840





## CONSENT FORM (IRAS reference: 209840)

You should complete this form after you have read the Participant Information Sheet.

### REACTS: Return to employment after carpal tunnel release surgery

Thank you for considering taking part in this research. If you have any questions arising from the Participant Information Sheet, please ask the research team before you decide whether to take part.

**Please initial the boxes if you agree with each statement**

1. I have read the Participant Information Sheet (version 2.0; 06.12.16) and have had the opportunity to ask questions about the study. ☐
2. I meet the criteria for being involved in this study:
  - Aged over 18 and referred for carpal tunnel release surgery
  - Routinely work in paid employment for at least 20 hours per week
  - Plan to return to work after carpal tunnel release surgery
  - Have not previously had carpal tunnel release surgery on either hand
  - Have not previously had a serious injury to the same wrist/hand that will have the carpal tunnel release operation☐
3. I agree to take part in this research and agree for my data to be used for the purposes explained in the Participant Information Sheet (version 2.0; 06.12.16). I understand that this information will be handled in accordance with the terms of the UK Data Protection Act 1998.
  - a. I agree for the REACTS research team to access pre-operative test results concerning my hand and wrist symptoms. No other information will be accessed. ☐
  - b. I agree for the REACTS research team to access my carpal tunnel release surgical record. No other information will be accessed. ☐
4. I understand that if I decide at any time during the research that I no longer wish to take part, I can notify the researchers and withdraw from the study immediately, without giving a reason. If I do, I understand that I can ask for any contribution I have already made to be removed from the study, up to the time when I have completed the final questionnaire. ☐

Signature \_\_\_\_\_ Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_  
(please print) (only to be used if we lose touch)

Postal address \_\_\_\_\_

Email address \_\_\_\_\_  
(please print)

## ADDITIONAL QUESTIONS

*Please circle one response for each question*

I prefer to receive the next two questionnaires by **Post** **Email** **Don't mind**

I prefer to receive correspondence about the study by **Post** **Email** **Don't mind**

I would like to be notified of the findings from this research **Yes** **No**

I am happy to be contacted about the next stage of the research,  
which will involve a one-off discussion with the lead researcher **Yes** **No**

I am happy to be contacted about other studies related to this  
research **Yes** **No**

When the research team receives your completed questionnaire and consent form, we will sign it below and return a copy to you for your records.

Researcher signature \_\_\_\_\_ Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Researcher name \_\_\_\_\_

University of Southampton research supervisors:

Professor Karen Walker-Bone | Professor Jo Adams | Professor David Warwick

**SECTION A: BACKGROUND****1 What is your date of birth?**

d	d	m	m	y	y

**2 Are you:**Male ☐ Female ☐ Other ☐**3 Are you:**Right handed ☐ Left handed ☐ Both ☐**4 Do you routinely carry out paid work for 20 hours or longer in a given week?**Yes ☐ No ☐

*If no, thank you for your interest in our study, however, we are only looking for individuals who carry out paid work for at least 20 hours per week. You **do not** need to complete the rest of the questionnaire, but please return it using the pre-paid envelope provided.*

**5 When do you expect to have your carpal tunnel surgery?**

Please enter the exact date if known, or provide the approximate month and year if unsure.

d	d	m	m	y	y

**6 Which hand will be operated on?**

If both hands please answer Question 6.1; if one hand, please move on to Question 7.

Right ☐ Left ☐ Both ☐**6.1 If both hands, which side will be operated on first?**Right ☐ Left ☐ Both sides operated on the same day ☐ Unsure ☐**7 Do you have access to an occupational health service through your place of work?**Yes ☐ No ☐ Unsure ☐**8 Do you expect to take any time off work following your surgery?**

If yes, please answer Question 8.1; if no, please move on to Question 9.

Yes ☐ No ☐ Unsure ☐**8.1 If you do expect to take time off work, how long do you expect to take?**

Please complete using days, weeks or months; whichever applies.

Days  Weeks  Months

## SECTION A: BACKGROUND

### 9 Have you been given any information about your operation?

If yes, please answer Question 9.1; if no, please move on to Question 10.

Yes ☐ No ☐

#### 9.1 If yes, who provided this information? Please tick all that apply.

- |  |                          |  |                          |
|--|--------------------------|--|--------------------------|
| a) Your surgeon or a member of the surgical team | <input type="checkbox"/> | f) Occupational health nurse or doctor | <input type="checkbox"/> |
| b) Hospital nurse                                | <input type="checkbox"/> | g) Employer                            | <input type="checkbox"/> |
| c) GP or practice nurse                          | <input type="checkbox"/> | h) Friend or family member             | <input type="checkbox"/> |
| d) Hand therapist                                | <input type="checkbox"/> | i) Internet                            | <input type="checkbox"/> |
| e) Physiotherapist or occupational therapist     | <input type="checkbox"/> | j) Other ( <i>please specify</i> )     | <input type="checkbox"/> |

### 10 Have you been given any information about returning to work after your surgery?

If yes, please answer the rest of Question 10; if no, please move on to Question 11.

Yes ☐ No ☐

#### 10.1 If yes, who provided this information? Please tick all that apply.

- |  |                          |  |                          |
|--|--------------------------|--|--------------------------|
| a) Your surgeon or a member of the surgical team | <input type="checkbox"/> | f) Occupational health nurse or doctor | <input type="checkbox"/> |
| b) Hospital nurse                                | <input type="checkbox"/> | g) Employer                            | <input type="checkbox"/> |
| c) GP or practice nurse                          | <input type="checkbox"/> | h) Friend or family member             | <input type="checkbox"/> |
| d) Hand therapist                                | <input type="checkbox"/> | i) Internet                            | <input type="checkbox"/> |
| e) Physiotherapist or occupational therapist     | <input type="checkbox"/> | j) Other ( <i>please specify</i> )     | <input type="checkbox"/> |

#### 10.2 What advice were you given?

If this advice came from more than one source, please indicate who advised what.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



## SECTION B: WORK

**12 What is your MAIN occupation at the moment (e.g. secretary, teacher, builder etc.)?**

**13 And in what industry do you work (e.g. farming, shipyard, car factory, shoe shop, hospital, insurance office etc)?**

**14 Which of the following best describes your present work situation for your MAIN occupation? Please tick one box.**

- |  |                          |                                    |                          |
|--|--------------------------|------------------------------------|--------------------------|
| a) Employed (permanent contract)           | <input type="checkbox"/> | d) Self-employed                   | <input type="checkbox"/> |
| b) Employed (temporary/renewable contract) | <input type="checkbox"/> | e) Other ( <i>please specify</i> ) | <input type="checkbox"/> |
| c) Zero hours contract                     | <input type="checkbox"/> |                                    |                          |

**15 On average, how many hours per week do you normally work in your main occupation?**

hours

**16 On average, how many days per week do you normally work in your main occupation?**

days

**17 Do you have any other paid work?**

If yes, please answer Question 17.1; if no, please move on to Question 18.

Yes ☐ No ☐

**17.1 If yes, on average, how many hours a week do you work in other paid jobs?**  hours

**18 Does an average day at work in your MAIN job normally involve any of the following? Please tick one box for each question.**

- |   | Yes                      | No                       |
|---|--------------------------|--------------------------|
| a) Piecework in which you are paid according to the number of articles or tasks you or your team make or finish in the day? | <input type="checkbox"/> | <input type="checkbox"/> |
| b) A target number of articles or tasks that you or your team are expected to make or finish in the day?                    | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Payment of a bonus if you make or finish more than an agreed number of articles/tasks in the day?                        | <input type="checkbox"/> | <input type="checkbox"/> |
| d) Working to tight deadlines   | <input type="checkbox"/> | <input type="checkbox"/> |
| e) Use of a computer keyboard or mouse for longer than 1 hour in total?   | <input type="checkbox"/> | <input type="checkbox"/> |

## SECTION B: WORK

	Yes	No
f) Use of a computer keyboard or mouse for longer than 4 hours in total?	<input type="checkbox"/>	<input type="checkbox"/>
g) Other tasks involving repeated movements of the wrist or fingers for longer than 4 hours in total? <i>(Please indicate which tasks)</i>	<input type="checkbox"/>	<input type="checkbox"/>
-----		
h) Working with a powered tool that makes your hand(s) or arm(s) vibrate (e.g. chain saw, pneumatic drill)?	<input type="checkbox"/>	<input type="checkbox"/>
i) Working with your hand(s) above shoulder height for longer than 1 hour in total?	<input type="checkbox"/>	<input type="checkbox"/>
j) Lifting or carrying weights of 5 kg (11 lbs) or more in one hand (e.g. a tool bag or heavy briefcase)?	<input type="checkbox"/>	<input type="checkbox"/>
k) Lifting or carrying a weight of 10 kg (22 lbs) or more?	<input type="checkbox"/>	<input type="checkbox"/>
l) Tasks involving pushing or pulling a heavy weight?	<input type="checkbox"/>	<input type="checkbox"/>
m) Working for longer than two hours in total with your neck bent forward?	<input type="checkbox"/>	<input type="checkbox"/>
n) Working for longer than half an hour in total with your neck twisted e.g. when looking to one side?	<input type="checkbox"/>	<input type="checkbox"/>
o) Driving for more than an hour?	<input type="checkbox"/>	<input type="checkbox"/>

### 19 Do you find your MAIN job demanding on your hands/wrists?

Please circle one number, where 0 represents not at all, and 10 represents very much.

0	1	2	3	4	5	6	7	8	9	10	
Not at all											Very much

### 20 Does your MAIN employer (or boss/colleagues if self-employed) know about your hand/wrist problem?

If yes, please answer Question 20.1; if no, or not applicable, please move on to Question 21.

Yes ☐ No ☐ N/A self-employed and work alone ☐

### 20.1 Is your MAIN employer (or boss/colleagues if self-employed) supportive of your hand/wrist problem?

Please circle one number, where 0 represents not at all, and 10 represents very much

0	1	2	3	4	5	6	7	8	9	10	
Not at all											Very much

## SECTION B: WORK

**21** The following questions refer to how you did in your MAIN job during the **past 4 weeks**.

Please tick one box for each question.

**How much of the time during the past 4 weeks ...**

Always    Often    Sometimes    Rarely    Never

- |    |   |                          |                          |                          |                          |                          |
|----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| a) | Were you unable to do your work because of problems with your hand(s) / wrist(s)?                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) | Did you have to shorten your work day because of problems with your hand(s) / wrists(s)?            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) | Did you have to take breaks at work because of problems with your hand(s) / wrists(s)?              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d) | Did you get less done because of problems with your hand(s) / wrist(s)?                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) | Did you take longer to do the tasks in your work because of problems with your hand(s) / wrists(s)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**22** During the **past 4 weeks**, how much time have you missed from your MAIN job for the following reasons?

Please write 0 if you have not missed any time from work during this period. You can answer in days or hours, whichever applies.

- |    |   |   |      |    |   |       |
|----|---|---|------|----|---|-------|
| a) | Time missed because of the problem with your hand(s)/wrist(s) | <input type="text"/> <input type="text"/> | Days | or | <input type="text"/> <input type="text"/> | Hours |
| b) | Time missed because of any other problem                      | <input type="text"/> <input type="text"/> | Days | or | <input type="text"/> <input type="text"/> | Hours |

**23** If you fell ill and were off work, how long could you get your normal full pay (excluding bonuses)?

Please tick the option that best represents your MAIN job.

- |    |                    |                          |    |                    |                          |
|----|--------------------|--------------------------|----|--------------------|--------------------------|
| a) | Less than one week | <input type="checkbox"/> | d) | More than 6 months | <input type="checkbox"/> |
| b) | 1 – 4 weeks        | <input type="checkbox"/> | e) | Not sure           | <input type="checkbox"/> |
| c) | 1 – 6 months       | <input type="checkbox"/> |    |                    |                          |

**24** How satisfied are you with your MAIN job as a whole, taking everything into consideration? This includes your salary, career possibilities, management, colleagues etc. Please tick one box.

- |    |                            |                          |    |                   |                          |
|----|----------------------------|--------------------------|----|-------------------|--------------------------|
| a) | Very satisfied             | <input type="checkbox"/> | c) | Dissatisfied      | <input type="checkbox"/> |
| b) | Satisfied/fairly satisfied | <input type="checkbox"/> | d) | Very dissatisfied | <input type="checkbox"/> |

## SECTION C: GENERAL HEALTH

### 25 In general, would you say your health is:

- |              |                          |         |                          |
|--------------|--------------------------|---------|--------------------------|
| a) Excellent | <input type="checkbox"/> | d) Fair | <input type="checkbox"/> |
| b) Very good | <input type="checkbox"/> | e) Poor | <input type="checkbox"/> |
| c) Good      | <input type="checkbox"/> |         |                          |

### 26 What is your height? Please answer in either feet and inches or centimetres.

feet  inches **or**  cms

### 27 What is your weight? Please answer in either stones and pounds or kilograms.

stones  lbs **or**  kgs

### 28 Do you, or have you ever, smoked regularly? Please tick one box.

- |  |                          |                      |                          |
|--|--------------------------|----------------------|--------------------------|
| a) I have never smoked regularly                                   | <input type="checkbox"/> | c) I regularly smoke | <input type="checkbox"/> |
| b) I have smoked in the past, but do not currently smoke regularly | <input type="checkbox"/> |                      |                          |

### 29 The following is a list of common health problems. Please indicate if you currently have, or don't have, the problem listed in part 1. If you have the problem, please answer the corresponding question in part 2.

Please answer all questions in part 1.

HEALTH PROBLEM	PART 1 Do you have the problem?		PART 2 Does it limit your activities?	
	NO	YES	NO	YES
	(if yes move to part 2) →			
a) Heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) High blood pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Lung disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Ulcer or stomach disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Kidney disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Liver disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Thyroid disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Anaemia or other blood disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION C: GENERAL HEALTH

HEALTH PROBLEM continued...	Do you have the problem?		Does it limit your activities?	
	NO	YES (if yes move to part 2) →	NO	YES
k) Depression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Osteoarthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Rheumatoid arthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**29.1** Please list any other medical problems that have not been mentioned.

Does it limit  
your activities?

	NO	YES
o) _____	<input type="checkbox"/>	<input type="checkbox"/>
p) _____	<input type="checkbox"/>	<input type="checkbox"/>
q) _____	<input type="checkbox"/>	<input type="checkbox"/>

**30** The following questions are about how you feel and how things have been with you during the **past 4 weeks**. For each question, please give the answer that comes closest to the way you have been feeling. Please tick one box for each row.

How much of the time during the past 4 weeks ...	All of the time	Most of the time	A good bit of the time	Some of the time	A little bit of the time	None of the time
a) Did you feel full of 'get-up-and-go'?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have you been a very nervous person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have you felt so down in the dumps that nothing could cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you felt downhearted and blue?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Did you feel worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Have you been a happy person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Did you feel tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SECTION C: GENERAL HEALTH

31 Below is a list of problems that people sometimes have. Please read each one carefully and tick the box that best describes how much that problem has distressed or bothered you during the past 7 days, including today?  
Please tick one box for each row.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
a) Faintness or dizziness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Pains in the heart or chest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Nausea or upset stomach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Trouble getting your breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hot or cold spells	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: HAND AND WRIST FUNCTION

In the past 7 days, have you experienced any pain, tingling (pins and needles) or numbness (loss of sensation) in your RIGHT hand or wrist?

32 Please mark where on your hand/wrist you experienced these symptoms using the key below.  
If you do not have any symptoms in your right hand, please move on to Question 34.



Pain



Tingling or numbness

RIGHT HAND



33 How long ago did the first of these symptoms begin? Please tick one box.

- |                       |                          |                     |                          |
|-----------------------|--------------------------|---------------------|--------------------------|
| a) Less than 3 months | <input type="checkbox"/> | c) 6 – 12 months    | <input type="checkbox"/> |
| b) 3 – 6 months       | <input type="checkbox"/> | d) More than a year | <input type="checkbox"/> |

SECTION D: HAND AND WRIST FUNCTION

In the *past 7 days*, have you experienced any pain, tingling (pins and needles) or numbness (loss of sensation) in your **LEFT** hand or wrist?

**34** Please mark where on your hand/wrist you experienced these symptoms using the key below.  
If you do not have any symptoms in your right hand, please move on to Question 36.

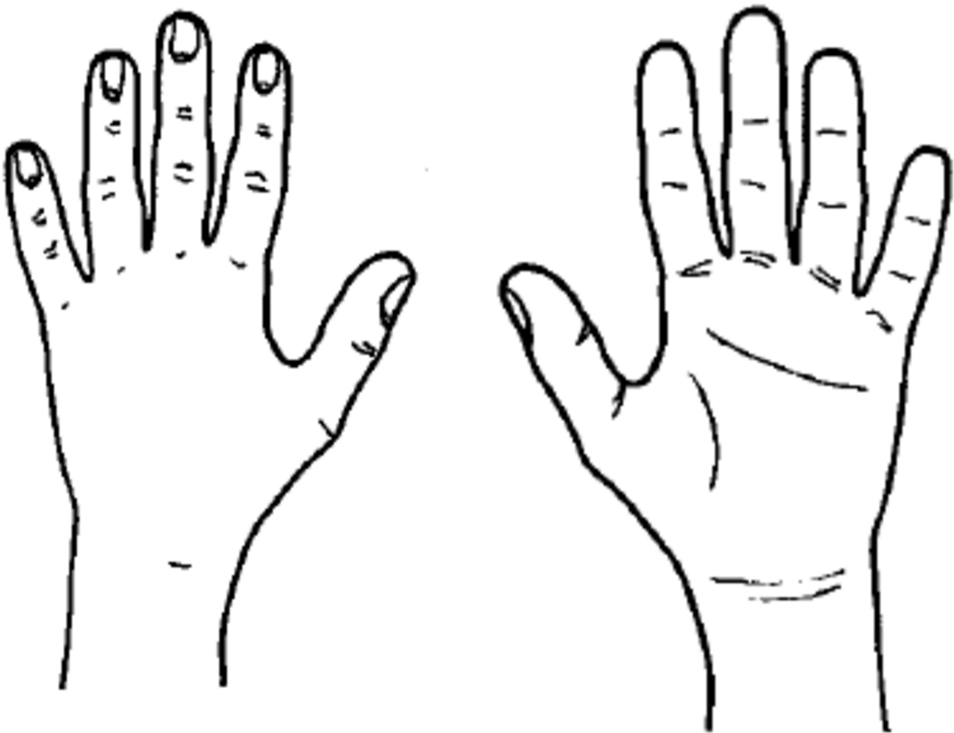


Pain



Tingling or numbness

LEFT HAND



**35** How long ago did the first of these symptoms begin? Please tick one box.

a) Less than 3 months ☐

b) 3 – 6 months ☐

c) 6 – 12 months ☐

d) More than a year ☐

## SECTION D: HAND AND WRIST FUNCTION

The following questions refer to your symptoms over the ***last 7 days***.

- 36** Please answer for each hand, even if you only have problems with one side.  
Please tick one box for each row.

<b>36.1</b>	<b>How severe were the following symptoms in your <u>RIGHT</u> hand?</b>	<b>None</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Very severe</b>
a)	Pain at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Pain during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Numbness or tingling at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Numbness or tingling during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>How often did the following symptoms in your <u>RIGHT</u> hand wake you up at night?</b>	<b>Never</b>	<b>Once</b>	<b>2 or 3 times</b>	<b>4 or 5 times</b>	<b>More than 5 times</b>
e)	Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Numbness or tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>36.2</b>	<b>How severe were the following symptoms in your <u>LEFT</u> hand?</b>	<b>None</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Very severe</b>
a)	Pain at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Pain during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Numbness or tingling at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Numbness or tingling during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>How often did the following symptoms in your <u>LEFT</u> hand wake you up at night?</b>	<b>Never</b>	<b>Once</b>	<b>2 or 3 times</b>	<b>4 or 5 times</b>	<b>More than 5 times</b>
e)	Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Numbness or tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 37** This question refers to the appearance (look) of your hand during the ***past 7 days***. Please tick one box for each hand.

		<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
a)	I am satisfied with the appearance (look) of my <b><u>RIGHT</u></b> hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	I am satisfied with the appearance (look) of my <b><u>LEFT</u></b> hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION D: HAND AND WRIST FUNCTION

**38** Please answer the following questions on a scale of 0-10, where 0 represents not at all, and 10 represents very much. Please circle one number for each question.

**38.1** Do you think that you will be able to use your hand normally 3 months after the operation?

0 1 2 3 4 5 6 7 8 9 10

**38.2** Are you afraid of having long-term problems with your hand?

0 1 2 3 4 5 6 7 8 9 10

**38.3** Do you blame yourself for your hand problem?

0 1 2 3 4 5 6 7 8 9 10

**38.4** Are your family and friends supportive of your hand problem?

0 1 2 3 4 5 6 7 8 9 10

**39** The following statements describe people's beliefs about their health problems. Please indicate whether you agree or disagree with them in relation to the problems you have with your hand(s) or wrist(s).

Please tick the box which most closely reflects how you feel for each statement.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
a) Problems like this run in my family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I think I was born with a weakness or underlying problem in this part of my body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) My problem was caused by work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Work probably didn't cause my problem, but it made it worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I have a lot of stress in my life and that has made my problem a lot worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I think a lack of exercise probably contributed to my problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) As you get older, parts of the body start to wear out and problems like mine are likely to occur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## SECTION D: HAND AND WRIST FUNCTION

**We are interested in the types of thoughts and feelings that you have when you are in pain. The following statements describe different thoughts and feelings that may be associated with pain. Please indicate the degree to which you have these thoughts and feelings when you are experiencing pain.**

**40** Please tick one box for each statement.

	Not at all	To a slight degree	To a moderate degree	To a great degree	All of the time
a) I keep thinking about how badly I want the pain to stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) It's terrible and I think it's never going to get any better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I become afraid that the pain may get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I anxiously want the pain to go away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions refer to the function of your hands/wrists during the ***past 7 days***. Please answer all questions for the right and left sides, even if you do not experience any problems. Please tick one box for each question.

<b>41 RIGHT SIDE</b>	Very well	Well	Adequately	Poorly	Very poorly
a) Overall, how well did your <b>right</b> hand work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) How well did your <b>right</b> fingers move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) How well did your <b>right</b> wrist move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very good	Good	Fair	Poor	Very poor
d) How was the strength in your <b>right</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) How was the sensation (feeling) in your <b>right</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>42 LEFT SIDE</b>	Very well	Well	Adequately	Poorly	Very poorly
a) Overall, how well did your <b>left</b> hand work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) How well did your <b>left</b> fingers move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) How well did your <b>left</b> wrist move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very good	Good	Fair	Poor	Very poor
d) How was the strength in your <b>left</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) How was the sensation (feeling) in your <b>left</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION D: HAND AND WRIST FUNCTION

The following questions refer to the ability of your hands to do certain tasks during the **past 7 days**. If you do not do a certain task, please estimate the difficulty you would have in performing it. Please tick one box for every activity.

### 43 How difficult was it for you to perform the following activities using your RIGHT HAND?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Turn a door knob	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Pick up a coin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Hold a glass of water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Turn a key in a lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hold a frying pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 44 How difficult was it for you to perform the following activities using your LEFT HAND?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Turn a door knob	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Pick up a coin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Hold a glass of water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Turn a key in a lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hold a frying pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 45 How difficult was it for you to perform the following activities using BOTH HANDS?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Open a jar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Button a shirt/blouse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Eat with a knife/fork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Carry a grocery bag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Wash dishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Wash your hair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Tie shoelaces/knots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION D: HAND AND WRIST FUNCTION

The following questions refer to your satisfaction with your hands/wrists during the ***past 7 days***. Please tick one box for each question

### 46 How satisfied were you with your **RIGHT** hand/wrist during the ***past 7 days***?

RIGHT HAND	Very satisfied	Somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisfied	Very dissatisfied
a) Overall function of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Movement of the fingers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Movement of your wrist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Strength of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Pain level of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Sensation (feeling) of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 47 How satisfied were you with your **LEFT** hand/wrist during the ***past 7 days***?

LEFT HAND	Very satisfied	Somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisfied	Very dissatisfied
a) Overall function of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Movement of the fingers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Movement of your wrist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Strength of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Pain level of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Sensation (feeling) of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Thank you for completing this questionnaire!**  
**Please return it to the REACTS team**  
**using the pre-paid envelope.**



If you have any questions, or would like any additional information, please contact  
 Lisa Newington on:

[ln@mrc.soton.ac.uk](mailto:ln@mrc.soton.ac.uk) | 023 8077 7624 | 07866 997732

REACTS ID:

## One Month After Your Carpal Tunnel Release Surgery



## Return to Employment After Carpal Tunnel Release Surgery (REACTS)

**ln@mrc.soton.ac.uk | 023 8077 7624**Arthritis Research UK – MRC Centre for Musculoskeletal Health and Work  
MRC Lifecourse Epidemiology Unit, University of Southampton  
Southampton General Hospital (MP 95), SO16 6YD

IRAS reference: 209840

**SECTION A: ABOUT YOUR OPERATION**

Please fill in today's date

d	d	m	m	y	y	y	y

**1 What was the date of your carpal tunnel release surgery?**

d	d	m	m	y	y	y	y

**2 Which side was operated on? Please tick one box.**

Right

☐

Left

☐

Both

☐**3 What type of anaesthetic did you have? Please tick one box.**

a) General anaesthetic (you were sent to sleep)

☐

b) Local or regional anaesthetic (your arm was made numb, but you were still awake)

☐c) Other (*please specify*)☐

d) Unsure

☐**4 How long did you need to stay in the hospital/clinic after your operation?**  
Please tick one box (and specify the number of nights, if applicable).

a) I went home the same day

☐

b) I needed to stay overnight (one night only)

☐

c) I needed to stay for more than one night

☐

(Please specify for how long)

--	--

nights



## SECTION A: ABOUT YOUR OPERATION

### 5 Have you used any of the following services specifically for your operated hand(s) since your surgery?

Please give the number of visits for each service, and the date(s) attended, if known.

	I used this service in the NHS		I used this service privately	
	Number of visits	Dates attended, if known	Number of visits	Dates attended, if known
a) Your surgeon, or one of the surgical team				
b) GP or practice nurse				
c) Hospital nurse				
d) Pharmacist				
e) Hand therapist				
f) Other physiotherapist or occupational therapist				
g) Chiropractor or osteopath				
h) Occupational health nurse or doctor				
i) Accident and emergency (A&E) or minor injuries unit				
j) Other ( <i>please specify</i> )				

**SECTION A: ABOUT YOUR OPERATION**

- 6 Have you taken any antibiotics for an infection in your surgical wound?**  
Please do not include any antibiotics you were prescribed at the time of your operation.

Yes ☐No ☐

**If yes, what date did you start taking the antibiotics?**

d	d	m	m	y	y	y	y

- 7 Have you been admitted to hospital because of a problem with your operated hand(s)?** If yes, please answer the rest of Question 7; if no, please move on to Question 8.

Yes ☐No ☐

**7.1 If yes, when were you first admitted?**

d	d	m	m	y	y	y	y

**7.2 How many nights did you stay in hospital?**

Please answer 0 if you didn't stay overnight.

--	--

 nights

**7.3 Did you require another operation?**

Yes ☐ No ☐

- 8 Have you been advised that you may need a carpal tunnel release for your other hand in the future?**

If yes, please answer Question 8.1; if no, please move on to Question 9.

Yes ☐No ☐

**8.1 If yes, when are you expecting to have this surgery?** Please tick one box.

- |                          |                          |                        |                          |           |                          |
|--------------------------|--------------------------|------------------------|--------------------------|-----------|--------------------------|
| a) In less than 2 months | <input type="checkbox"/> | c) In 6-11 months      | <input type="checkbox"/> | e) Unsure | <input type="checkbox"/> |
| b) In 2-5 months         | <input type="checkbox"/> | d) In more than a year | <input type="checkbox"/> |           |                          |

- 9 If you would like to give us any other information about your operation, or the healthcare services you have used, please do so here:**

.....

.....

.....

.....

.....

.....

**SECTION B: WORK****10 Compared to before your surgery, which of the following best describes your current work situation? Please tick one box.**

- a) Returned to the same job, work duties and hours – **please go to Question 14** ☐
- b) Returned to the same job, with altered duties or hours – **please go to Question 14** ☐
- c) Started a new job – **please go to Question 11** ☐
- d) Not yet returned to work, but plan to return in the future – **please go to Question 12** ☐
- e) Do not plan to return to work – **please go to Question 13** ☐

**11 Thinking about your new job:**

**11.1 What is your main occupation now (e.g. secretary, teacher, builder etc.)?**

.....

**11.2 In what industry do you work (e.g. farming, shipyard, car factory, shoe shop, hospital, insurance office etc.)?**

.....

**11.3 Did you change jobs because of your hand/wrist problem?**  
Please tick one box.

- a) Yes, my hand/wrist problem was the main reason for my job change ☐
- b) Yes, my hand/wrist problem was one of several reasons for my job change ☐
- c) No, my job change was nothing to do with my hand/wrist problem ☐
- d) Other, please specify ☐

.....

.....

**Please go to Question 14**

## SECTION B: WORK

12 If you have not yet returned to work, when do you think you might be able to return? Please give an estimated date if you are unsure.

d	d	m	m	y	y	y	y

**12.1 Have you discussed when to return to work with anyone?**  
If yes, please answer the rest of Question 12; if no, please move on to Question 21.

Yes ☐ No ☐

**12.2 If yes, who have you discussed this with?** Please tick all that apply.

- |  |                          |   |                          |
|--|--------------------------|---|--------------------------|
| a) Your surgeon or a member of the surgical team | <input type="checkbox"/> | f) Occupational health nurse or doctor                  | <input type="checkbox"/> |
| b) Hospital nurse                                | <input type="checkbox"/> | g) Employer or manager (or colleagues if self-employed) | <input type="checkbox"/> |
| c) GP or practice nurse                          | <input type="checkbox"/> | h) Friend or family member                              | <input type="checkbox"/> |
| d) Hand therapist                                | <input type="checkbox"/> | i) Other ( <i>please specify</i> )                      | <input type="checkbox"/> |
| e) Physiotherapist or occupational therapist     | <input type="checkbox"/> | .....   |                          |

**12.3 Since your operation, have you been given any specific advice about when and how to return to work?** This could include any activities to avoid or timescales to follow. Please list any advice here, including who gave you this advice:

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**Please go to Question 21**

**SECTION B: WORK****13 If you do not plan to return to work, what is the main reason for this decision?**  
Please tick one box.

- a) Retirement ☐
- b) Redundancy ☐
- c) Position/work no longer available ☐
- d) Unable to do your work because of your problem with your hand(s)/wrist(s) ☐
- e) Unable to do your work because of any other problem ☐
- f) Other (*please specify*) ☐
- .....
- .....
- .....
- .....

**13.1 Have you been advised not to return to work by anyone?**  
If yes, please answer Question 13.2; if no, please move on to Question 21.Yes ☐No ☐**13.2 If yes, who by?** Please tick all that apply.

- |  |                          |   |                          |
|--|--------------------------|---|--------------------------|
| a) Your surgeon or a member of the surgical team | <input type="checkbox"/> | f) Occupational health nurse or doctor                  | <input type="checkbox"/> |
| b) Hospital nurse                                | <input type="checkbox"/> | g) Employer or manager (or colleagues if self-employed) | <input type="checkbox"/> |
| c) GP or practice nurse                          | <input type="checkbox"/> | h) Friend or family member                              | <input type="checkbox"/> |
| d) Hand therapist                                | <input type="checkbox"/> | i) Other ( <i>please specify</i> )                      | <input type="checkbox"/> |
| e) Physiotherapist or occupational therapist     | <input type="checkbox"/> | .....   |                          |
- .....

**Please go to Question 21**

## SECTION B: WORK

### 14 When did you first return to work after your carpal tunnel release surgery?

d	d	m	m	y	y	y	y

### 15 How much work-time did you miss between the date of your surgery and the date you first returned to work?

Please include all work-time missed, even if this had been pre-arranged with your employer, or was taken as annual leave. You can answer in hours, days or weeks, whichever applies.

			hours			days			weeks
--	--	--	-------	--	--	------	--	--	-------

#### 15.1 Was any of this time paid?

Please tick one box (and provide the amount of time, if applicable).

- a) Yes, all of my time away from work was paid ☐
- b) Yes, some of my time away from work was paid ☐  
*(please specify how much time was paid, you can use hours, days or weeks, whichever applies)*
- |  |  |  |       |  |  |      |  |  |       |
|--|--|--|-------|--|--|------|--|--|-------|
|  |  |  | hours |  |  | days |  |  | weeks |
|--|--|--|-------|--|--|------|--|--|-------|
- c) No, none of my time off was paid ☐
- d) Not sure ☐

### 16 Since your surgery, have you discussed when to return to work with anyone?

If yes, please answer the rest of Question 16; if no, please move on to Question 17.

Yes ☐ No ☐

#### 16.1 If yes, who did you discuss this with? Please tick all that apply.

- |  |                          |   |                          |
|--|--------------------------|---|--------------------------|
| a) Your surgeon or a member of the surgical team | <input type="checkbox"/> | f) Occupational health nurse or doctor                  | <input type="checkbox"/> |
| b) Hospital nurse                                | <input type="checkbox"/> | g) Employer or manager (or colleagues if self-employed) | <input type="checkbox"/> |
| c) GP or practice nurse                          | <input type="checkbox"/> | h) Friend or family member                              | <input type="checkbox"/> |
| d) Hand therapist                                | <input type="checkbox"/> | i) Other <i>(please specify)</i>                        | <input type="checkbox"/> |
| e) Physiotherapist or occupational therapist     | <input type="checkbox"/> | .....   |                          |
| .....  |                          |   |                          |



## SECTION B: WORK

**16.2 Please list any advice you have been given (since your surgery) about when and how to return to work?**

This could include any activities to avoid or timescales to follow. If this advice came from more than one place, please indicate who advised what.

.....

.....

.....

.....

.....

.....

**17 Since returning to work after your operation, have you needed to take any time off work because of a problem with your operated hand(s)/wrist(s)?**

If yes, please answer Question 17.1; if no, please move on to Question 18.

Yes ☐

No ☐

**17.1 If yes, how much time did you take off work?**

Please answer in days or hours, whichever applies.

hours

days

weeks

**18 When you first returned to work after your surgery, did you work shorter hours than would be normal for your job as a direct result of your operation?**

If yes, please answer the rest of Question 18; if no, please move on to Question 19.

Yes ☐

No ☐

**18.1 Have you since gone back to working full hours?**

If yes, please answer Question 18.2; if no, please move on to Question 19.

Yes ☐

No ☐

**18.2 If yes, when did you return to full working hours?**

If you do not know the exact date, approximately how many weeks did you work reduced hours?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d	d	m	m	y	y	y	y

a) Less than a week ☐

c) More than 2 weeks, but less than 3 weeks ☐

b) 1 – 2 weeks ☐

d) 3 weeks or longer ☐

SECTION B: WORK

**19 When you first returned to work after your surgery, did you need to alter or avoid any of your usual work duties as a direct result of your operation?**  
If yes, please answer the rest of Question 19; if no, please move on to Question 20.

Yes ☐ No ☐

**19.1 Have you since gone back to full duties?**  
If yes, please answer Question 19.2; if no, please move on to Question 20.

Yes ☐ No ☐

**If yes, when did you return to full working duties?**  
**19.2** If you do not know the exact date, approximately how many weeks did you have altered work duties?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d	d	m	m	y	y	y	y

- a) Less than a week

☐
- c) More than 2 weeks, but less than 3 weeks

☐
- b) 1 – 2 weeks

☐
- d) 3 weeks or longer

☐

**20 If you would like to give us any additional information about returning to work, please do so here:**

## SECTION C: HAND AND WRIST SYMPTOMS

**21** The following questions refer to your symptoms over the last 7 days. Please answer for each hand. Please tick one box for each row.

<b>21.1</b>	<b>How severe were the following symptoms in your <u>RIGHT</u> hand?</b>	<b>None</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Very severe</b>
a)	Pain at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Pain during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Numbness or tingling at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Numbness or tingling during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>How often did the following symptoms in your <u>RIGHT</u> hand wake you up at night?</b>	<b>Never</b>	<b>Once</b>	<b>2 or 3 times</b>	<b>4 or 5 times</b>	<b>More than 5 times</b>
e)	Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Numbness or tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>21.2</b>	<b>How severe were the following symptoms in your <u>LEFT</u> hand?</b>	<b>None</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Very severe</b>
a)	Pain at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Pain during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Numbness or tingling at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Numbness or tingling during the daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>How often did the following symptoms in your <u>LEFT</u> hand wake you up at night?</b>	<b>Never</b>	<b>Once</b>	<b>2 or 3 times</b>	<b>4 or 5 times</b>	<b>More than 5 times</b>
e)	Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Numbness or tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**22** This question refers to the appearance (look) of your hands during the past 7 days. Please tick one box for each hand.

		<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
a)	I am satisfied with the appearance (look) of my <u>RIGHT</u> hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	I am satisfied with the appearance (look) of my <u>LEFT</u> hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION C: HAND AND WRIST SYMPTOMS**

**23** How do you rate your symptoms in your operated hand(s) now, compared to before your surgery? Please tick one box.

- a) Completely cured ☐      c) Unchanged ☐      e) Worse ☐  
b) Much better ☐      d) Slightly better ☐

**24** The following questions ask specifically about your scar. Please think about your scar over the **past 7 days**.

**24.1** Has your scar been itchy?

If yes, please continue; if no, please move on to Question 24.2

Yes ☐      No ☐

Yes, it was itchy:      Sometimes ☐      Often ☐      Always ☐

And when it was itchy, it was:      Slightly itchy ☐      Fairly itchy ☐      Very itchy ☐

**24.2** Has your scar caused you pain?

If yes, please continue; if no, please move on to Question 24.3

Yes ☐      No ☐

Yes, it was painful:      Sometimes ☐      Often ☐      Always ☐

And when it hurt, it was:      Slightly painful ☐      Fairly painful ☐      Very painful ☐

**24.3** Has your scar been uncomfortable?

If yes, please continue; if no, please move on to Question 24.4

Yes ☐      No ☐

Yes, it was uncomfortable:      Sometimes ☐      Often ☐      Always ☐

And when it was uncomfortable, it was:      Slightly uncomfortable ☐      Fairly uncomfortable ☐      Very uncomfortable ☐

**SECTION C: HAND AND WRIST SYMPTOMS****24.4 Has your scar felt numb?**

If yes, please continue; if no, please move on to Question 24.5

Yes ☐No ☐

Yes, it was numb:

Sometimes ☐Often ☐Always ☐And when it felt numb,  
it was:Slightly numb ☐Fairly numb ☐Very numb ☐**24.5 Have you had odd sensations in your scar e.g. tightening, pulling or pins and needles?**

If yes, please continue; if no, please move on to Question 24.6

Yes ☐No ☐Yes, I have had odd  
sensations:Sometimes ☐Often ☐Always ☐**24.6 Has your scar caught on things e.g. clothing?**

If yes, please continue; if no, please move on to Question 24.7

Yes ☐No ☐Yes, it has caught on  
things:Sometimes ☐Often ☐Always ☐**24.7 Overall, how troublesome are the symptoms from your scar?**

Please tick one box.

Not at all  
troublesome☐A little  
troublesome☐Fairly  
troublesome☐Very  
troublesome☐

Unbearable

☐

## SECTION D: HAND AND WRIST FUNCTION

The following questions refer to the function of your hands/wrists during the ***past 7 days***. Please answer all questions for the right and left sides, even if you do not experience any problems. Please tick one box for each question.

25 RIGHT SIDE	Very well	Well	Adequately	Poorly	Very poorly
a) Overall, how well did your <b>right</b> hand work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) How well did your <b>right</b> fingers move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) How well did your <b>right</b> wrist move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very good	Good	Fair	Poor	Very poor
d) How was the strength in your <b>right</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) How was the sensation (feeling) in your <b>right</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26 LEFT SIDE	Very well	Well	Adequately	Poorly	Very poorly
a) Overall, how well did your <b>left</b> hand work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) How well did your <b>left</b> fingers move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) How well did your <b>left</b> wrist move?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very good	Good	Fair	Poor	Very poor
d) How was the strength in your <b>left</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) How was the sensation (feeling) in your <b>left</b> hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions refer to the ability of your hands to do certain tasks during the ***past 7 days***. If you do not do a certain task, please estimate the difficulty you would have in performing it. Please tick one box for every activity.

### 27 How difficult was it for you to perform the following activities using your RIGHT HAND?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Turn a door knob	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Pick up a coin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Hold a glass of water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Turn a key in a lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hold a frying pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## SECTION D: HAND AND WRIST FUNCTION

### 28 How difficult was it for you to perform the following activities using your LEFT HAND?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Turn a door knob	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Pick up a coin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Hold a glass of water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Turn a key in a lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hold a frying pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 29 How difficult was it for you to perform the following activities using BOTH HANDS?

	Not at all difficult	A little difficult	Somewhat difficult	Moderately difficult	Very difficult
a) Open a jar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Button a shirt/blouse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Eat with a knife/fork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Carry a grocery bag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Wash dishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Wash your hair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Tie shoelaces/knots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions refer to your satisfaction with your hands/wrists during the **past 7 days**. Please tick one box for each question.

### 30 How satisfied were you with your RIGHT hand/wrist during the **past 7 days**?

RIGHT HAND	Very satisfied	Somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisfied	Very dissatisfied
a) Overall function of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Movement of the fingers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Movement of your wrist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Strength of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Pain level of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Sensation (feeling) of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION D: HAND AND WRIST FUNCTION

### 31 How satisfied were you with your LEFT hand/wrist during the past 7 days?

LEFT HAND	Very satisfied	Somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisfied	Very dissatisfied
a) Overall function of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Movement of the fingers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Movement of your wrist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Strength of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Pain level of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Sensation (feeling) of your hand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 32 If you would like to give us any additional information about your hand and wrist function, please do so here:

.....

.....

.....

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.....

**Thank you for completing this questionnaire!**  
**Please return it to the REACTS team**  
**using the pre-paid envelope.**



If you have any questions or would like any additional information, please contact  
 Lisa Newington on:  
 ln@mrc.soton.ac.uk | 023 8077 7624 | 07866 997732

## SUPPLEMENTARY TABLES

## 1. Cox proportional hazards univariate analyses of the association between demographic and general health factors and the duration of work absence after carpal tunnel release (non-significant findings)

	N	Median time to return to work (days)	Inter quartile range	Hazards ratio <sup>1</sup>	95% Confidence intervals	P value
<i>Body mass index (kg/m<sup>2</sup>) (censored 1 normal, 1 overweight, 2 obese; 13 missing)</i>						
Normal (18.5-24.9)	47	20	12-33	1	-	-
Over (25.0-29.9)	64	19	12.5-29	0.98	0.65, 1.46	0.91
Obese (≥30)	67	21	10-40	0.88	0.60, 1.28	0.50
<i>Surgery to dominant hand <sup>2</sup> (censored 3 yes, 2 no; no missing data)</i>						
Yes	128	19.5	12-33	1	-	-
No	62	22	12-35	0.83	0.61, 1.14	0.25
<i>General health status (censored 5 excellent; 1 missing)</i>						
Excellent/very good/ good	165	19	12-32	1	-	-
Fair/poor	24	28.5	12.5-42	0.74	0.47, 1.16	0.19
<i>Number of comorbidities <sup>3</sup> (censored 3 none, 1 one; 1 missing)</i>						
None	49	18	7-32	1	-	-
One	67	24	14-42	0.87	0.59, 1.27	0.47
Two or more	74	19.5	10-29	1.11	0.76, 1.62	0.60
<i>Number of disability comorbidities <sup>3</sup> (censored 3 none, 2 one; no missing data)</i>						
None	130	19	9-33	1	-	-
One	39	26	13-31	0.75	0.52, 1.08	0.12
Two or more	21	20	14-31	0.81	0.50, 1.32	0.40
<i>Number of somatising symptoms <sup>4</sup> (censored 1 none, 1 one, 3 two or more; 1 missing)</i>						
None	96	19	10.5-35	1	-	-
One	51	22	13-34	0.98	0.70, 1.38	0.91
Two or more	42	19.5	14-31	0.84	0.58, 1.22	0.36
<i>SF36 Mental health score (tertiles) <sup>5</sup> (censored 2 poor, 1 intermediate, 2 good; 2 missing)</i>						
Poor (22.2-57.8)	60	24	16-39	0.71	0.50, 1.03	0.07
Intermediate (60.0-75.6)	68	18.5	11-36.5	0.88	0.62, 1.25	0.48
Good (77.8-97.8)	60	16.5	7-30	1	-	-

Total sample size n=195. Median duration of work absence relates to the 190 non-censored events.

<sup>1</sup>. Adjusted for age and sex.

<sup>2</sup>. Considered and the non-dominant hand for those who reported ambidexterity (n=4) and dominant hand for those undergoing simultaneous bilateral surgery (n=2).

<sup>3</sup>. Adapted from the self-administered co-morbidity questionnaire [1].

<sup>4</sup>. Adapted from the four-dimensional symptom questionnaire [2].

<sup>5</sup>. Taken from the SF-36 with data-driven tertiles [3].

## 2. Cox proportional hazards univariate analyses of the association between health beliefs and the duration of work absence after carpal tunnel release (non-significant findings)

	N	Median time to return to work (days)	Inter quartile range	Hazards ratio <sup>1</sup>	95% Confidence intervals	P value
<i>Believe will be unable to use hand normally in 3 months <sup>2</sup> (censored 5 no; 2 missing)</i>						
No	168	20	12-32.5	1	-	-
Yes	20	20.5	14.5-40	1.04	0.65, 1.67	0.87
<i>Blames self for hand problem <sup>2</sup> (censored 5 no; 2 missing)</i>						
No	162	20	12-35	1	-	-
Yes	26	22	14-31	1.08	0.70, 1.66	0.73
<i>Lack of support from family/friends <sup>2</sup> (censored 4 no, 1 yes; 2 missing)</i>						
No	156	20	12-32.5	1	-	-
Yes	32	19.5	13-40	0.88	0.60, 1.29	0.51
<i>Problem runs in the family/born with a weakness <sup>3</sup> (censored 3 no, 2 agree/strongly agree; 2 missing)</i>						
No	134	20	12-35	1	-	-
Agree/strongly agree	54	23	12-31	0.88	0.63, 1.21	0.42
<i>Stress made the problem worse <sup>3</sup> (censored 5 no; 2 missing)</i>						
No	169	20	12-33	1	-	-
Agree/strongly agree	19	28	14-40	0.79	0.48, 1.28	0.33
<i>Lack of exercise contributed to the problem <sup>3</sup> (censored 5 no; 2 missing)</i>						
No	172	20	13-33	1	-	-
Agree/strongly agree	16	15	10.5-34.5	1.23	0.73, 2.06	0.43
<i>Getting older contributes to the problem <sup>3</sup> (censored 3 no, 2 yes; 3 missing)</i>						
No	79	26	14-42	1	-	-
Agree/strongly agree	108	16	10-29	1.28	0.94, 1.74	0.11
<i>Work probably didn't cause the problem, but made it worse <sup>3</sup> (censored 2 no, 3 yes; 4 missing)</i>						
No	100	20.5	12-35	1	-	-
Agree/strongly agree	86	19.5	13-31	1.01	0.75, 1.35	0.95
<i>Pain catastrophisation to at least a moderate degree <sup>4</sup> (censored 3 no, 2 yes; missing 2)</i>						
No	133	19	10-33	1	-	-
Yes	55	22	15-31	0.81	0.59, 1.12	0.21

Total sample size n=195. Median duration of work absence relates to the 190 non-censored events.

<sup>1</sup>. Adjusted for age and sex.

<sup>2</sup>. Reported on a 0-10 scale and dichotomised to no (0-6) and yes (7-10) [4].

<sup>3</sup>. Reported on a 5-point scale and dichotomised to agree/strongly agree and neither agree nor disagree/disagree/disagree strongly [5].

<sup>4</sup>. Pain catastrophizing scale dichotomised to those who reported catastrophising pain thoughts and feelings to at least a moderate degree in response to all questions and those who did not [6].

### 3. Cox proportional hazards univariate analyses of the association between clinical and surgical factors and the duration of work absence after carpal tunnel release (non-significant findings)

	N	Median time to return to work (days)	Inter quartile range	Hazards ratio <sup>1</sup>	95% Confidence intervals	P value
<i>Katz hand diagram score for side of surgery <sup>2</sup> (censored 3 classics/probable, 2 possible/unlikely; 4 missing)</i>						
Classic/probable	126	22	14-38	1	-	-
Possible/unlikely	60	16.5	9.5-30.5	1.10	0.81, 1.51	0.54
<i>Duration of symptoms (censored 1 ≤ 1 year, 4 &gt; 1 year; 2 missing)</i>						
≤ 1 year	47	19	10-31	1	-	-
> 1 year	141	20	13-34	0.86	0.62, 1.21	0.38
<i>Nerve conduction studies performed (censored 3 no, 2 yes; 40 missing)</i>						
No	71	21	14-35	1	-	-
Yes	79	20	11-33	1.14	0.83, 1.58	0.41
<i>Type of suture material (censored 4 non-absorbable; 49 missing)</i>						
Non-absorbable	119	21	12-38	1	-	-
Absorbable	23	20	13-29	1.15	0.73, 1.83	0.55
<i>MHQ function score for side of surgery (tertiles) <sup>3</sup> (censored 3 poor, 1 intermediate, 1 good; 2 missing)</i>						
Poor (0-40)	79	20	13-41	0.80	0.57, 1.12	0.19
Intermediate (44-55)	48	19.5	13.5-33	0.81	0.55, 1.19	0.29
Good (60-100)	61	20	7-29	1	-	-
<i>MHQ bilateral activities of daily living score (tertiles) <sup>3</sup> (censored 1 poor, 4 intermediate; 1 missing)</i>						
Poor (0-61)	72	19	12.5-33.5	0.96	0.66, 1.38	0.81
Intermediate (64-82)	55	21	13-38	0.70	0.49, 1.01	0.06
Good (83-100)	62	20	10-31	1	-	-
<i>MHQ activities of daily living score, side of surgery (tertiles) <sup>3</sup> (censored 2 poor, 3 intermediate; 1 missing)</i>						
Poor (0-55)	63	20	12-42	0.81	0.56, 1.18	0.27
Intermediate (58-80)	63	20	14-35	0.86	0.61, 1.23	0.42
Good (85-100)	63	20	9-32	1	-	-
<i>MHQ satisfaction score for side of surgery (tertiles) <sup>3</sup> (censored 3 poor, 2 intermediate; no missing data)</i>						
Poor (0-25)	88	21.5	13-42	0.78	0.55, 1.11	0.16
Intermediate (29-50)	49	18	14-29	0.87	0.59, 1.28	0.48
Good (54-100)	53	20	9-31	1	-	-
<i>Satisfaction with appearance for side of surgery <sup>4</sup> (censored 2 satisfied, 3 dissatisfied; 1 missing)</i>						
Satisfied	136	20	10.5-31.5	1	-	-
Dissatisfied	53	20	13-40	0.84	0.61, 1.16	0.29

Total sample size n=195. Median duration of work absence relates to the 190 non-censored events.

<sup>1</sup>. Adjusted for age and sex.

<sup>2</sup>. Adapted from Calfee et al. [7].

<sup>3</sup>. Michigan Hand Questionnaire [8]. Data-driven tertiles.

<sup>4</sup>. Reported on a 5-point scale in response to the statement: I am satisfied with the appearance (look) of my hand. Dichotomised as satisfied (strongly agree/agree) and dissatisfied (neither agree nor disagree, disagree, strongly disagree).

#### 4. Cox proportional hazards univariate analyses of the association between occupational factors and the duration of work absence after carpal tunnel release (non-significant findings)

	N	Median time to return to work (days)	Inter quartile range	Hazards ratio <sup>1</sup>	95% Confidence intervals	P value
<i>Have more than one paid job (censored 4 no, 1 yes; 1 missing)</i>						
No	177	20	12-32	1	-	-
Yes	12	26.5	19-42	0.61	0.34, 1.11	0.11
<i>Total paid work hours per week <sup>2</sup> (censored 4 ≤37.5, 1 &gt;37.5; no missing data)</i>						
≤37.5	97	22	15-38	1	-	-
>37.5	93	16	6-29	1.25	0.88, 1.79	0.21
<i>Number of work days per week (censored 1 &lt;5, 4 5; no missing data)</i>						
<5	55	23	15-35	1	0.72, 1.39	0.98
5	116	19	10.5-33	1	-	-
>5	19	13	6-31	1.28	0.77, 2.14	0.34
<i>Sick leave taken for this problem in the last month (censored 5 no; 16 missing)</i>						
No	154	20	12-33	1	-	-
Yes	20	15	9.5-30	0.99	0.61, 1.60	0.95
<i>Sick leave taken for another problem in the last month (censored 4 no, 1 yes; 20 missing)</i>						
No	152	19	10.5-31	1	-	-
Yes	18	30	21-42	0.67	0.41, 1.09	0.10
<i>Received advice about return to work after surgery (censored 5 yes; 3 missing)</i>						
Yes	134	19	12-31	1	-	-
No	53	22	14-41	0.92	0.67, 1.27	0.61
<i>Required to work to tight deadlines <sup>3</sup> (censored 3 no, 2 yes; missing 3)</i>						
No	75	23	14-40	1	-	-
Yes	112	18	9.5-31	1.19	0.89, 1.61	0.24
<i>Use power tools that make the hand/arm vibrate <sup>3</sup> (censored 5 no; missing 7)</i>						
No	145	19	12-32	1	-	-
Yes	38	22	14-42	0.68	0.44, 1.05	0.08
<i>Work with hands above shoulder height for &gt;1 hour <sup>3</sup> (censored 4 no, 1 yes; missing 9)</i>						
No	147	20	12-33	1	-	-
Yes	34	19.5	13-33	0.89	0.60, 1.32	0.56
<i>Work with neck bent forward for &gt;2 hours <sup>3</sup> (censored 3 no, 2 yes; missing 3)</i>						
No	114	21	13-39	1	-	-
Yes	73	18	8-31	1.19	0.88, 1.60	0.26
<i>Work with neck twisted for &gt;30 minutes <sup>3</sup> (censored 4 no, 1 yes; missing 7)</i>						
No	136	20	12-34	1	-	-
Yes	47	22	13-32	0.93	0.66, 1.32	0.70
<i>Drive for &gt;1 hour per day <sup>3</sup> (censored 5 no; missing 5)</i>						
No	115	21	13-38	1	-	-
Yes	70	16	7-31	1.22	0.88, 1.68	0.24

Total sample size n=195. Median duration of work absence relates to the 190 non-censored events.

<sup>1</sup>. Adjusted for age and sex.

<sup>2</sup>. Dichotomised by the median for the sample population

<sup>3</sup>. As part of the normal working day [9].



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