

Return to work following arthroscopic supraspinatus repair: A survey of UK practice

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Abstract

Objective: The primary objective was to explore current practice and advice given to patients about a return to work (RTW) following arthroscopic supraspinatus repair (single tendon) by the patients surgeon and physiotherapist.

The secondary objective was to explore the consensus on key predictive factors for successful phased and full return to work following arthroscopic supraspinatus repair surgery.

Methods: An online electronic anonymous survey was developed and hosted by survey monkey to capture pertinent information relating to the return to work postoperatively.

The survey was approved by British Elbow and Shoulder Society (BESS) research committee in 2017. The survey link was disseminated via email to expert shoulder surgeons and physiotherapist who are BESS members. Survey had a vignette with different age group, tear size, type of work and return to work advice. Consistency of responses and thereby the internal validity of the questionnaire was tested via a correlation analysis between responses. Results were comparatively analysed with Mann-Whitney U test and Chi-square tests.

Results: Sixty-two valid responses were received (48 surgeons;14 physiotherapists). Regarding RTW time frames, a wide range of responses was received (sedentary work 0-12 weeks, light manual workers 2-24 weeks, and manual workers 3-36 weeks). Furthermore, responses varied among professionals ($P=0.01$). The range of motion of the operated shoulder, functional shoulder scores, self-reported patient scores and patient expectations were considered moderate to very important predictive factors for successful full RTW arthroscopic supraspinatus repair surgery. Pain, psychological profile, job satisfaction, and patient compliance were also considered relevant. 77% respondents said they liaise with occupational health departments and patient's general practitioners with regards to their patient's RTW.

Conclusion: This is the first survey in the UK exploring current practices with regards to RTW after arthroscopic supraspinatus repair. Responses highlight variability in the advice given to the patients on phased and full return to work by the professionals even for a single tendon repair. There is a need to standardise the advice given to patients and further research is needed with patient public involvement to develop an evidenced-based guideline for RTW.

Implications: Return to work is influenced by a combination of factors. The relationship between each of these needs to be explored in greater depth and wider understanding of the variables influencing the patient's RTW following arthroscopic supraspinatus repair.

Introduction

Shoulder pain is one of the most common cause of reduced functional incapacity affecting the activities of daily life and work [1]. Although pain related to shoulder ranks number three among musculoskeletal conditions [2], its prevalence is on the rise [3], not only in the UK but also in many western countries [4,5]. Despite the growing incidence, there is no gold standard treatment yet, which would help completely address shoulder pain. This is due to the complex matrix of structures that are directly and indirectly involved in its function and multiaxial motion [6]. There has always been a debate on surgical versus conservative management for rotator cuff pathology [7-9]. Furthermore, a large variation among the surgeons regarding the type of surgery itself for the same pathology [10] has meant different recovery and return to activity periods.

Although rotator cuff pathology is linked to several causative and trigger factors, it is a common occurrence among employees who are engaged in repetitive overhead work [11] and also among certain sports' populations that involve overhead activity [12,13]. Work-related

upper limb disorders (WRULDs) accounted for round 3.9 million working days lost in the UK in 2016/17 [14]. RTW criteria for Size of the rotator cuff tear, open versus mini versus arthroscopic procedure, and surgeon's own preference on the duration of immobilization, the healing time required for the patient, are some of the many factors which can influence patient's functional gains and return to work [15-17], the relative advantage or disadvantage of early mobilization of the shoulder compared with immobilization post rotator cuff surgery [18] has been a topic of debate and trials are still being conducted to find the ideal immobilisation period to allow healing postoperatively [19].

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Although return to work is a complex process which needs to take into account the patients expectations and perception of functional capacity post-surgery, psychological factors, work environment and demands and calculating the amount of stress the tissue can manage (graded return to work) [20], some studies has demonstrated that the personal opinion of the surgeon or a healthcare professional on when the patient is fit to return to work usually takes a precedence and can influence return to work [21,22].

Considering the vital role surgeons and a physiotherapists (PT) can play in the RTW recommendation post rotator cuff surgery, the primary objective of this study was to explore current UK practice and advice given to patients about a return to work (RTW) following arthroscopic supraspinatus repair (single tendon) by surgeons and PTs.

Aims of Survey

1. To determine current UK practice with respect to RTW after RC repair.
2. To identify predicative factors associated with rates of RTW after RC repair.
3. To determine what objective measures could be used in practice to guide RTW after RC repair.
4. To examine if surgeon and PT practice varies regarding RTW after RC repair in practice.
5. To see if consensus could be reached regarding RTW after RC repair guidelines.

Methodology

Participants

Expert shoulder surgeons and physiotherapists who are members of British Elbow & Shoulder Society (BESS) were anonymously surveyed regarding their current practice on return to work following an arthroscopic supraspinatus repair.

Data collection

An online survey was be developed by the author with help of BESS. It was hosted by Survey Monkey (<https://www.surveymonkey.com>) to capture pertinent information relating to the return to work post operatively (Appendix 1). A link to the survey was sent by email to the BESS members. Members were given case scenarios and requested to use their clinical expertise to answer the questions.

Data analysis

Descriptive summary statistics were generated by Survey Monkey and subsequently imported into Excel to facilitate the data reporting in terms of period of immobilisation, load permitted, and time taken to return to work.

Based on the response rate to the survey, data was further partition into the responses from subgroups (i.e. different professions) and comparative statistical analysis was undertaken.

Statistical methods

The first set of analyses summarised the results of the survey for all respondents combined. Additionally, separate responses were given for physiotherapists and for surgeons. A statistical comparison of the differences between surgeons for all questionnaire responses was made.

Several questions on the survey were ordinal in nature. These questions were compared between groups using the Mann-Whitney tests. Other questions had answers that were potentially continuous in nature. The data from all such questions was found to have positively skewed distributions, and so the Mann-Whitney test was used for the analyses of these questions as well. Categorical variables were compared between categories using Fishers exact test.

A second set of analyses compared suggested immobilisation times between patients of two different ages. As each respondent gave a response for both ages, the data was paired in nature. Due to ordinal nature of the outcome scale, the Wilcoxon matched-pairs test was used for the analyses.

Results

A total of 8.27% of total BESS members responded (62/750) out of which 10% of BESS PT responded (14/140) and 8.6% of BESS surgeons responded (48/560). The data collected from 62 respondents was analysed in following way:

1. If respondents gave a range of values for RTW the earliest date was selected,
2. If respondents gave a range of values for FU the latest date was selected,
3. The data collected relating to whether special orthopaedic tests were predictive of RTW was qualitatively analysed.

Data summaries and comparison between professions

The first analyses summarised the survey responses, both for all respondents, and separately by profession (Table 1). A summary of the survey results for all, and by profession, is given in the next two tables. Continuous and ordinal variables were summarised by either the mean and standard deviation, or the median and inter-quartile range, as thought to be most appropriate for each question. Categorical variables are summarised by the number and percentage in each category. The final column reports the p-values from comparisons of the responses given by PT's and surgeons.

The majority of clinicians were UK based. For all respondents combined, tissue quality and tendon traction were thought to be the most relevant, as these had the highest average scores. Tear size was the least relevant with the lowest average score. Surgeons scored both tissue quality and tendon traction as more relevant than physios, with significant higher scores for these items. Conversely, biceps treatment was rated significantly more relevant by physios than by surgeons.

Immobilisation times scored approximately the same for all cases, with averages scores all between 4 and 5.5 out of 7. Surgeons suggested significantly longer times for the scenarios where the patient had a <5cm supraspinatus plus infraspinatus tear.

Return to work

The time to return to work was longer for heavy manual workers than for sedentary and light manual works (Table 1A). Surgeons suggested a significantly longer time to return to work, with a median of 12 weeks, compared to a median of 8 weeks suggested by the PT's. Surgeons also suggested a significantly longer return to sports for both non-contact and contact sports. Conversely, surgeons suggested shorter returns to driving than physios, although the results for the operated left arm did not quite reach statistical significance. Around three-quarters of respondents suggested a liaison with occupational health, and that the patient's GP should be informed; however, the author has never experienced this in their own clinical practice.

Table 1. The first table summarises the results for the first half of the survey. Summary statistics are mean \pm standard deviation, or number (percentage)

Variable	All (n=62)	Physios (n=15)	Surgeons (n=47)	P-value
UK based	60 (97%)	15 (100%)	45 (96%)	1
Immobilisation factors (+)				
Tear size	1.6 \pm 0.5	1.5 \pm 0.5	1.7 \pm 0.5	0.14
Tissue quality	3.8 \pm 1.1	3.3 \pm 0.9	4.0 \pm 1.1	0.02
Tendon traction	3.7 \pm 1.2	3.2 \pm 1.0	3.9 \pm 1.2	0.02
Arm dominance	2.1 \pm 1.1	3.1 \pm 1.0	1.8 \pm 1.1	<0.001
Biceps treatment	2.1 \pm 1.2	3.2 \pm 0.7	1.8 \pm 1.1	<0.001
Surgery type	3.2 \pm 1.4	3.1 \pm 1.1	3.2 \pm 1.5	0.72
Healing rate	3.1 \pm 1.3	3.4 \pm 0.8	3.0 \pm 1.4	0.61
Pain	2.5 \pm 1.2	2.9 \pm 0.9	2.5 \pm 1.2	0.24
Immobilisation time (++)				
Age 60, 3cm Sup ear	4.5 \pm 1.4	4.8 \pm 1.5	4.4 \pm 1.4	0.33
Age 60, 3-5cm Sup Tear	5.0 \pm 1.1	4.7 \pm 1.5	5.1 \pm 1.3	0.27
Age 60, <5cm Sup + Inf	5.4 \pm 1.2	4.7 \pm 1.6	5.6 \pm 0.9	0.02
Age 45, 3cm Sup ear	4.4 \pm 1.4	4.3 \pm 1.6	4.4 \pm 1.4	0.91
Age 45, 3-5cm Sup Tear	5.0 \pm 1.6	4.9 \pm 1.6	5.0 \pm 1.3	0.94
Age 45, <5cm Sup + Inf	5.3 \pm 1.3	4.5 \pm 1.7	5.5 \pm 1.2	0.02

(+) Scored on scale from: 1 = not relevant to 5 = very relevant, (++) Scored on scale from: 0 = shortest time to 7 = longest time

Table 1A. The results for the second half of the survey. Summary statistics are mean \pm standard deviation, median [inter-quartile range], or number (percentage).

Variable	All (n=62)	Physios (n=15)	Surgeons (n=47)	P-value
Return to work (wks)				
Sedentary worker	6 [4,6]	6 [4,6]	4 [2,6]	0.25
Light manual worker	6 [6,10]	6 [4,12]	8 [6,10]	0.66
Heavy manual worker	12 [8,12]	8 [6,12]	12 [12,12]	0.02
Return to driving (wks)				
Right arm op	6 [6,8]	12 [6,12]	6 [6,8]	0.04
Left arm op	8 [6,8]	12 [6,12]	8 [6,8]	0.08
Return to sports (wks)				
Non-contact	12 [12,12]	12 [8,12]	12 [12,20]	0.03
Contact	20 [12,24]	12 [12,20]	24 [20,24]	0.003
Liaise with occ health	47/60 (78%)	10/13 (77%)	37/47 (79%)	1
Inform patient's GP	44/60 (73%)	7/13 (54%)	37/47 (79%)	0.09
No fixed length FU (*)	4/58 (7%)	1/11 (9%)	3/47 (6%)	1
Length FU (wks) (**)	24 [12,52]	38 [12,52]	24 [12,25]	0.46
Return work success (+)				
Range motion	3.8 \pm 1.0	3.7 \pm 0.8	3.9 \pm 1.0	0.29
Radiological evidence	2.0 \pm 1.3	2.8 \pm 1.3	1.8 \pm 1.3	0.01
Patient self-report	4.4 \pm 0.7	4.1 \pm 1.0	4.5 \pm 0.7	0.2
Patient expectation	4.0 \pm 0.8	3.9 \pm 1.0	4.0 \pm 0.7	0.61

(+) Scored on scale from: 1 = not relevant to 5 = very relevant (*) Patients not indicating a fixed length of follow-up indicated that follow-up time should be vary depending on patient needs (**) Figures based on those who indicated a specific time period.

Neither variable varied significantly between the two professions. A minority of respondents (7%) felt that no fixed length of follow-up should be given, with this varying depending on the patient. Of those who did give a fixed length, the median follow-up was 24 weeks. The highest scores for return to work success were patient self-report of their return, and patient expectations. Neither of these factors varied between professions. Of the other measures, radiological evidence was rated as more relevant by physios than by surgeons

Immobilisation times between ages

The second set of analyses compared the differences in recommended immobilisation times between male patients of different

ages with similar tears. The results are summarised in table 2. The figures are the mean and standard deviation score (on a scale from 0-7) for each age group, along with p-values indicating the significance of the differences.

The analysis suggested no strong evidence of a difference in the immobilisation times between males of different ages in any of the three situations. There was slight evidence of a difference for the 3cm supraspinatus tear, but the result was quite significant and there was little difference in mean values between the age groups.

Gender

Immobilisation periods after arthroscopic repair was ranked significantly different between professions (p=0.01) where 85% of the surgeons considered it as 'not relevant'. However, within the PT's, 35% believed it as not relevant but 29% of the therapists leaned towards being relevant in the recovery process.

Pre-operative tissue quality

A significant difference between the therapist and the surgeons opinion was found on the correlation between the pre-operative tissue quality and immobilization period (p=0.01). Surgeons considered it to be moderately (21%) to increasingly (36%) to very relevant (36%) and PT considered it slightly relevant (23%) to moderately relevant (38%) to increasing relevant (38%). None of the therapists ranked it as very relevant.

Amount of tendon retraction

A significant difference between the therapist and the surgeons' opinion was found on the correlation between the amount of tendon retraction and the immobilization period (p=0.01). Surgeons considered it to of increased relevance (36%) to very relevant (36%). Physiotherapists considered it moderately relevant (42%) to increasing relevant (35%). None of the therapists ranked it as very relevant.

Smoking

No significant difference in ranking between professions (p=0.19) was found for smoking status and immobilisation periods post arthroscopic repair.

Arm dominance

A significant difference between the therapist and the surgeons' opinion was found on the correlation between the arm dominance and the immobilization period (p=0.01). Surgeons considered it to be not relevant (53%) or slightly relevant (26%). Whereas physiotherapists considered arm dominance to be moderate (43%) to increasingly relevant (36%).

Involvement of biceps pathology

A significant difference between the therapist and the surgeons' opinion was found on the correlation between the involvement of biceps pathology and the immobilization period (p=0.01). Surgeons considered it to of no relevance (61%) and PT considered it moderately relevant (57%).

Table 2. Immobilization times by age and extent of tear

Type of tear	Age 60 Mean \pm SD	Age 45 Mean \pm SD	P-value
3cm supraspinatus tear	4.5 \pm 1.4	4.4 \pm 1.4	0.05
3-5cm supraspinatus tear	5.0 \pm 1.1	5.0 \pm 1.6	0.97
<5cm supraspinatus + infraspinatus tear	5.4 \pm 1.2	5.3 \pm 1.3	0.31

Type of surgery

No significant difference ($p=0.63$) in ranking between professions were found for the type of surgery considering immobilization periods after the arthroscopic repair.

Tendon healing rate

No significant difference ($p=0.73$) in ranking for immobilisation and tendon healing rate was found between professions.

Pain

No significant difference ($p=0.24$) in ranking for pain and immobilizations was found between the therapist and the surgeons.

Other factors which can influence the opinion for immobilization

Other factors that were reported via free text in the survey which could influence the period of immobilisation: patient compliance; revision surgery; use of augmentation; shape of the tear; and the quality of the bone for anchor.

Answers based on case scenarios

a) How long would BESS members immobilise in a sling the cases given:

- All non-smoking males, and the dominant arm is operated on.
- The repair is considered to be stable and done by margin convergence with no concurrent pathology.
- In addition, does the response vary according to profession?

Note on the bar graph (Figure 1) the significant difference between PT and surgeons when recommending period of immobilisation for the patient group 60 years with a 5 cm or more tear and 2 tendons involved and for a patient aged 45 years of age with the same criteria. It is notable that the surgeons would immobilise for a longer period (6 ± 1 weeks) than the physiotherapists (5 ± 2 weeks) in the 60-year-old patient (Tables 3 and 4). In the 45-year-old patient surgeons would immobilise for longer too (5 ± 1 weeks) and physiotherapists a shorter period (4 ± 2 weeks).

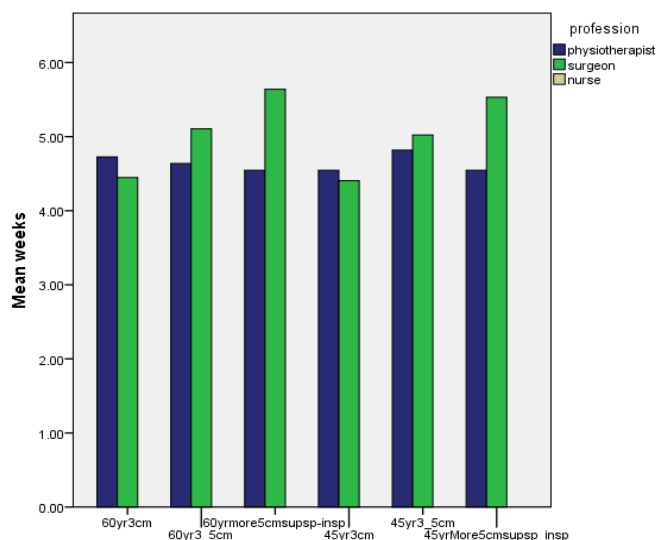


Figure 1. Difference between the surgeons and physiotherapists on immobilization periods.

Table 3. Descriptive Statistics. Time frame in weeks for immobilisation and return to activity for combined professions.

	Min weeks	Max weeks	Mean weeks	STD weeks	Sig diff between professions p value
60yr/3cm tear	1	6	4	1	0.46
60yr/3-5cm tear	1	6	5	1	0.18
60yr/>5cm tear/SS+IS	1	7	5	1	0.02*
45yr/3cm tear	1	6	4	1	0.91
45yr/3-5cm tear	1	7	5	1	0.94
45yr/>5cm tear /SS+IS	1	7	5	1	0.02*
Sedentary worker RTW	0	12	5	3	0.23
Light manual worker RTW	2	24	8	4	0.88
Manual worker RTW	3	36	12	5	0.01*
RT Drive/right side operated	3	12	7	2	0.05
RT Drive/left side operated	3	12	7	2	0.07
RT to non-contact sport	2	28	14	5	0.03*
RT to contact sport	6	40	20	7	0.01*
Follow up	4	72	27	17	0.25

PH=physiotherapist, SX=surgeon; *=significant difference between professions; SS=supraspinatus; IS=infraspinatus; RT=return to; RTW=return to work; yr=years old.

Table 4. Differences in time frames cited between professions

	Profession	Mean weeks	Std. weeks
60yr/>5cm tear/SS+IS	physiotherapist	5	2
	surgeon	6	1
45yr/>5cm tear/SS+IS	physiotherapist	4	2
	surgeon	5	1
RTW manual worker	physiotherapist	9	3
	surgeon	12	5
RT to non-contact sport	physiotherapist	10	3
	surgeon	14	5
RT to contact sport	physiotherapist	14	6
	surgeon	22	7

The above bar graph illustrates the significant differences between physiotherapists and surgeons when considering return to work for a manual worked and RT Sport with physiotherapists suggesting significantly shorter time frames for each of these activities compared to surgeons (Table 4). It is notable that RT manual work differs by 3 weeks, RT non-contact sport by 2 weeks and RT contact sport by 8 weeks (Figure 2).

b) What do BESS members consider to be predictive factors determining a successful return to work after an arthroscopic supraspinatus repair. Does the response vary according to profession?

ROM as a predictive factor to a successful return to work after arthroscopic SS repair was considered moderate (32% rank 3) to increasingly relevant (32% rank 4) and very important by both professions (32% rank 5) with no sig diff between professions $p=0.16$ (Figure 3).

Evidence of tendon healing on radiology as a predictive factor to a successful return to work after arthroscopic SS repair was ranked significantly differently by each profession ($p=0.03$). Physiotherapists rated it as moderately relevant at 58% and surgeons rated it as not important at 61% (Figure 4).

Functional outcome measure scores as a predictive factor to a successful return to work after arthroscopic SS repair were considered very important by both professions (65%) with no sig diff between professions $p=0.65$. The pie chart is representative of the type of functional outcome scores implemented by BESS members (Figure 5).

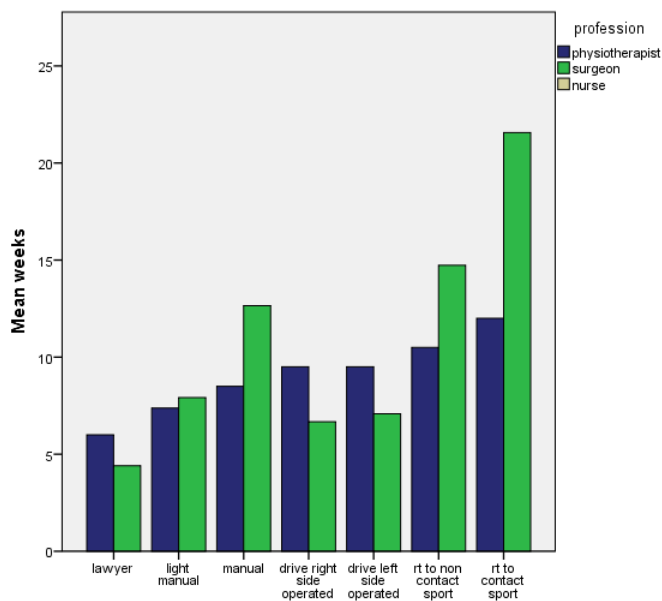


Figure 2. Return to sports and work recommendation by surgeons Vs physiotherapist

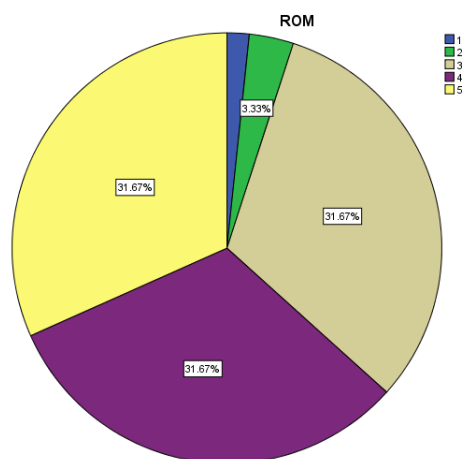


Figure 3. Shoulder range of motion

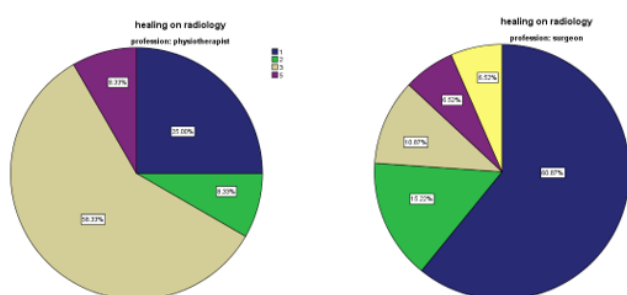


Figure 4. Tendon healing

Patient self-reported outcomes as a predictive factor to a successful return to work after arthroscopic SS repair was considered very important by both professions (54% rank 5; 29% ranked 4) with no sig diff between professions $p=0.12$ (Figure 6).

Patient expectations as a predictive factor to a successful return to work after arthroscopic SS repair was considered moderate (25%

rank 3) to increasingly relevant (44% rank 4) and very important by both professions (29% rank 5) with no sig diff in ranking between professions $p=0.42$ (Figure 7).

Other factors for predictive RTW (Free text)

Pain, psychological profile, job satisfaction, and patient compliance.

c) **Role of special orthopedic strength/integrity tests:** We hoped to evaluate the response of BESS members to assess if they considered special orthopedic strength tests of value whether these could be a predictive factor in successful return to work. However, due to the nature of the way the question was formatted only a qualitative analysis is possible for this and it was not possible to evaluate ranking. From the total number of participants (31% missing data), 17 (27%) responded that this is not predictive and do not test it, 3 stated it to be moderately predictive, 1 stated it is very predictive, 26 (42%) responded with the type of test they would use from this it was deduced that they may consider it relevant but how relevant that cannot be assumed.

d) Percentages of BESS member who liaise with occupational health (Figure 8) and the patient GP (Figure 9)?

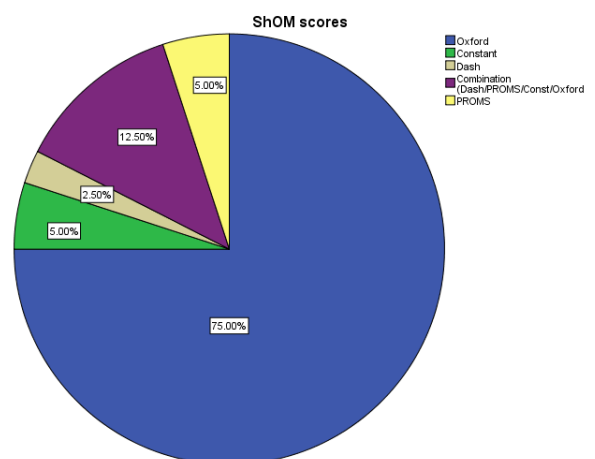


Figure 5. Shoulder functional score

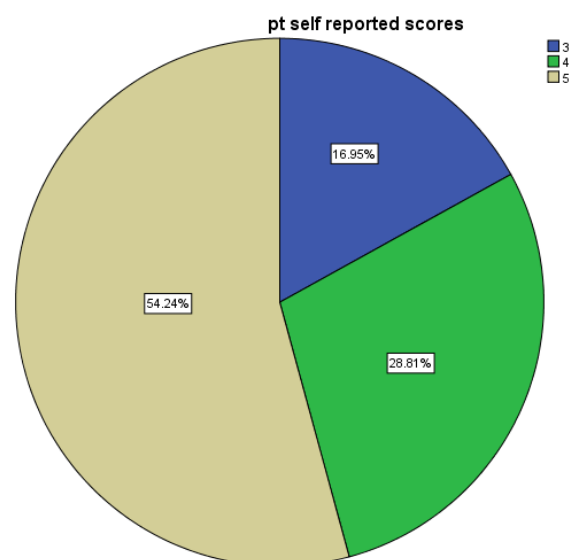


Figure 6. Self-reported patient score

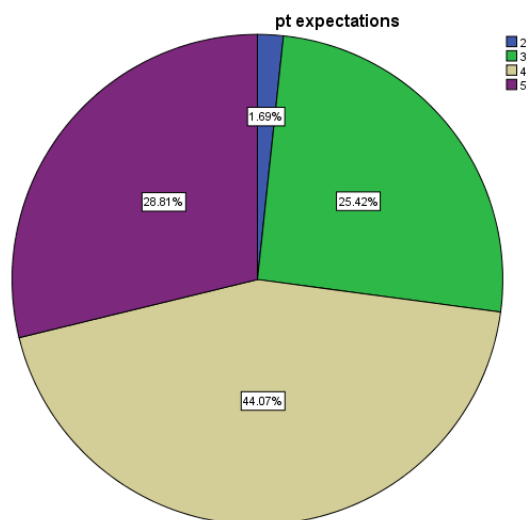


Figure 7. Patient expectation

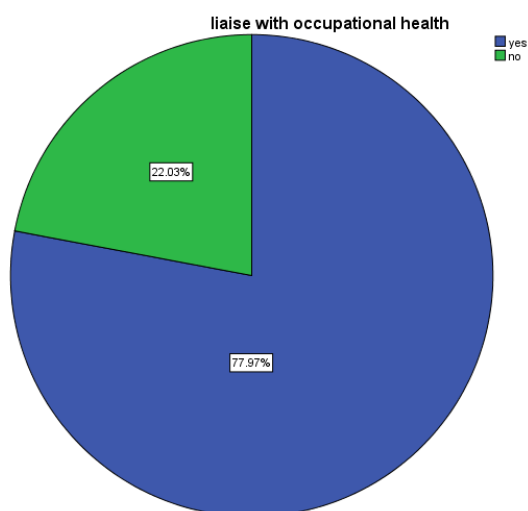


Figure 8. Liaise with Occupational Health

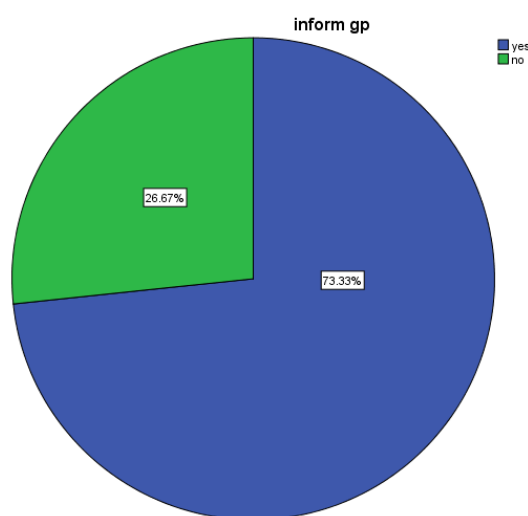


Figure 9. Liaise with patient GP

Further Statistical analysis of responses to cases given to evaluate:

i. if age was a criteria determinizing time of immobilization after RC repair

ii. to assess for internal consistency in responses using tear size as a factor

Comparative statistics (Wilcoxon signed ranks test) between responses with age as a dependent variable and size of tear as the independent variable were run to determine if age was used as a factor in guiding time of immobilization after RC repair. However, neither collectively or as separate professions did the respondents differ their responses using age as a criterion with all p values exceeding 0.05.

Since tear size was ranked as very relevant (5) by 40% of both professions when considering immobilisation periods after Ss arthroscopic repair with no sig diff in ranking between professions ($p=0.06$) further statistical analysis (repeated ANOVA) was done to assess for internal consistency in responses by respondents using tear size as a factor. In the case of the 60 year old patient a repeated measures ANOVA with a Greenhouse-Gesser correction determined that mean weeks of immobilisation differed statistically between groups ($F(1.75,102.97)=21.09$, $p=0.01$) of different tear size (Figure 10). Post hoc tests using Bonferroni correction revealed significant differences ($p=0.01$) in mean weeks of immobilisation between all three groups (3cm tear; 3-5cm tear and more than 5cm tear).

In the case of the 45 year old patient a repeated measures ANOVA with a Greenhouse-Gesser correction determined that mean weeks of immobilisation differed statistically between groups ($F(1.81,103.29)=23.56$, $p=0.01$) of different tear size (Figure 11). Post hoc tests using Bonferroni correction revealed significant differences ($p=0.01$) in mean weeks of immobilisation between all three groups (3cm tear; 3-5cm tear and more than 5cm tear).

Discussion

The current study, to our knowledge, the only study to explore return to work recommendations post rotator cuff surgery by the surgeons and PT's in the UK. The response was 8.27% of total BESS

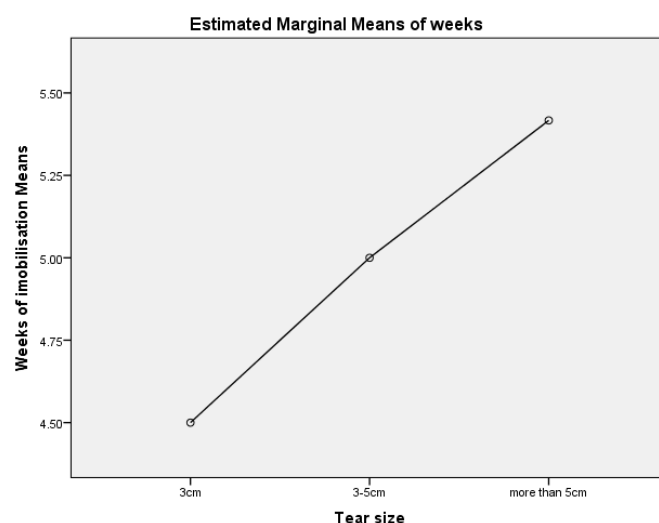


Figure 10. Estimated marginal means of weeks of immobilisation periods according to tear size in a 60-year-old patient

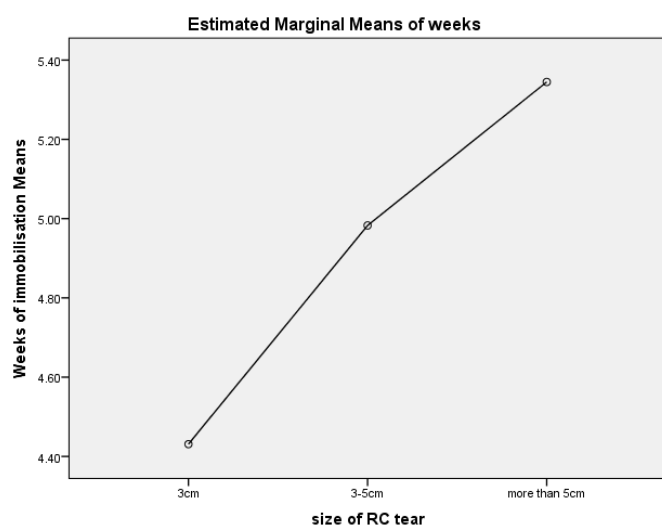


Figure 11. Estimated marginal means of weeks of immobilisation periods according to tear size in a 45-year-old patient

members which is a low response rate this may be attributed to lack of familiarity with the subject of occupational health. Appropriate return to work recommendations post-surgery is vital not only for the patient but also to the employers considering that musculoskeletal work-related problems accounts for the second most common cause for the loss of time from work in the UK [23]. In our study although there was variation in the recommendations between the surgeons and the PT's this was expected, return to work recommendation being a complex process which depends on multiple variables [24]. Hence this study not only explored the current practice and advice given to patients about RTW, but it also investigated the consensus on key predictive factors for successful phased or full return to work following arthroscopic supraspinatus repair surgery.

Although previous studies reported a consensus among the 93% of the respondents (PT and surgeon) supporting immobilisation post rotator cuff arthroscopy [25], the participants in our study, on the contrary, believed immobilisation post-surgery as 'not relevant' (85% of the surgeons and 35% physiotherapist) and only a minority of the therapists (29%) leaned towards being relevant in the recovery process. With regards to the actual RTW, there was a substantial disagreement between the time frames given by the surgeons when compared to the PT's for manual and light work. RTW time frames are becoming increasingly important to patients not only for the impact it has on their health-related quality of life, but for the type of financial benefits they are entitled to (UK citizens), i.e. Statutory Sick Pay (SSP) or Employment and Support Allowance (ESA) and Incapacity Benefits (IB).

Interestingly, PT's had more inclination for evidence of healing using post op radiological imaging as one of the factors to influence the return to work than the surgeons. However, several researchers in the past has cautioned against the presentation of the tendon on postoperative imaging finding as the interpretation of such imaging requires scrupulous correlation with symptoms and clinical outcomes [26,27].

Age factor in relation to immobilization post-surgery was also investigated in our study and in line with previous studies, age at the time of operation was considered as one of the factors in prescribing immobilization; perhaps the longer immobilization is being placed as a caution to prevent re-tear of the tendon [28]. Furthermore, tendon

healing was not considered as among the top priorities for the PT's and surgeons in our study when determining the immobilization period, which we find interesting as the impact of early versus late mobilization and the related complications [29] has always been debated. However, this thought process might be due to the fact that evidence is overwhelming leaning towards no major difference between immobilization and early mobilization on tendon healing [30].

Return to manual work or sports recommendation also differed between the PT's and the surgeons, with return to manual work by 3 weeks, non-contact sport by 2 weeks and contact sport by 8 weeks. Unfortunately we are not aware of any published results on the return to sports post rotator cuff surgery and hence it is difficult to draw any comparison however, the vast difference between the PT and surgeons time frame can be detrimental for patients and there is an urgent need for a universal consensus to be reached.

Range of motion and functional outcome measures were reported as important for determining return to work by both PT's and surgeons however, it was not clear from their response if they would wait for a complete movement and functional gains or consider a phased return to work. Targeted approach to return to work is essential for both patients and employers to maintain a smooth workflow process as individuals can safely return to work with less functional gains and progress to more demanding work as their condition progresses. We anticipate that there is a knowledge gap among healthcare professionals about the key phases in the return to work process i.e., "off work," "work re-entry," "retention," and "advancement" [31] and hence the delay in facilitating RTW process. However, on the positive note, majority of the participants in our study reported using occupational health professional's expertise in aiding return to work and this can help in targeted return to work. Lastly, the PT's and surgeons agreed that the special orthopaedic tests were not reliable in predicting return to work or recovery post-surgery which is interesting as special orthopaedic tests for shoulder has been a topic of debate between the researchers for a long time now [32,33].

Conclusion

This is the first survey in the UK to explore the views of surgeons and PT's about their patient's return to work, driving and sports, and in relation to the factors that determine the appropriate immobilisation period, after arthroscopic supraspinatus repair. Responses highlight the potential for wide variability in the advice given to patients. In the context of contemporary literature, it might be suggested that the current advice with regards to return to work after supraspinatus surgery is not evidenced based. This study highlights the need for standardisation of practices in relation to return to work, driving and sports, and in relation to the factors that should be considered in determining an appropriate period of immobilisation.

Further high-quality research evaluating more robust advice is needed with patient and public involvement, to develop evidenced-based guidelines for recovery after supraspinatus repair surgery.

Clinical Message

- First study in UK to explore the views of surgeons and PT's about patient's return to work, driving and sports in relation to appropriate immobilisation period, and highlights the need for standardisation of practices.
- current advice with regards to return to work after supraspinatus surgery is not evidenced based

- High-quality research needed with patient and public involvement, to develop evidenced-based guidelines

Limitations

Although we received a reasonable number of responses from specialist group in a period of 4 weeks, it was only 8.27 % of the BESS members. This may be due to unfamiliar topic of return to work after single tendon repair. This is likely to represent only a small proportion of Physiotherapists and Surgeons involved in providing return to work advice. Furthermore, we did provide open space in the survey for qualitative data collection of clinicians expert views, opinions, and feedback with regards to survey, some clinicians may have not utilised that opportunity due to time constrain.

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