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RESEARCH ARTICLE

Physiotherapists nearly always prescribe exercise for rotator cuff-related shoulder pain; but *why*? A cross-sectional international survey of physiotherapists

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Abstract

Background and Aims: This cross-sectional international survey explored the beliefs of physiotherapists regarding the possible mechanisms of benefit of exercise for rotator cuff-related shoulder pain (RCRSP). Clinical practice guidelines recommend physiotherapists use exercise as a primary treatment to help people with RCRSP, but the explanations provided to patients by physiotherapists regarding its mechanism of effect is unknown.

Materials and Methods: Registered physiotherapists were surveyed about 'how and why' they believe exercise provides a clinical benefit for people with RCRSP. Information was also gathered about commonly used exercise types and preferred diagnostic labels. The survey was designed and reported in concordance with Consensus-Based Checklist for Reporting of Survey Studies guidelines.

Results: Four hundred and eighty physiotherapists from forty-nine countries completed the survey. Psychosocial and biomedical mechanisms of exercise were evenly selected by participants. Improving muscle strength, muscle endurance, pain self-efficacy and reducing kinesiophobia, and fear avoidance beliefs were the most common individual mechanisms thought to underpin exercise therapy for RCRSP. Rotator cuff-related shoulder pain was the most commonly used diagnostic label.

Discussion and Conclusion: Physiotherapists hold beliefs regarding exercise mechanisms that is largely concordant with the current evidence base, which is commendable. Future research should consider the patients perspective and consider testing commonly selected mechanisms of exercise, such as shoulder muscle strength, pain self-efficacy and kinesiophobia as possible mediators of recovery.

KEYWORDS

exercise, exercise mechanisms, physiotherapy, rotator cuff, shoulder pain, strengthening

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1 | INTRODUCTION

Shoulder pain is common and impacts on myriad functions of life (Page et al., 2019; Urwin, 1998). Rotator cuff-related shoulder pain (RCRSP) is reported to be the most frequent manifestation of shoulder pain (Luime et al., 2004) and unfortunately can prove resistant to medical, surgical and non-surgical interventions. The veracity and usefulness of RCRSP as a diagnostic label for shoulder pain has been explored elsewhere (Lewis, 2016; Lewis & Powell, 2022; Lo et al., 2022a; Requejo-Salinas et al., 2022; Zadro, 2021) and is beyond the scope of this study.

Many treatments, with similar effectiveness, exist to help people suffering with RCRSP. Of the treatments available, education and exercise therapy are widely recommended as a practical, sensible, and high value first-line intervention (Babatunde et al., 2021; Pieters et al., 2020). Therefore, exercise is the primary focus of this publication. Whilst uncertainty exists regarding the absolute benefit of exercise therapy for managing RCRSP (Page et al., 2016), similar could be said for most (if not all) available treatment options, whether surgical or non-surgical. A possible explanation for the hitherto observed modest clinical effects of exercise for people with RCRSP is the enduring ambiguity of 'how and why' shoulder exercise may influence the experience of shoulder pain. Put simply, if a person experiences an improvement in shoulder pain or function in response to an exercise program, how this occurred is currently unclear. Conversely, if a person doesn't experience a clinical benefit in response to exercise, we often don't know why. This lack of knowledge about treatment mechanisms is not limited to exercise or to the shoulder (Lee et al., 2016) and is an area of burgeoning research interest (Nguyen et al., 2020). Biopsychosocial mechanisms underpinning exercise for musculoskeletal conditions have been proposed (Smith, 2019), however there is a dearth of research specifically testing these mechanisms for RCRSP.

Research has been conducted investigating the mechanisms proposed by clinical trialists for the beneficial effect of exercise for RCRSP, persistent low back pain and knee osteoarthritis (Beckwee et al., 2013; Powell et al., 2022; Wun et al., 2020). Despite this, to the best of the authors knowledge, no research to date has explored the beliefs of practising physiotherapists regarding the possible causal mechanisms of exercise therapy for managing RCRSP. This is despite the overwhelming majority (up to 99.8%) of physiotherapists reporting they would prescribe exercise for people presenting with signs and symptoms resembling RCRSP (Smythe et al., 2020). Understanding clinician perspectives is important because it is the clinician who is tasked with providing explanatory information about the available treatments during shared decision making. In turn, it is often these explanations that patients latch onto (Setchell et al., 2017), which have the potential to influence perceptions of their condition.

Given the role physiotherapists undertake in helping people with RCRSP, most often via the prescription of exercise, the primary aim of this study was to explore how physiotherapists believe exercise may provide benefit for individuals with RCRSP. Secondary aims were to compare the beliefs of practising physiotherapists with mechanisms proposed by clinical trialists, and to determine whether there is a difference between physiotherapists with and without a special interest in musculoskeletal shoulder pain pertaining to whether they believe biomedical or psychosocial mechanisms most often underpin exercise therapy.

2 | METHODS

2.1 | Design

This study is a cross-sectional online international survey exploring physiotherapists beliefs of the possible mechanisms underpinning exercise therapy in the management of RCRSP. The design of this study was partly inspired by a previous published survey exploring physiotherapy practice for RCRSP (Bury & Littlewood, 2018). The design was chosen to capture, globally and at scale, the average viewpoint of physiotherapists regarding mechanisms of exercise for RCRSP. The design and reporting of this survey is concordant with the Consensus-Based Checklist for Reporting of Survey Studies (CROSS) guidelines (Sharma et al., 2021).

2.2 | Ethics

Ethical approval for this survey was obtained by the Bond University Human Research Ethics Committee (JP03070).

2.3 | Survey development

The authors developed an original 22-item survey (Appendix 1) using Qualtrics software (Qualtrics, Provo, Utah) guided by the results of a recent scoping review of commonly suggested mechanisms of exercise for RCRSP as proposed in clinical research (Powell et al., 2022). The survey was divided into three main sections. Section one was designed to capture participant demographic information. Section two was designed to identify the beliefs of physiotherapists about the possible mechanisms underpinning exercise therapy for RCRSP. Section three was designed to elicit information about the practice of measuring shoulder strength, what diagnostic labels physiotherapists use to describe a clinical presentation resembling RCRSP and whether knowledge of treatment mechanisms was important to their clinical practice. The survey employs the use of a clinical vignette to help orient participants towards a 'typical' clinical presentation of RCRSP. The clinical vignette was adapted from Bury & Littlewood, 2018 (Bury & Littlewood, 2018) and is documented in Box 1 below. The pretesting process of the survey was 2-staged and involved 15 physiotherapists. Stage 1 involved pretesting the survey with 5 registered physiotherapists in Australia (male = 4, female = 1),

after which minor amendments were made to the wording and structure of survey questions to improve flow. Stage 2 involved pretesting the survey with 10 (male = 6, female = 4) registered physiotherapists from Australia (n = 5), United Kingdom (n = 2), North America (n = 2) and Thailand (n = 1) and appropriate minor modifications were made to wording and adding skip logic functions where necessary.

Box 1 Clinical vignette

A 52 year-old man presents to you with a 6-month history of non-traumatic, gradual onset, right-sided shoulder pain. The man works as a financial planner and thus is not engaged in labour intensive work. The pain is predominately confined to the anterolateral region of the shoulder. There are no radiculopathy symptoms or referral of pain down the arm or up the neck. Pain intensity is mild to moderate in nature, rising to 5/10 at worst and is negligible at rest. Pain type is typically dull unless aggravated, in which the pain can become sharper. Aggravating factors are shoulder abduction (painful arc sign), reaching behind the back and sleeping on the affected side. There is no history of shoulder dislocation or feelings of instability. Passive range of motion (ROM) of the shoulder is preserved. Shoulder external rotation strength, as measured by a hand-held dynamometer, is reduced by 20% on the affected side vs. the unaffected side but a massive full thickness rotator cuff tear is not suspected. Cervical spine ROM is full and pain free. The acromioclavicular joint is unremarkable. An ultrasound scan of the affected shoulder has been performed, which reveals tendinopathy of the supraspinatus and thickening of the subacromial bursa. There are no relevant co-morbidities. The pain is impacting the man's quality of life, mainly disrupting sleep and the ability to participate in his weekly tennis.

2.4 | Sampling and recruitment

Physiotherapists were able to participate in this study if they were, (1) registered with their national accrediting body, (2) at the time of the survey were treating people seeking care for shoulder pain, (3) aged 18 years and above, and (4) were proficient in the English language. Convenience sampling was used to recruit potential participants via the social media platforms Twitter™, Instagram™ and Facebook™. One month after the initial advertisement of the survey on the social media platforms, a reminder was posted to prospective participants. This recruitment strategy was hypothesised to be sufficient to obtain a sample size of ≥350 participants, which was adequate in previous comparable research (Bury & Littlewood, 2018; Smythe et al., 2020). The survey was live online between March 30 and 9 May 2022.

2.5 | Statistical analysis

Data was collected via Qualtrics software (Qualtrics) and exported to SPSS v28 (IBM Corp) for statistical analysis. We set a threshold that minimum 60% of the survey be completed to be included in the final analysis. Descriptive statistics were used to summarise the data and Chi-square tests (alpha 0.05) were used to compare those with and without a special interest in shoulder pain for whether they thought biomedical or psychosocial factors most often underpinned the effect of exercise for RCRSP. Qualitative responses were categorised into cogent themes using thematic analysis (Braun & Clarke, 2006) and, where appropriate, incorporated into the main dataset.

3 | RESULTS

A total of 660 physiotherapists returned responses to the survey. One hundred and eighty responses were excluded for completing less than 60% of the survey, leaving 480 responses for inclusion in the final analysis (73% of the original sample). Figure 1 illustrates the flow of participants through this study. The survey took approximately 10 min to complete.

The demographic information of the participants in this study is displayed in Table 1 (see end for list of tables). Most respondents were male (61.3%), from Australia/New Zealand (38%), worked in private practice (72.1%) and indicated they had a self-reported special interest in shoulder pain (65.2%). The participants were from 49 different countries and all but one continent (Antarctica) was represented (Figure 2).

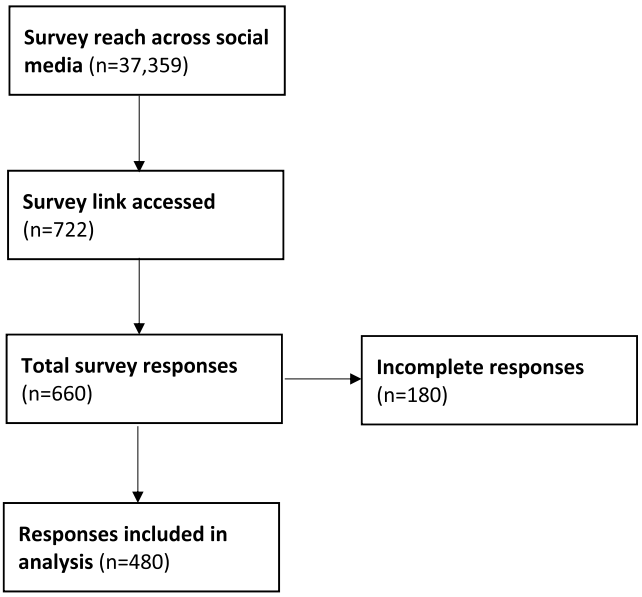


FIGURE 1 Flow of participants through study

TABLE 1 Participant demographic information

	Mean (range)	Standard deviation
Age[a]	34.2 (20–66)	9.8
Gender	Frequency (*n*)	Total (%)
Male	294	61.3%
Female	185	38.5%
Non-binary/third gender	1	0.2%
Total	480	100%
Clinical experience		
<5 years	204	42.5%
5–10 years	83	17.3%
10–15 years	65	13.5%
15–20 years	44	9.2%
>20 years	84	17.5%
Total	480	100%
Location of registration		
Australia and New Zealand	182	38%
Continental Europe	119	25%
Great Britain and Ireland	88	18%
Northern America	56	12%
South America	2	0%
Middle East and Northern Africa	11	2%
Southern Africa	4	1%
Asia	18	4%
Total	480	100%
Average number of shoulder pain cases treated per week		
Less than 5	108	22.5%
5–10	248	51.6%
11–15	71	14.8%
>15	53	11%
Total	480	100%
Clinical setting[b]		
Private practice	344	72.1%
Hospital inpatients	6	1.3%
Hospital outpatients	90	18.9%
Aged care facility	2	0.4%
Community health	25	5.2%
Professional sport	10	2.1%
Total	477	100%
Special interest in MSK shoulder conditions		
No	167	34.8%
Yes	313	65.2%
Total	480	100%

[a]Based on 432 respondents.

[b]Based on 477 respondents.

3.1 | Would you prescribe exercise for this clinical presentation?

Almost all (99%) respondents indicated they would prescribe exercise for the type of presentation described in the clinical vignette.

3.2 | Exercise type

Resistance exercise was the most common type of exercise physiotherapists would prescribe for the clinical presentation described in the vignette (288/474; 60.8%). Resistance exercise was selected approximately three times more often than the next most common type of exercise, motor control exercise (102/474; 21.5%) (Figure 3). The most common 'other' exercise type was a combination of exercise types (19/474; 4%).

3.3 | Exercise mechanisms

Respondents selected a balanced variety of mechanisms to explain the clinical effectiveness of exercise for RCRSP. Psychosocial factors were selected most often (325/472; 68.9%) followed by neuromuscular factors (289/472; 61.2%), neurophysiological factors (58.3%) and tissue healing factors (45.3%) (Figure 4). 'Other' mechanisms were proposed rarely (8/472; 1.7%) with the most common being a combination of all suggested mechanisms (6/8; 75%).

Among neuromuscular mechanisms, increased muscle strength ($n = 293$), muscle endurance ($n = 239$) and enhanced shoulder motor control ($n = 238$) were the most selected mechanisms to explain possible improvements in shoulder pain and function with shoulder exercise. An increase in acromiohumeral distance was the least selected mechanism ($n = 19$) (Figure 5a).

Psychological mechanisms were deemed important by the vast majority of respondents (431/475; 90.7%). The specific psychological mechanisms selected were relatively evenly spread; with kinesiophobia ($n = 354$), pain self-efficacy ($n = 308$), and fear avoidance beliefs ($n = 306$) the most selected psychological mechanisms to explain the possible effectiveness of shoulder exercise. Depression ($n = 83$) and anxiety ($n = 129$) were selected the least (Figure 5b).

When dichotomised into either biomedical or psychosocial mechanisms to explain the effect of shoulder exercise, psychosocial mechanisms (249/473; 52.6%) were selected slightly more often than biomedical mechanisms (224/473; 47.4%). Respondents with a self-reported special interest in musculoskeletal shoulder pain were significantly more likely to select psychosocial mechanisms (173/307;

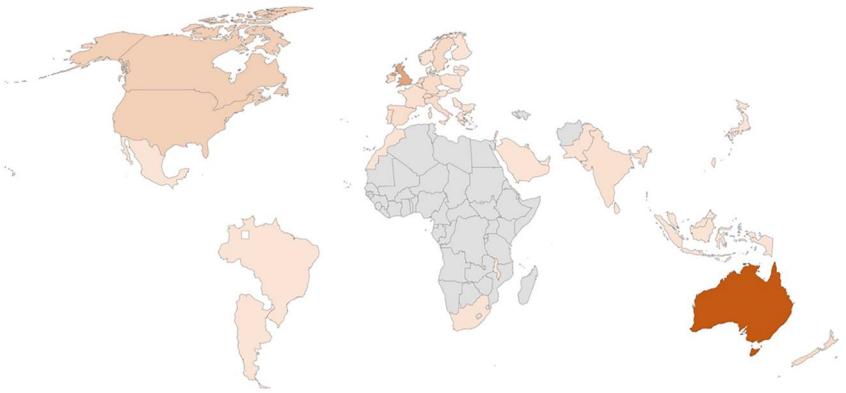


FIGURE 2 Countries represented in the survey

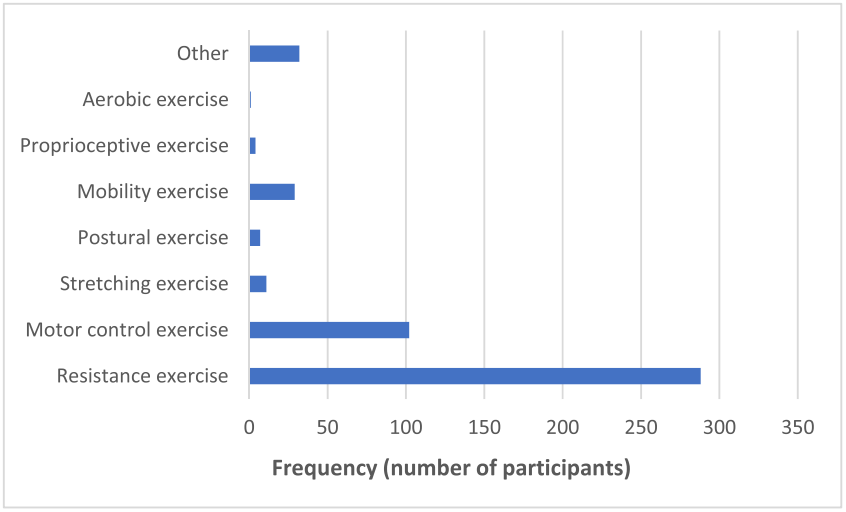


FIGURE 3 Exercise types selected to manage the presentation described in the clinical vignette

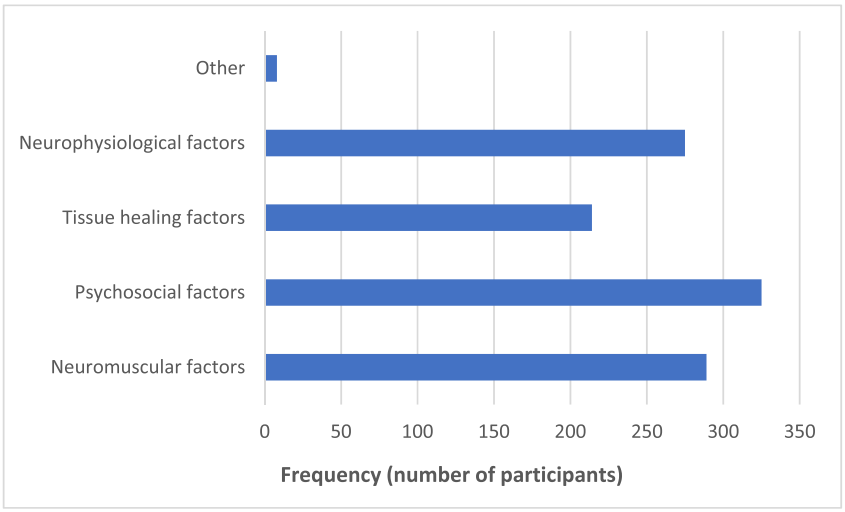
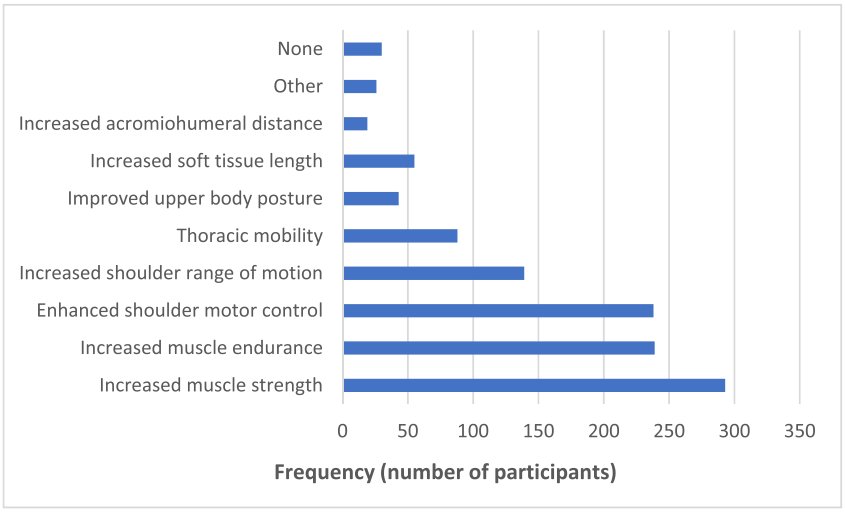


FIGURE 4 Mechanisms selected by physiotherapists to underpin exercise for the presentation described in the clinical vignette

(a)



(b)

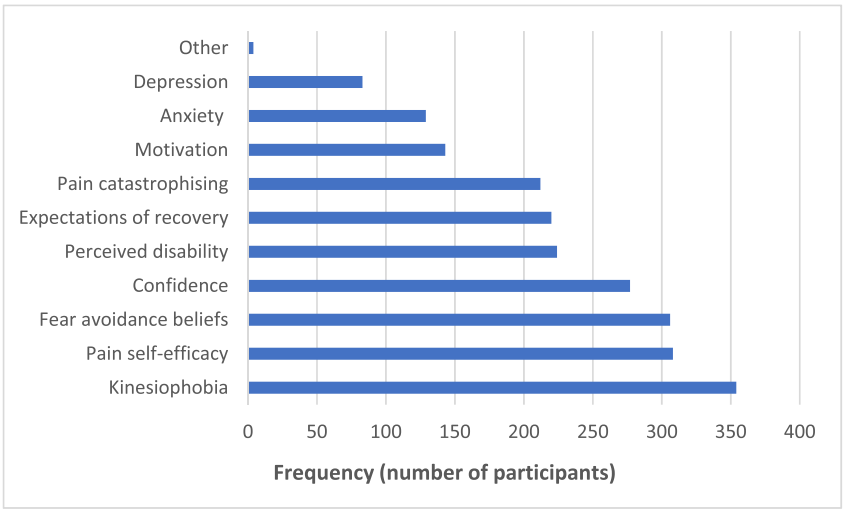


FIGURE 5 (a) Neuromuscular mechanisms selected by physiotherapists to underpin exercise for the presentation described in the clinical vignette, (b) Psychological mechanisms selected by physiotherapists to underpin exercise for the presentation described in the clinical vignette

56.4%) than those without a self-reported special interest (76/166; 45.8%) (Chi-Squared = 4.8, $p = 0.028$).

Physiotherapists were uncertain regarding the importance of tissue healing mechanisms in response to exercise for shoulder pain, with approximately half believing it is important (234/457; 51%) and half believing it is not important (223/457; 49%). In contrast, most physiotherapists in this cohort (394/455; 87%) believe neurophysiological factors to be an important mechanism underpinning exercise.

3.4 | Scapular dyskinesis

Most physiotherapists in this cohort (303/461; 66%) did not believe that an identified scapular dyskinesis need be rectified or optimised for shoulder pain and function to improve.

3.5 | Shoulder weakness

Most physiotherapists in this cohort (275/459; 60%) believed the external rotation weakness described in the clinical vignette should be a primary target for treatment.

3.6 | Posture

Slightly more physiotherapists in this cohort (266/462; 58%) did not believe that any detected postural abnormalities of the shoulder complex (including the thoracic spine) to be an important treatment target.

3.7 | Shoulder strength measurement

Most physiotherapists in this cohort (355/463; 77%) indicated they regularly measure shoulder strength in their clinical practice. The most common method of measuring maximal shoulder strength was manual muscle testing (MMT) (193/348; 56%) followed by handheld dynamometry (113/348; 33%) and isokinetic testing (20/348; 6%). 'Other' methods suggested by respondents included using a force frame ($n = 8$) and using various repetition maximum tests ($n = 7$).

3.8 | Diagnostic label

Most physiotherapists in this cohort (267/454; 59%) selected RCRSP as the diagnostic label they would use for the clinical presentation described in the vignette (Figure 6). Rotator cuff-related shoulder pain was selected four times more often than the next most common diagnostic label, subacromial pain syndrome (62/454; 14%) and rotator cuff tendinopathy (51/454; 11%). The traditionally common diagnostic labels subacromial/shoulder impingement syndrome (18/454; 4%), shoulder bursitis (2/454; 0.4%) and rotator cuff disease (1/454; 0.2%) were selected relatively infrequently. Some respondents suggested 'other' diagnostic labels including sensitive shoulder ($n = 2$), shoulder irritation ($n = 2$), and weak and painful shoulder ($n = 1$).

3.9 | Knowledge of exercise mechanisms

The vast majority of participants in this survey (408/455; 90%) indicated that more knowledge on the possible mechanisms of exercise for shoulder pain would benefit their clinical practice.

4 | DISCUSSION

The results of this international cross-sectional survey suggest physiotherapists hold beliefs regarding exercise mechanisms for RCSRSP that is largely concordant with the current evidence base. In fact, it appears practicing physiotherapists, in this cohort, hold beliefs regarding the possible mechanisms of exercise that more closely approximates contemporary scientific research compared to the explanations proffered in randomised clinical trials (Powell et al., 2022).

Almost all (99%) physiotherapists who participated in this survey indicated they would prescribe some form of exercise for a clinical presentation resembling RCRSP. This is similar to previous published surveys of physiotherapists from around the world (Bury & Littlewood, 2018; Pieters et al., 2019; Smythe et al., 2020) and is consistent with recommendations from both clinical practice guidelines (Hopman, 2013) and systematic reviews (Haik et al., 2016; Pieters et al., 2020; Steuri et al., 2017). Uncertainty remains regarding the absolute effectiveness of exercise for RCRSP (Page et al., 2016) and this study does not address or mitigate this uncertainty, however, physiotherapists in this cohort do adhere to recommendations in the scientific literature. Resistance exercise was clearly the most common type of exercise physiotherapists would prescribe for people with RCRSP and was three times more common than motor control exercise. It is unclear why resistance exercise was clearly the most popular exercise type to manage RCRSP. Resistance exercise to 'strengthen' muscles of the shoulder complex is a recommended intervention (Haik et al., 2016) and is possibly effective for people with RCRSP (Naunton et al., 2020) but it is unclear if resistance exercise is clinically superior to motor control exercise (Lafrance et al., 2021). Perhaps simple progressive resistance exercise is considered a more parsimonious exercise approach to manage RCRSP and there is evidence that perceived complexity can be a barrier to initiating and maintaining participation in exercise (Winett et al., 2009).

Physiotherapists surveyed in this study, somewhat surprisingly, selected psychosocial mechanisms of exercise more often than biomedical mechanisms. In fact, 91% of physiotherapists believe psychosocial constructs to be important mechanisms underpinning the possible effectiveness of exercise for RCRSP. This is in complete contrast to a recent scoping review investigating proposed

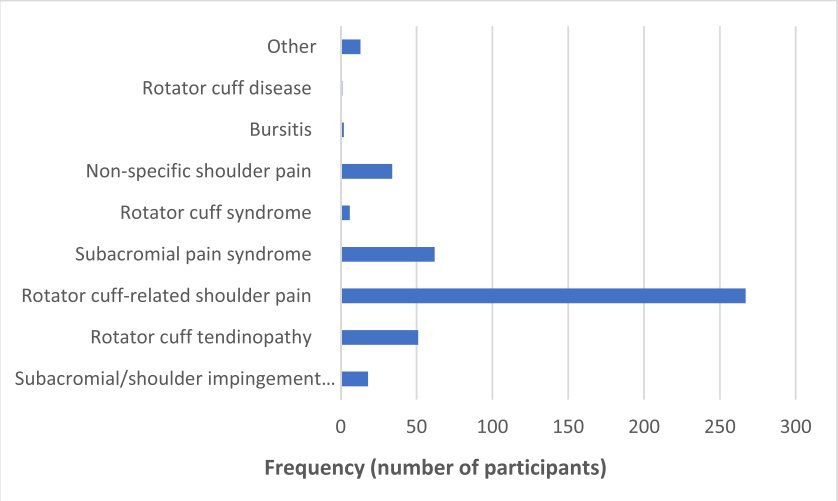


FIGURE 6 Diagnostic label preferred by physiotherapists to describe the presentation in the clinical vignette

mechanisms of benefit of exercise for RCRSP in randomised clinical trials (Powell et al., 2022). This scoping review reported only 5% of all proposed mechanisms of exercise in clinical research were related to psychosocial constructs (Powell et al., 2022). This appears to indicate that practising physiotherapists might hold a more rounded understanding of the probable multifactorial causal effect of exercise for RCRSP compared to clinical researchers and reiterates appeals for clinicians and researchers to work together in the research process (Esculier et al., 2018). Kinesiophobia, pain self-efficacy and fear avoidance beliefs were the specific psychological mechanisms selected most often. These psychological constructs appear to be associated with clinical outcomes in people with shoulder pain (Chester et al., 2018; Luque-Suarez et al., 2019; Martinez-Calderon et al., 2018) but it is unclear to what extent exercise can modify these constructs or if they are valid mediators of recovery for people with RCRSP. There is evidential support in osteoarthritis research for self-efficacy as a mediator of recovery (Lima et al., 2022) and it is plausible this could be the case for RCRSP too (Chester et al., 2019).

Among neuromuscular mechanisms, muscle strength and muscle endurance were most proffered by physiotherapists. This is most likely correlated to resistance exercise being found to be the most popular exercise type to manage RCRSP in this survey. Muscle strength is also a popular causal explanation proposed in clinical research (Powell et al., 2022), indicating agreement between clinicians and clinical researchers. Just how relevant improvements in shoulder strength are in the clinical outcomes of people with RCRSP is currently uncertain (Hotta et al., 2022; Powell & Lewis, 2021) but evidence from knee osteoarthritis research suggests it is a plausible mediator of positive clinical outcomes (Hall et al., 2018). Interestingly, an increase in acromiohumeral distance was the least proposed neuromuscular mechanism in this study, which accurately reflects the evidence base (Park et al., 2020). This diverges from the explanations proffered by clinical researchers (Powell et al., 2022), in which acromiohumeral distance was one of the more common neuromuscular mechanisms proposed. This may suggest, in this cohort at least, clinicians are evolving with the evidence, and this is to be commended.

The importance of tissue healing as a reason to prescribe exercise remains equivocal for the participants in this survey. This probably reflects the lack of consensus in the literature and is an area where research is required. Currently, it appears macroscopic tendon structure need not improve for pain and function to improve (Drew et al., 2014; Ingwersen et al., 2017), however it is plausible that changes in the microscopic biochemical environment of the rotator cuff and subacromial bursa may influence clinical outcomes (Dean et al., 2015). As such, it is unsurprising that 90% of respondents to this survey believe more knowledge on the possible mechanisms of exercise for shoulder pain would support their clinical practice.

Physiotherapists with a self-reported special interest in musculoskeletal shoulder pain were significantly more likely to believe psychosocial mechanisms underpin exercise compared to those without a self-reported special interest. One explanation for this finding could be those with a special interest are more likely to have undertaken further training by attending evidence-based continuing education courses on shoulder pain, or perhaps, are more engaged with contemporary research. This may highlight the importance of keeping up to date with research trends.

Most physiotherapists in this study do not believe scapular dyskinesis or upper body postural abnormalities represent important treatment targets. This belief is backed up by high quality evidence, which suggests that while scapular focused exercise is effective at reducing shoulder pain and improving function, it does not seem to do so via a change in scapular motion (Hotta et al., 2022; Reijneveld et al., 2017). A recent secondary mediation analysis of a randomised controlled trial (Hotta et al., 2022) reported scapular motion and position did not mediate the effect of scapular focused exercise on shoulder pain and disability in a cohort of people with RCRSP. Moreover, the relationship between static posture and shoulder pain and function are currently tenuous (Barrett et al., 2016). Again, physiotherapists should be commended for holding beliefs that align with contemporary evidence.

Most physiotherapists indicated measuring shoulder force output (strength) was an important part of their clinical practice, and

the most common measurement method was MMT. Manual muscle testing can be a reliable method of measuring shoulder force output (Bohannon, 2018) but is less sensitive and more subjective compared to hand held dynamometry (HHD) and isokinetic testing (Kolber & Cleland, 2013). It is arguably a sensible and pragmatic recommendation for physiotherapists to consider using a HDD, especially given the increasing affordability of these devices (Karagiannopoulos et al., 2022). What clinicians then do with the information derived from the measure is another question entirely, is subject to variation based on the individual clinical context and is the focus of ongoing academic discussion.

The diagnostic label favoured by physiotherapists in this survey was, compellingly, RCRSP. This finding agrees with a recent consensus study of shoulder experts (Littlewood et al., 2019) and reflects the cultural and academic momentum to move away from inaccurate and potentially harmful pathoanatomical diagnostic labels such as subacromial/shoulder impingement syndrome and rotator cuff tear (Lewis, 2016; Lo et al., 2022b; Stewart & Loftus, 2018; Zadro, 2021). Intriguingly, clinicians appear to be more cognisant of current trends in best practice management of shoulder pain compared to researchers, who still overwhelmingly use the term subacromial/shoulder impingement syndrome (Powell et al., 2022).

The findings of this survey must be considered in light of its limitations. We used a convenience sampling recruitment method and were unable to calculate an exact response rate. The survey reached >37,000 potential participants across the social media platforms Instagram™, Twitter™, and Facebook™, however, it is impossible to know what proportion were registered physiotherapists. It is important to acknowledge a possible selection bias too with most participants being male, with a self-reported special interest in shoulder pain, working in private practice and from an English speaking and highly economically developed country. Therefore, the findings of this survey must be interpreted within this context. Moreover, using the authors social media platforms may bias the sample due to familiarity of work. Inherent to de-identified surveys is the problem of screening participants and there is a chance that not all who completed the survey were registered physiotherapists. Whilst the use of clinical vignettes in health research to elicit knowledge, opinions, or attitudes from study participants has many benefits, there are limitations, particularly with external validity (Gould, 1996). We attempted to mitigate this limitation by basing our vignette on published precedents (Bury & Littlewood, 2018; Smythe et al., 2020), thoroughly analysing the evidence-base, and pretesting it to physiotherapists in order make it as generalisable and robust as possible.

5 | CONCLUSION

Physiotherapists in this cohort believe exercise may be effective for RCRSP via a combination of biomedical and psychosocial mechanisms, with a slight leaning towards psychosocial. Improving muscle strength, muscle endurance, pain self-efficacy and reducing kinesiophobia, and fear avoidance beliefs were the most common individual mechanisms thought to underpin exercise therapy for RCRSP. The term RCRSP was the term of choice identified by respondents of this survey. Subsequent research should attempt to determine if these mechanisms are valid mediators of recovery in response to an exercise program in people with RCRSP.

AUTHOR CONTRIBUTIONS

Jared K. Powell, Ben Schram, Jeremy Lewis, and Wayne Hing conceived and designed the study. Jared K. Powell developed the survey and all authors edited and ratified the final version. Jared K. Powell, Ben Schram and Jeremy Lewis distributed the surveys on social media. Jared K. Powell executed data analysis and all authors critically appraised the results. Jared K. Powell drafted the manuscript, and all authors were involved in the subsequent editing process and approval of the final version of the manuscript.

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CONFLICT OF INTEREST

Jared K. Powell and Jeremy Lewis have received remuneration for the provision of continuing professional development courses on shoulder pain rehabilitation.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available (https://osf.io/bg3ar/).

ETHICS STATEMENT

Ethical approval for this survey was obtained by the Bond University Human Research Ethics Committee (JP03070).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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