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ROTATOR CUFF DISORDERS: A SURVEY OF CURRENT (2018) ITALIAN PHYSIOTHERAPY PRACTICE

1 **ABSTRACT**

2

3 **BACKGROUND:** Shoulder pain is a common musculoskeletal complaint and disorders
4 of the rotator cuff (RC) are widely regarded as the most common cause. Where clinical
5 care is required, physiotherapists play an integral role. Previous studies have reported
6 physiotherapy practice across other countries as a means of determining current
7 practice and understanding whether practice changes over time in response to
8 emerging research evidence.

9 **AIM:** To investigate the practice of Italian physiotherapists, in order to determine
10 current practice for the assessment and management of RC disorders.

11 **METHODS:** A cross sectional online survey. A 20-item questionnaire based on one
12 clinical vignette was developed using Survey Monkey Software. Data were analyzed
13 descriptively and difference in proportions between those with a specific education
14 compared to those with no specific education (i.e. "Master's Degree," "1-2 days
15 Training Course" or "Other) were analysed using the chi-squared test.

16 **RESULTS:** A total of 805 participants accessed the survey with a total of 436
17 completed responses (54%). Fifty-five percent of respondents were male (239/436).
18 Seventy-one percent of respondents (309/436) reported having specific education with
19 regards to RC disorders. The methods of diagnosing RC disorders were variable
20 across the respondents as well as the requests for imaging (184/436, 42%), the
21 adoption of manual therapy techniques (251/436, 58%), the duration of treatment
22 (231/436, 53% visit the patient six times at least) and the administration of physical

23 examination test (175/436, 40%). Advice (279/436, 64%) and some form of exercise
24 therapy (268/436, 62%) are the most popular choices of treatment.

25 **DISCUSSION AND CONCLUSION:** This current study is the first which described
26 Italian physiotherapy practice for RC disorders. Italian physiotherapy practice is in line
27 with other European countries. Italian physiotherapy practice also aligns with current
28 recommendations with regards to minimal use of imaging and prescription of
29 therapeutic exercise. However, there is heterogeneity across the responses
30 particularly with regards to use of manual therapy, physical examination tests, and
31 duration of treatment.

32 Furthermore this study is a platform for future research to explore whether Italian
33 physiotherapy practice changes over time.

34

35

36 **KEYWORDS:** Evidence-Based Practice, Exercise Therapy, Physical Therapy
37 Modalities, Rotator Cuff

38 INTRODUCTION

39 Shoulder pain is one of the most common musculoskeletal disorders, with up to 26%
40 of the general population complaining of pain over a one month period in the last year
41 [1]. Rotator cuff (RC) disorders, account for 44% to 80% of all shoulder complaints [2],
42 regardless of age and level of activity [3]. Clinically RC disorder can present with pain,
43 weakness and functional difficulties during activities of daily living and sport [4,5].
44 Moreover, for many patients this is not a self-limiting problem, with 50% of patients
45 reporting ongoing symptoms 12 months after onset [6].

46 Physiotherapists play an integral role in the management of people with RC disorders
47 and, given the burden of this problem, it is vital that physiotherapists evolve their
48 practice and incorporate research evidence as it emerges. One way of understanding
49 current practice is to undertake a survey. Bury and Littlewood [4] undertook such a
50 survey of UK physiotherapy practice in 2016 as a follow-up to a previous survey [5] to
51 describe practice and understand how practice has evolved over time in line with
52 current recommendations. These surveys reported that practice had evolved between
53 2011 and 2016 and this evolution was in line with current recommendations [7,8].

54 The evidence based for the management of RC disorders is limited but current
55 recommendations include minimal use of imaging, unless red flag pathology (e.g
56 humeral head dislocation or fracture) is expected or the patient does not respond to
57 treatment as expected, and prescription of progressive therapeutic exercise, although
58 the specifics of this prescription remain less clear. There are clear limitations of
59 commonly used physical examination tests in informing a diagnosis or prognosis [7,8]

60 To our knowledge, no similar survey has been undertaken in relation to Italian
61 physiotherapy practice for RC disorders. Therefore, the aim of this current survey is to

62 investigate the practice of Italian physiotherapists for RC disorders, in order to
63 determine current physiotherapy practice and to compare this with practice in other
64 European countries. Furthermore we will analyze differences between respondents
65 classified as having a “specific education” (i.e. physiotherapists that attended specific
66 training courses in the management of RC disorders) and those with “no specific
67 education” when evaluating treatment prescription by respondents in this survey.

68

69 **METHODS**

70 **Study Design**

71 The cross-sectional online anonymous survey developed by Bury and Littlewood [4]
72 was adapted, with the permission of the authors, to the Italian language and modified
73 further. Three questions were added to the demographic information, in order to better
74 characterize the personal and educational background of the respondents: age of the
75 respondents, gender and level of qualification.

76 Moreover, a question to better qualify the respondent’s specialization was added: it
77 was “Do you have a specific education in the management of rotator cuff disorders?”,
78 to which the participants had four mutually exclusive answer options: “No”, “Yes,
79 Master's Degree”, “Yes, 1-2-days Training Course”, or “Yes, Other”.

80 Furthermore the open question regarding the instructions given to the patient when
81 prescribing exercises, was changed in some of its parts to make it as clear as possible
82 for the respondents. In particular, the item “Frequency” was split into “Daily frequency”
83 and “Weekly frequency”, the item “Position” was changed into “Position of exercise
84 execution” and the item “Quality of movement” became “Characteristics of the
85 movement (velocity, fluidity, ...)”.

86 As per the original survey which focused on RC disorders, a clinical scenario detailing
87 a patient reporting typical signs and symptoms of a RC disorder (Table 1, left column)
88 was maintained and translated in Italian (Table 1, right column). This is a recognized
89 way to elicit responses that, as closely as possible, stimulate thought aligned to the
90 decision making process of everyday clinical practice.

91 TABLE 1 HERE

92 This study was approved by the Ethical Committee of the ASL of Lecce (Italy), with
93 protocol number 16 of the 21st February 2018. The full version of the survey is
94 available as Supplementary material.

95 **Sampling and recruitment**

96 The inclusion criterion was physiotherapists based in Italy. Potential participants were
97 reached through different sources: Facebook, e-mail and Whatsapp, using the
98 researchers' profiles and contacts and an e-mail newsletter promoted by Italian
99 Physiotherapists Association.

100 In the instructions for filling out the survey there was the specific request that the survey
101 itself was only for physiotherapists. There was also the request to complete the survey
102 only once and we incorporated the function that there could only be one completion
103 per browser or per e-mail address.

104 Informed consent was implied through completion of the survey.

105 **Sample size**

106 In this current survey, our approach was to obtain the maximal number of responses
107 in a defined time period. This approach is reflective of other similar surveys [4,9].

108 **Data collection**

109 Based on previous surveys, a one month was set recognising that most responses to
110 surveys occur within the first one to two weeks [4]. The survey was available via Survey
111 Monkey from the 25th of February 2018 and was closed 2 weeks later, because no
112 further requests to complete the survey were apparent after this time. No reminders for
113 survey completion were sent.

114

115 **Data analysis**

116 Data were analyzed using Microsoft Excel. Descriptive statistics are reported. The
117 remaining results were analyzed considering two primary divisions: the first between
118 those having a specific education in RC disorders (SE) and those who had no specific
119 education (NSE), the second comparing (inside the SE group) those specialized
120 through a Master's Degree, those specialized through a 1-2 days Training Course (TC)
121 and those specialized through other means (O). Differences in the proportions of
122 responses between these groups were analyzed using the chi-squared test, completed
123 using "R".

124 **RESULTS**

125 A total of 805 participants accessed the survey. The respondents who were not
126 physiotherapists based in Italy (n=11) were automatically excluded. Software can not
127 show the response rate of all the questionnaires. For this reason, authors decided to
128 ignore the entire survey questionnaire even if only a single question was unanswered.
129 That is, further 358 were excluded due to incomplete compilation of the survey. The
130 remaining 436 (54%) surveyed were used in the data analysis (Figure 1).

131 **FIGURE 1 HERE**

132 The majority of respondents (n = 228/436; 52%;) were under 30 years and are male
133 (239/436; 55%), received their degree less than ten years previously (314/436; 72%)
134 and were private practitioners (299/436; 69%).

135 The demographic details of the respondents are presented in table 2 along with
136 educational levels.

137

138 TABLE 2 HERE

139 Following this descriptive detail, the participants were asked to respond to a series of
140 further practice related questions.

141 All of the 436 respondents stated that the patient described in table 1 could be treated
142 within physiotherapy.

143

144 **Would you request any further information or undertake any further clinical**
145 **tests?**

146 The results of this question are summarized in Figure 2 and Figure 3. Eight percent of
147 respondents (34/436) would not request any further information or undertake any
148 further clinical tests. Thirty-eight percent (167/436) stated that they would request
149 further subjective information and 40% (175/436) would carry out further physical
150 examination tests. Forty-two percent of respondents (184/436; 33% SE, 57% NSE)
151 would request further investigation (e.g. X-ray, ultrasound scan, MRI); of these, a
152 significantly lower proportion belonged to the SE group ($p < 0.05$) and, in particular to
153 Master's degree professionals ($p < 0.05$). Thirty-eight percent (165/436; 48% SE, 22%
154 NSE) would undertake further rehabilitation classification, e.g. the shoulder symptom

155 modification procedure (SSMP) [10] with a significantly greater prevalence of those
156 with a SE ($p < 0.05$) and particularly those with an Master's degree ($p < 0.05$).

157 One hundred and ninety-two respondents (44%) qualified their answers. Regarding
158 subjective information, the most common requests concerned about red flags
159 screening, previous trauma, characterization of pain, associated symptoms,
160 information about the onset, lifestyle, psychosocial screening, and previous treatments
161 and their outcomes.

162 Further physical examination tests that would be carried out included observation,
163 trigger point palpation, muscle strength tests and specific tests (cuff integrity,
164 impingement). Special orthopaedic tests were mentioned by one-third of respondents
165 (57/192, 30%), who less frequently belonged to the SE group and to the Master's
166 degree subgroup (22% Master's degree, 24% TC, 29% O).

167 FIGURES 1 and 2 HERE

168 **Which management strategies would you typically recommend for this patient?**

169 Figure 4 and Figure 5 highlight that treatment for patients with RC disorders was varied
170 among the respondents. Advice and education was most commonly prescribed
171 (279/436; 64%) as well as exercise therapy in all forms. Within the types of exercises,
172 62% (268/436) would include scapular stabilization exercises, 45% (197/436) isometric
173 exercises, 41% (180/436) isotonic exercises and 33% (143/436) a global kinetic chain
174 approach. A significantly higher proportion of respondents with a NSE ($p = 0.04$) would
175 include isotonic exercises compared to those with SE, but inside the SE group this
176 choice is particularly common among the Master's degree professionals (63% $p =$
177 0.0004).

178 Another popular treatment option was mobilization (251/436, 58%; 52% SE; 67% NSE)
179 with less of those respondents in the SE group choosing this option ($p = 0.003$).
180 Massage (including deep friction massage/soft-tissue release) would be utilised by
181 41% (179/436) of respondents. Only 6% (26/436) of all physiotherapists would suggest
182 referral for further investigation.

183

184 FIGURES 4 and 5 HERE

185

186 **When prescribing exercises, what instructions do you generally give to the**
187 **patient?**

188 Less than 40% (174/436) responded to this open-ended, non-mandatory question. In
189 this case a qualitative analysis of the answers was undertaken. In relation to pain, the
190 majority of respondents would expect it to be present while exercising. Exercising in
191 the pain-free range was expressed by 41% of the respondents (179/436), of which a
192 higher proportion belonged to the NSE group. Moreover, among the SE group
193 components, exercising in the pain-free range was less supported by Master's degree
194 physiotherapists (19%).

195 Regarding load, most respondents (105/350, 30%) suggested gradual progression
196 when loading and adjusting it with respect to the patient's abilities (76/350, 22%) and
197 under the guidance of acceptable levels of pain (62/350, 18%).

198 In relation to repetitions, most respondents would indicate up to 10 times (143/366,
199 39%) and/or up to three sets (89/366, 24%) and often to be guided by fatigue (65/366,
200 18%). Less frequently recommended were up to 15 repetitions (56/366, 15%), and
201 guided by pain (24/366, 7%).

202 In terms of frequency, the most common response was two times per day (123/358,
203 34%), followed by once (87/358, 24%) and three times per day (68/358, 19%).

204 The majority of respondents suggested exercising every day (158/346, 46%). There
205 was no overall difference between SE and NSE groups,

206 In terms of position of exercise execution, the majority of respondents preferred
207 exercises in standing (130/334, 39%). Some chose a comfortable position in order to
208 control compensation (41/334,12%) or making it functional to the provocative task
209 (39/334,12%) or even changing position following a gravity progression (21/334, 6%).

210 The functional approach was supported mostly by the members of the SE group and
211 in particular by the Master's degree professionals (23/84, 27%).

212 In relation to the characteristics of movement a slow (187/321, 58%), fluid (102/321,
213 32%) and controlled (87/321, 27%) movement was preferred in most cases. Slowness
214 and movement control were more frequently mentioned by the NSE group, while the
215 SE group and especially those with a Master's degree, emphasised fluidity and
216 preferred exercises at variable speed.

217 Concerning the onset of fatigue, most respondents consider it to be necessary to
218 progression (53/260, 20%) or at least normal when performing the last repetitions
219 (27/260, 10%). On the contrary, the need to reduce repetitions or propose rest when
220 fatigue appears (101/260, 39%) was less frequently expressed.

221 In relation to progression of exercises, the majority of respondents stated that they
222 would progress as pain allows (74/232,32%) or as fatigue allows (41/232, 18%) and
223 by increasing the load (72/232, 31%).

224

225 **What advice would you typically offer this patient?**

226 Italian physiotherapists would choose to offer a wide variety of advice about different
227 topics: advice about a home exercise program (382/436, 88%) was the most popular
228 choice followed by the use of written advice about self-management (157/436, 36%)
229 and counseling about relative rest and movement (163/436, 37%).

230

231 **After the initial assessment, how would you typically deliver this treatment?**

232 The results of this question are summarized in Table 3. The majority of the respondents
233 stated a preference for a combination of face-to-face appointments and self-
234 management at home (350/436, 80%; 86% SE; 72% NSE) with this choice significantly
235 more prevalent in NSE group members ($p = 0.005$). A lower percentage of total
236 respondents chose only individual face-to-face appointments (146/436, 36%; 27% SE;
237 44% NSE), with this choice significantly more prevalent in SE group members ($p =$
238 0.0002). SE group members were more likely to choose “Home Exercise Programme”
239 ($p=0.01$) and “Written advice on Self Management” ($p=0.02$) as advice for this kind of
240 patient, than those with NSE. (Figure 6).

241 FIGURE 6 HERE

242 **How many times and how long would you typically expect to see this patient?**

243 The results of these questions are summarized in Table 3. The majority of respondents
244 would see this patient 5-6 times (119/436, 27%) and over a six week period of time
245 with no statistically significant difference between groups ($p = 0.08$). A three month
246 treatment program was indicated only by 19% of all respondents (84/436); of which a
247 greater percentage were SE professionals ($p = 0.001$) and predominantly members of
248 the Master’s degree subgroups (37/107, 35% Master’s degree; $p = 0.02$).

249 TABLE 3 HERE

250

251 **Would you expect this patient to recover with the prescribed physiotherapy?**

252 The most common opinion on this question was that the patient would recover with
253 three months of physiotherapy (332/436, 76%), while a smaller amount of respondents
254 suggested six months (87/436, 20%).

255

256 **What would be your main treatment goals for this patient?**

257 This was an open-ended question and a qualitative analysis of the answers was
258 undertaken. Eighty-two percent (357/436) of the respondents reported at least one
259 treatment goal. The most recurrent themes were pain reduction, patient education and
260 increase in the pain-free range of motion.

261

262 **Would you consider referring this patient for a surgical opinion?**

263 The vast majority of respondents stated that they would not consider a surgical opinion
264 (271/436, 62%). Among the SE subgroups the Master's degree professionals were
265 significantly more likely to not refer the patient (83/107, 78% Master's degree; $p =$
266 0.0008) compared to the other SE physiotherapists.

267 Referral was considered because of failure of conservative treatment (102/163, 63%),
268 or for severe functional impairment (23/163, 14%).

269

270 **Do you think that research would benefit your practice with regard to rotator cuff**
271 **disorders?**

272 The vast majority of respondents considered that further research would benefit their
273 practice (395/436, 91%). In this case a qualitative analysis of the answers was
274 undertaken: one hundred and fifty five respondents suggested areas for further
275 research such as ideal exercise parameters, prognostic factors and the role of fascial
276 dysfunctions in the onset and maintenance of RC disorders.

277

278 **DISCUSSION**

279 This study provides new information regarding Italian physiotherapists' clinical practice
280 in relation to disorders of the RC and represents a starting point to understand how
281 Italian physiotherapy practice might change over time.

282 This survey reports that Italian physiotherapy practice aligns with current
283 recommendations with regards to minimal use of imaging, and prescription of advice
284 and therapeutic exercise that are the most popular choices of treatment.

285 Exercise is currently recommended as the mainstay of physiotherapy practice for the
286 management of RC disorders [8]. The findings of this survey reflect current
287 recommendations [8-12]. However, there is heterogeneity with regards to other factors
288 including use of physical examination tests for diagnosing RC disorders and use of
289 manual therapy in management.

290 There are many differences between physiotherapists with SE and NSE, and some of
291 these are significant. Physiotherapists with SE responded more in line with current
292 recommendations, than those with NSE, indicating that further specialist education
293 provides a beneficial effect in terms of the implementation of evidence based practice.

294 This differential response is similar to other European surveys of current physiotherapy
295 practice [9].

296 In relation to clinical assessment and treatment, the results of the present study elicit
297 several observations. In the clinical assessment 40% of respondents stated that they
298 would have carried out further physical examination tests. Although comments
299 included screening of the cervical/thoracic spine, observation and palpation, one-third
300 of respondents, mainly those with NSE, expressly mentioned performing specific
301 orthopaedic tests. These findings are in keeping with the UK survey [4], but in contrast
302 with current evidence that indicates the poor validity and reliability of these tests
303 [11,12].

304 Furthermore, 42% of the respondents would request further investigation (X-ray, MRI,
305 ultrasound scan) and a significantly lower proportion of these have a specific education
306 (33%) and followed a Master's degree (8%). The utility of diagnostic imaging in patients
307 with atraumatic shoulder pain is challenged by current evidence due to the presence
308 of abnormal morphology in asymptomatic individuals [13,14,15]. These findings,
309 similar to the results found in the UK by Littlewood et al. [5] more than in 2016 [4],
310 suggest mainly that professionals who did not have a Master's degree are more likely
311 to rely on imaging to make a diagnosis.

312 Thirty-eight percent of physiotherapists in the current study would use a rehabilitation
313 classification, for example the SSMP, in their clinical assessment, particularly those
314 with a SE and mainly Master's degree ones (respectively 48% and 73%). This might
315 reflect the clear limitations of many current approaches to the assessment of
316 atraumatic shoulders, however the validity and reliability of these classification systems
317 requires further investigation, which is currently conflicting [15].

318 Concerning treatment, Italian physiotherapists choose a wide selection of interventions
319 with advice, education and some form of exercise the most common. These findings
320 are in line with those of Bury and Littlewood [4] and current evidence, with studies
321 identifying exercise therapy as a promising treatment approach for RC disorders [7,11].
322 The variability in exercise prescription parameters reported in this survey reflects
323 current uncertainty about the optimal approach [16]. For example, 40% would instruct
324 pain-free exercise, but the majority of respondents would expect some level of pain,
325 mainly among physiotherapists with a SE and particularly with a Master's degree. This
326 is in line with Bury and Littlewood study [4] and showed that physiotherapists in these
327 two surveys are more likely to prescribe exercises into pain. Current evidence also
328 supports painful exercise in musculoskeletal disorders in the short-term [17], although
329 further research is needed to investigate how it applies specifically to RC disorders.

330 Regarding the type of exercise, scapular exercises were most common, although
331 isotonic, isometric and global kinetic chain exercises were also popular, reflecting the
332 same research uncertainty mentioned above [18].

333 Italian physiotherapists would also include manual therapy techniques in their
334 rehabilitation program, which is not currently supported by strong evidence in the long
335 term [19,20], and was less frequently used as a modality by comparison in the UK
336 survey [4]. One possible explanation for this, is that hands-on techniques still represent
337 a core element of musculoskeletal physiotherapy practice appreciated by patients and
338 widely taught in educational program and clinical professional development training in
339 Italy [21].

340 With respect to advice, Italian physiotherapists would offer this on a wide variety of
341 topics, among which "home exercise program" was the main one. Moreover, the most
342 popular choice of treatment delivery was a combination of supervised treatment and a

343 home exercise program. These two findings reflect research evidence that supervised
344 and self-managed exercise do not differ [22,23]. Group exercise was mentioned by a
345 very small number of participants, interesting given the emerging evidence for the
346 effectiveness of physiotherapy-led group exercise in various musculoskeletal
347 conditions, including shoulder pain [24,25].

348 Concerning the treatment period, the majority of Italian physiotherapists would treat
349 the patient up to a six-week period, while only around 20% for a three-month period.
350 There is no unanimity in literature on this topic, though it appears that three months
351 could be optimal for conservative treatment to reveal its efficacy [16].

352

353 **Strengths and limitations of this study**

354 A strength of this paper is the large number of respondents and the vignette-based
355 methodologies that are used to examine decision making processes and clinical
356 judgments made by health professionals. Vignette studies have been recognized as a
357 “hybrid” methodology that inherits the external validity strengths of survey research
358 and the internal validity strengths of experimental methods, highly generalizable to real
359 world behavior among clinicians [26]. Another original strength of this study is that the
360 respondents were divided into those with SE, and with NSE, in order to understand if
361 having a SE can lead to practice which more closely aligns to current
362 recommendations. Furthermore in the context of other studies, the current survey is
363 one of the largest that has been conducted worldwide in this clinical area with a wide
364 variety of respondents, but, despite this, there are some limitations. The number of
365 participants who failed to complete the survey was quite large (369/805; 46%). The
366 reasons for non-completion are unclear but the large number of participants who

367 completed and their varied backgrounds offers some reassurance with regard to the
368 validity of these findings.

369

370 **Future research**

371 The survey findings support the need for more high-quality studies to help establish a
372 reliable method of assessment, define the parameters of exercise therapy and clarify
373 the actual benefit of including therapies other than exercise in the rehabilitation
374 protocol, which remains open to question by the current evidence base for RC
375 disorders.

376

377 **CONCLUSION**

378 This survey is the first to describe Italian physiotherapy practice for RC disorders.
379 The present study found that Italian physiotherapists are in line with current evidence
380 in using mainly education, advice and exercise therapy, though without a consensus
381 on the parameters of exercise prescription. It also found that physiotherapists with a
382 specific education, and particularly those with a Master's degree, seem to be better
383 aligned with current evidence for what concerns the assessment of these patients and
384 less reliance on imaging or orthopedic tests.

385

386 **ETHICS APPROVAL AND CONSENT TO PARTICIPATE**

387 This study was approved by the Ethical Committee of the ASL of Lecce (Italy), with
388 protocol number 16 of the 21st February 2018.

389 Informed consent of participant to the survey was implied through voluntary submission
390 of the same survey, without the need of a written consent form

391

392 **CONSENT FOR PUBLICATION**

393 Not applicable

394

395 **CONFLICT OF INTEREST and SOURCE OF FUNDING**

396 Authors declares no competing interest, no conflict of interest or source of funding

397

398 **MANUSCRIPT CATEGORY**

399 This paper is a Survey (Original research) and it is NOT based on a previous
400 communication to a society or meeting

401

402 **AVAILABILITY OF DATA AND MATERIAL**

403 The full version of the survey is available as Supplementary material (See Appendix).

404

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407 statistical analysis, to Marco Segat and Mattia Salomon who significantly contributed
408 in sharing the survey and of course to all of the Italian physiotherapists who
409 participated, making it all possible.

410

411 **ACRONYMS**

- 412 ADL = Activities of daily living
- 413 AIFI = Associazione Italiana Fisioterapisti (Italian Physiotherapists Association)
- 414 RC = Rotator cuff
- 415 SE = Specific education
- 416 NSE = No specific education
- 417 TC = Training Course
- 418 O = Other
- 419 SSMP = Shoulder Symptoms Modification Procedures
- 420 SAT = Scapular Assistance Test

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517 TABLE 1: The clinical scenario about a patient reporting typical signs and symptoms
518 of an Rotator Cuff disorders

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Clinical scenario of a typical patient with a RC disorder (original)	Clinical scenario of a typical patient with a RC disorder (Italian translation)
<p>A 54-year-old man presents to you with a 9-month history of right shoulder pain of gradual, insidious onset. The pain is located over the anterolateral aspect of his shoulder, with no radiation of symptoms. He describes the pain as intermittent, made worse by reaching up, lifting, reaching behind his back and lying on this side. Symptoms ease with rest. He has had no previous treatment or investigations for this problem so far and is otherwise in good general health. His occupation as a warehouse operative involves some heavy lifting onto shelves, which he is continuing to do. On examination, observation is unremarkable. Cervical spine range of movement is full and pain-free. Active shoulder movements are full, but with a painful arc on active abduction between 60° and 120°. Passive shoulder movements are largely maintained. Isometric muscle testing produced pain on abduction and lateral rotation, with a power of 4/5 noted for both.</p>	<p>Un uomo di 54 anni si presenta alla sua attenzione per un dolore alla spalla destra che persiste da 9 mesi ed ha avuto un esordio insidioso e graduale. Il dolore è localizzato sull'aspetto anterolaterale della spalla, senza sintomi irradiati. Il paziente riferisce che i sintomi sono intermittenti ed aumentano con l'elevazione del braccio, il sollevamento di pesi, portando la mano dietro la schiena ed in posizione distesa sul fianco destro, mentre si attenuano con il riposo. Il paziente non ha effettuato altre indagini o altri trattamenti per questo problema prima d'ora e riferisce di essere in un buono stato di salute generale. Lavora come magazziniere, il che prevede il sollevamento di carichi pesanti su degli scaffali e non ha interrotto l'attività lavorativa. All'osservazione non emergono dati rilevanti. I movimenti cervicali attivi e passivi risultano completi e non evocano nessun sintomo. Anche il ROM attivo della spalla destra appare completo, ma presenta un arco doloroso fra i 60° e i 120° di abduzione. Il ROM passivo è complessivamente mantenuto. Si evoca dolore alla contrazione isometrica in abduzione e rotazione esterna e risultano entrambe deficitarie per quanto riguarda la forza, con un grading di 4/5 per entrambe.</p>

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529 TABLE 2: Respondents demographics

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Age	Frequency	%
20-25	85	19.5%
26-30	143	32.8%
31-35	82	18.8%
36-40	55	12.6%
>41	71	16.3%
Gender		
Male	239	54.8%
Female	197	45.2%
Level of education		
Bachelor's Degree	248	54.8%
Master of Science Degree	32	6.2%
PhD in Physiotherapy	2	0.4%
Master's Degree	139	30.9%
Other	39	7.7%
Years from graduation		
<5	177	40.6%
6-10	137	31.4%
11-15	55	12.7%
16-20	26	5.9%
>20	41	9.4%
Role/practice setting		
Hospital	59	8.5%
Private practice	143	21.7%
Freelance	299	56.6%
Sports team	56	8.8%
Teacher/researcher	18	2.1%
Other	32	3.3%
Specific education		
No	171	29.2%
Master's Degree	107	24.5%
1-2 days Training Course	160	36.7%
Other	42	9.6%

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535 TABLE 3: Treatment parameters

	SE (n=267)		NSE (n=171)		Total	
	n	%	n	%	n	%
Treatment setting (n=436)						
Face-to-face appointments	72	27.0%	76	44.4%	146	33.5%
Home-based program	2	0.8%	4	2.3%	6	1.4%
Face-to-face appointments and home-based program	229	85.8%	123	71.9%	350	80.3%
Group class(es)	8	3.0%	3	1.8%	11	2.5%
Other	3	1.1%	0	0.0%	3	0.7%
Number of times typically seen (n=436)	n	%	n	%	n	%
Once	1	0.4%	1	0.6%	2	0.5%
Twice	25	9.4%	13	7.6%	37	8.5%
3 or 4 times	36	13.5%	39	22.8%	75	17.2%
5 or 6 times	78	29.2%	42	24.6%	119	27.3%
7 or 8 times	41	15.4%	23	13.5%	64	14.7%
9 or 10 times	46	17.2%	28	16.4%	74	16.8%
More than 10 times	40	15.0%	25	14.6%	64	14.9%
Typical duration of treatment	n	%	n	%	n	%
Up to 3 weeks	35	13.0%	24	14.0%	59	13.5%
Up to 6 weeks	76	28.5%	63	36.8%	139	31.9%
Up to 8 weeks	64	24.0%	43	25.2%	106	24.3%
Up to 3 months	65	24.3%	20	11.7%	84	19.3%
Up to 6 months	5	1.9%	8	4.7%	13	3.0%
Up to 12 months	0	0.0%	2	1.2%	2	0.5%
Other	22	8.2%	11	6.4%	33	7.6%

536 NOTE: SE, respondents with a specific education in rotator cuff disorders; NSE,
 537 respondents without a specific education in rotator cuff disorders.

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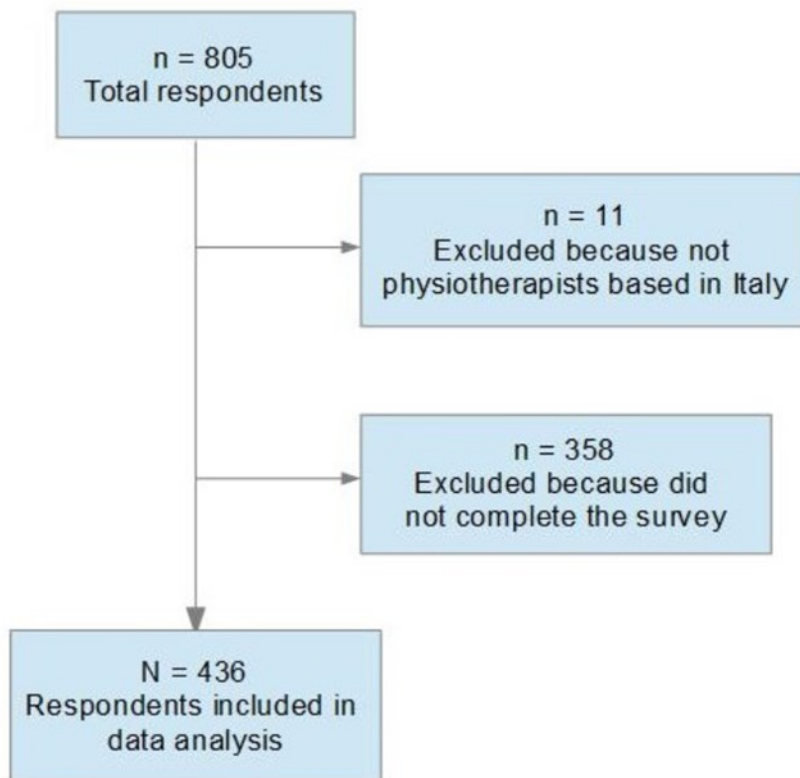
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549 FIGURE 1: FLOW CHART: participants inclusion criteria

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553 NOTE: Identification of respondents included

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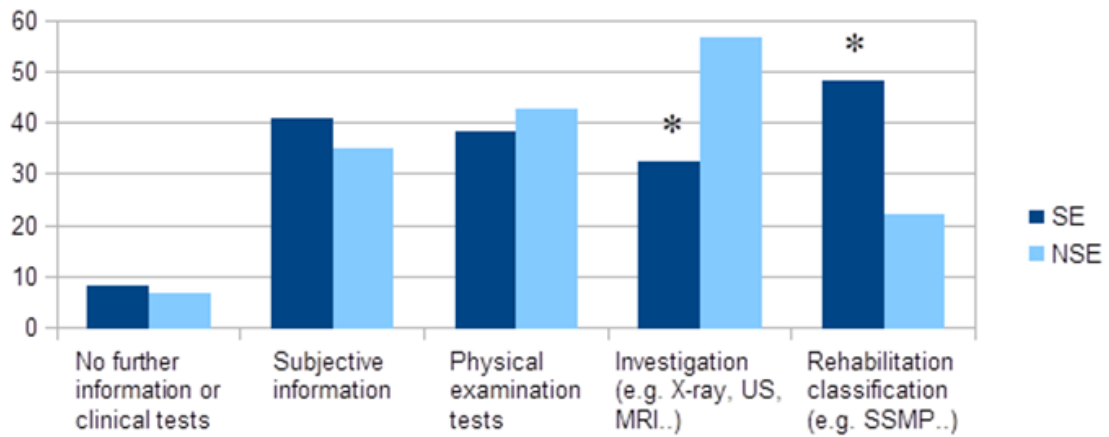
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564 **FIGURE 2: Q.9: Would you request any further information or undertake any**
565 **further clinical tests?**

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570 NOTE: Q, Question number; SE, respondents who stated a specific education in
571 rotator cuff disorders; NSE, respondents who stated no specific education in rotator
572 cuff disorders; SSMP, Shoulder Symptom Modification Procedure; US, Ultrasound
573 Imaging; MRI, Magnetic Resonance Imaging; *, statistically significant difference.

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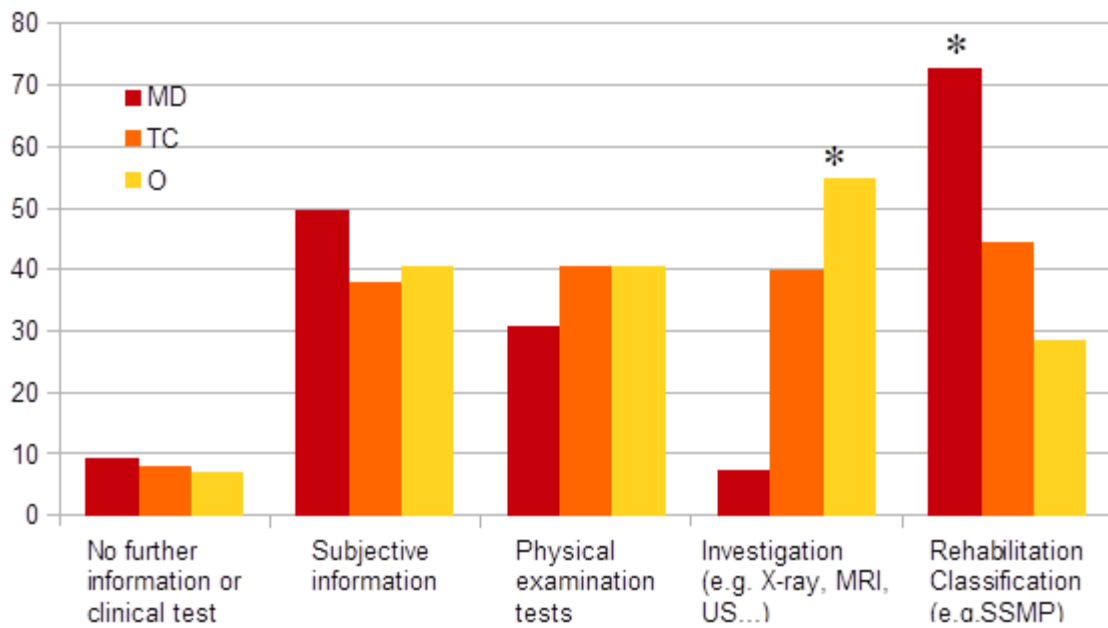
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585 **FIGURE 3: Q.10, SE subgroup: Would you request any further information or**
586 **undertake any further clinical tests?**

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592 NOTE: Q, Question number; MD, Master's Degree; TC, 1-2 days Training Course; O,
593 Other; US, Ultrasound Imaging; MRI, Magnetic Resonance Imaging; SSMP, Shoulder
594 Symptom Modification Procedure; *, statistically significant difference.

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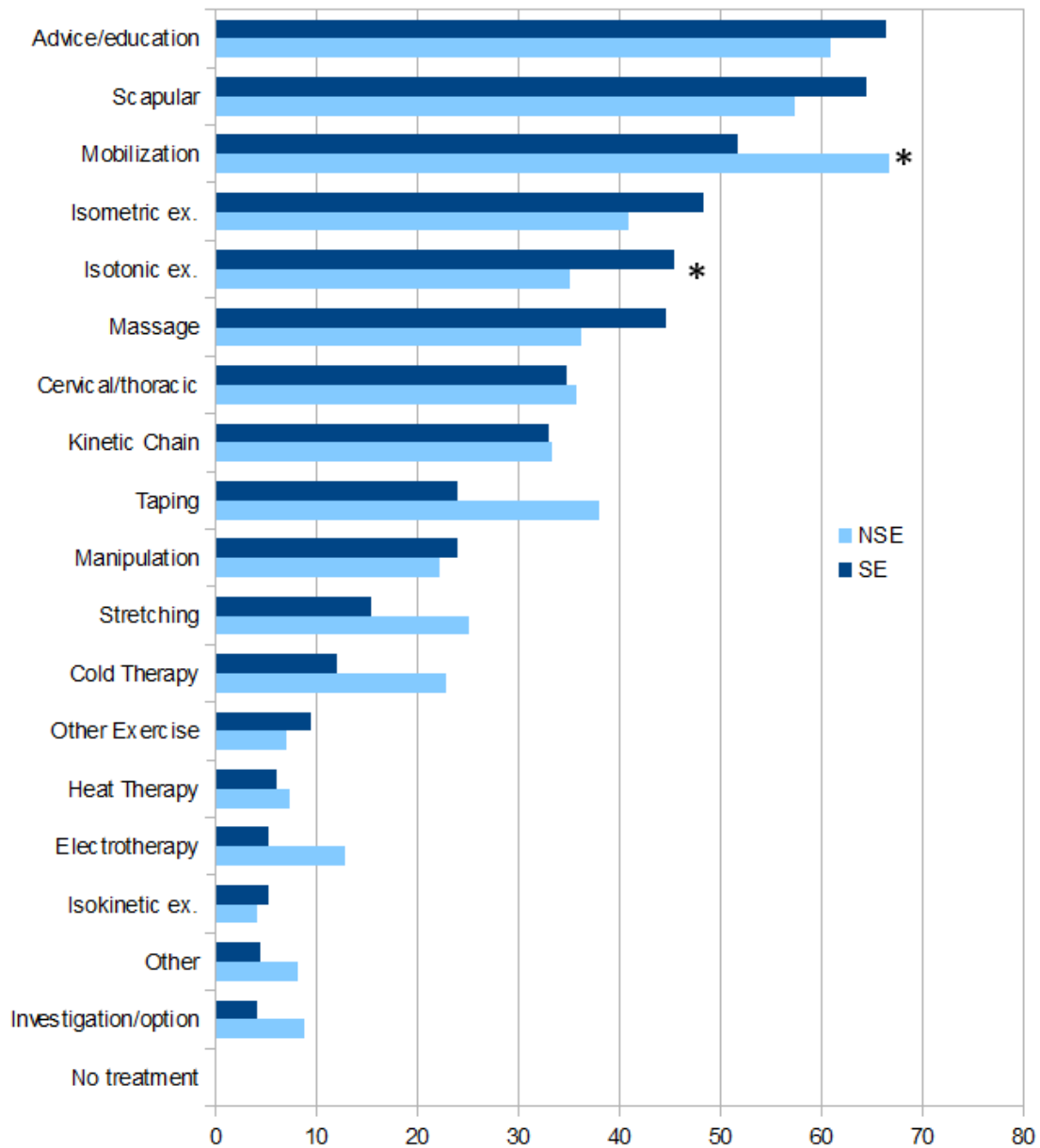
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602 FIGURE 4: Q.11: Which management strategies would you typically recommend
603 for this patient?



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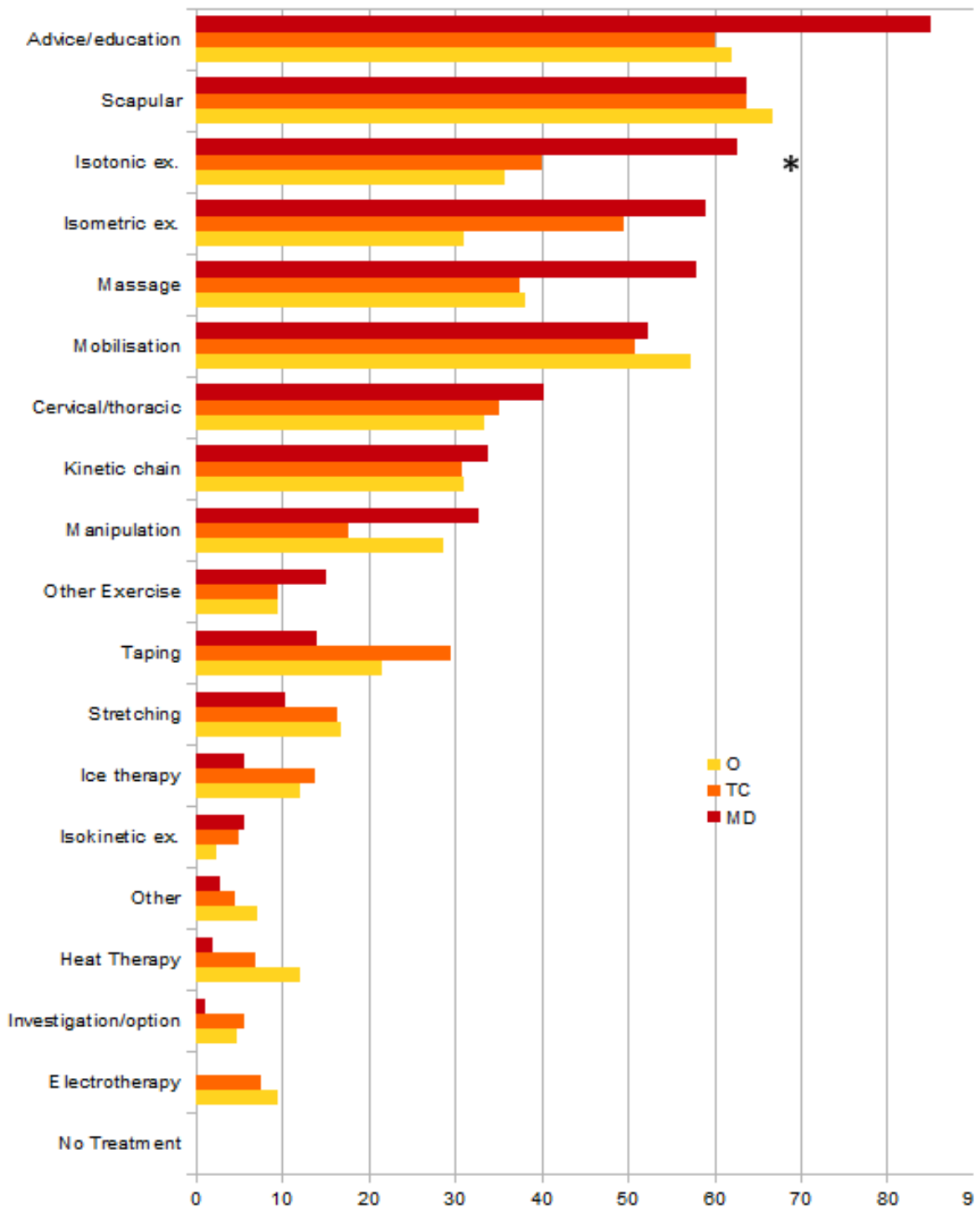
607 NOTE: Q, Question number; SE, respondents who stated a specific education in
608 rotator cuff disorders; NSE, respondents who stated no specific education in rotator
609 cuff disorders; Ex, Exercises; *, statistically significant difference

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612 FIGURE 5: Q.11, SE subgroup: Which management strategies would you
 613 typically recommend for this patient?

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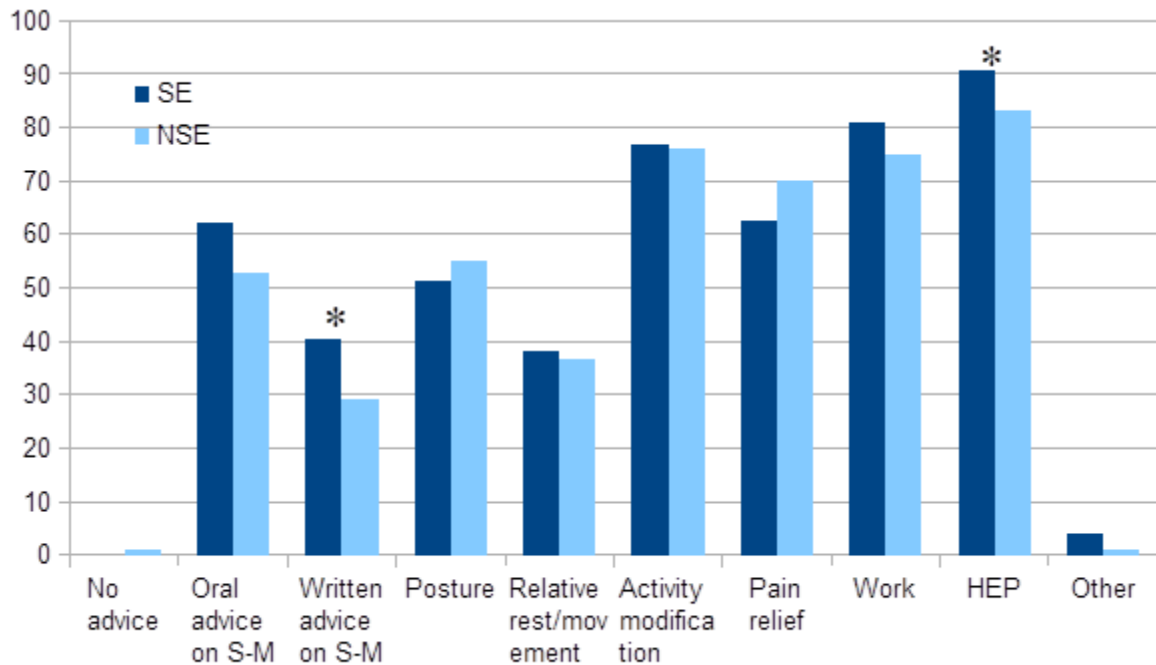
617 NOTE: Q, Question number; MD, Master's Degree; TC, 1-2 days Training Course; O,
 618 Other; Ex, exercises; *, statistically significant difference.

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620 FIGURE 6: Q. 12, **What advice would you typically offer this patient?**

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625 NOTE: Q, question number; SE, respondents who stated a specific education on
626 rotator cuff disorders; NSE, respondents who stated no specific education on
627 rotator cuff disorders; S-M, self-management; HEP, home exercise program; *,
628 statistically significant difference.

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