

Do Physiotherapists Adhere to Standardised Pulmonary Rehabilitation Protocol: Quality Control of a Pulmonary Rehabilitation Program

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Abstract

Background: COPD is caused by an inflammatory response to noxious substances leading to airflow limitation. Supervised exercise programs are well established for COPD management. However, the effect of exercise programs is still variable. Adherence levels by physiotherapists to exercise program protocols may have contributed to these variations. The adherence of physiotherapists to guidelines protocols in pulmonary rehabilitation programs for COPD patients has not been investigated before.

Objective: To assess physiotherapists' adherence to guidelines protocol for COPD patients in a 12-week pulmonary rehabilitation program.

Method: An observational study with data for each patient collected through a single interview using an identical semi structured questionnaire. Adherence was scored dichotomously and converted to percentages. The data was interpreted by Investigator and SPSS (version 23) was used for Descriptive Data analysis.

Result: Of the 27 COPD patients invited to this study 12 responded and completed their interviews. The median of adherence to core exercise was 54.9 % whereas the median of adherence to core with optional exercises was 54.4 %. The median of adherence in supervised and home training were respectively, 63.4% and 40.0%.

Conclusion: Physiotherapists had a moderate adherence to standardised protocol during pulmonary rehabilitation program. Also, the low adherence scores were mostly found in home training program. Staff number, experience and communication may influence adherence levels to training protocols. High physiotherapists' adherence ensures delivering protocol properly with a high quality level of delivery process.

Keywords: COPD; Adherence; Physiotherapy; Guidelines Compliance

Introduction

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable progressive disease characterized by limitations in airflow. This is due to an abnormal inflammatory reaction in response to the inhalation of noxious substances [1]. This can then trigger elastin destruction leading to the reduction in elastic recoil pressure of the lungs. As a result air is trapped in bronchioles and limited airflow is created [2,3]. It was estimated that COPD will be the third cause of death by 2020 [4,5]. The estimated prevalence of COPD for those over 40 years is 9 - 10% [6].

People with COPD commonly suffer disability due to the negative impact of the disease on the patients' life activities [7]. Typically, they have poor mobility, especially for those over 60 years of age, suffer anxiety and depression, and have poor self-monitoring of their health [7].

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To improve patient symptoms and quality of life from COPD it is generally agreed that a pulmonary rehabilitation program is used to provide comprehensive management for people with COPD [8,9]. One study demonstrated the benefits of a 6-week outpatient pulmonary rehabilitation for those with moderate and severe COPD. This included a significant improvement in exercise tolerance and quality of life [10]. Also, pulmonary rehabilitation programs significantly reduce depression and anxiety levels and improve quality of life for people with COPD [11].

However, pulmonary rehabilitation outcomes are impacted by a number of factors. These include poor patient attendance, which is itself influenced by the severity of the disease, lack of social support, length of program and smoking status [12,13]. Negative patient perceptions of the effectiveness of pulmonary rehabilitation can influence poor attendance which then negatively reflects on the outcomes of the program [14]. Also, poor adherence to COPD management can lead to an increase in hospitalization and mortality rates [4]. Health care providers can also influence a patients' perception regarding the disease and their health status which has an effect on their adherence to treatment programs [4]. Furthermore, the quality of communication between health care providers and the patient plays an important role in a patients' adherence to COPD treatment [4].

In fact, the outcomes from pulmonary rehabilitation programs are also influenced by physiotherapists' adherence level to programs [15]. Therefore, physiotherapists' adherence to guidelines protocols for different populations has also been evaluated. A published study has investigated physiotherapists' adherence to physiotherapy recommended guidelines for treating low back pain through assessing adherence indicators from a national information system for allied health services in Netherlands. They revealed that the presence of variations between Dutch physiotherapists in relation to adherence levels represent areas for improving their adherence with recommended guidelines [16]. Another study in the Netherlands also revealed that high physiotherapists' adherence to Dutch physical and manual therapy guidelines is significantly related with better outcomes for patients with low back pain [17].

The results from a study investigating physiotherapists' compliance to recommended guidelines for poste acute stroke cases demonstrated that high levels of physiotherapist adherence to recommended post-acute stroke guidelines is linked with good achievement of outcomes [18]. Moreover, a study by Hubbard., *et al.* [19] indicated that high levels of adherence by physiotherapists lead to improved functional outcomes of post stroke survivors. While a further study demonstrated that the major barriers to adherence exist at the organisational level [20]. Furthermore, a study investigated physiotherapists' adherence to ankle sprain guidelines. The study revealed that the physiotherapists' compliance to recommended guidelines for treating ankle sprain cases is applicable in daily clinical practice and shows the possibility of improvement [21].

In randomised controlled trails, which has been the focus of previous literature, physiotherapists' adherence to protocols in these trails was the focus. The geriatric physiotherapists' adherence to coach2move strategy on old patients in RCT were assessed in relation to patients' outcomes. The finding of this study revealed that adherence is influenced at patient, therapeutic and organizational levels [22].

Also, a study by Effing., *et al.* [23] has measured physiotherapists' adherence to COPE active protocol. The results of this study showed excellent physiotherapists' adherence to COPE active protocol in addition to the absence of contamination bias occurrence during the trial.

Physiotherapists' adherence to standardised pulmonary rehabilitation protocols for people with COPD has not been investigated. Therefore, the aim of this study was to assess the adherence of physiotherapists with a standardised training protocol after 8 weeks of training in a 12 week pulmonary rehabilitation program for people with COPD.

Methodology

This study has been designed as an interview based observational study for 20 patients with Chronic Obstructive Pulmonary Disease (COPD). Participants were recruited from a 12 weeks pulmonary rehabilitation program conducted at the Repatriation General Hospital.

The participants' recruitment was conducted from September to October 2015. The Southern Adelaide Clinical Human Research Ethics Committee has approved this study.

An invitation to participate was sent out to all patients who had completed their first 8 weeks of the 12-week pulmonary rehabilitation program. Patients who decided to participate in this study received additional information from the study chief-investigator. Their approval to participate was confirmed on signed consent forms. A copy of the form and patient information sheet were placed in patient medical records.

The study included COPD patients who participated in a 12 weeks pulmonary rehabilitation program at Repatriation General Hospital and had completed the first 8 weeks of their pulmonary rehabilitation program at the time of inclusion. The study excluded patients with limited English language skills.

All participants completed first 8 weeks of the 12 weeks pulmonary rehabilitation program. The exercise training was supervised by two physiotherapists and two assistants in pulmonary rehabilitation program. All participants received the same pulmonary rehabilitation program tailored to their capabilities (e.g. intensities) for 12 weeks. The intensity of exercises delivered to participants was tailored according to the maximal ergometer cycling test (MECT) and a 6 minute walking test. The core supervised exercises held at the gym consisted of cycling, treadmill walking, climbing stairs, quadriceps training, and lifting exercises. Optional exercise consisted of pushing and pulling exercises. Core exercises at home included walking or cycling, climbing stairs or getting out of a chair or quadriceps and biceps training with a Thera band, or pushing exercises against the wall. The frequency of training was of two weekly supervised sessions plus one unsupervised training session at home. The training lasted 60 minutes for each session of supervised and unsupervised training. The training program included different components of exercises which have been described previously [24].

All participants had a single interview after completing the first 8 weeks of the 12-week pulmonary rehabilitation program. The interviews were conducted by assistant researcher. It evaluated the degree of adherence to standardised training protocol by physiotherapists' during 8 weeks of training in the pulmonary rehabilitation program. The interviews were held in a quiet room at Repatriation General Hospital. All interviews were also electronically recorded for quality of the research.

An identical semi structured questionnaire was completed by participant during each interview (See the appendix 1). A total of 88 questions in the questionnaire were scored using a dichotomous scoring system: (0) if not performed according to rehabilitation protocol or (1) if performed according to rehabilitation protocol [23]. All questions were classified into 17 exercise components in terms of describing the features for the recommended pulmonary rehabilitation training protocol that were delivered to participants. Each component contains a number of questions that cover certain areas of information in the pulmonary rehabilitation training protocol. A total of 83 questions related to core exercises and 5 to optional exercises. For adherence, the supervised exercises climbing stairs and quadriceps training were considered as one component if a patient could not perform the climbing stairs exercise. For in home training, adherence was scored for only walking or cycling according to training protocol instructions. Also, adherence was scored for one home exercise component in the lower limb training and one exercise component in the upper limb training according to training protocol (See table 1).

The collected data were converted into scores in score's sheets by an investigator (MA). Adherence was scored for each question in exercise component in relation to the number of questions per component. Each component was scored with a (1) when fully implemented. The full adherence score for each question in the exercise component was represented by the number that resulted from dividing 1 (maximum adherence score per component) on the number of questions of the same exercise component (See table 1). Subsequently, all scores were converted into percentages which ranged from 0% (pulmonary training protocol wasn't implemented at all) and 100% (pulmonary training protocol was fully implemented).

Protocol components	Number of questions	Adherence Score per question	Maximum adherence score per component
1-General questions-gym	5	0.2	1
2-Borg scale – short of breath and fatigue	7	0.14	1
3-Cycling gym	5	0.2	1
4-Walking gym	5	0.2	1
5-Climbing stairs gym*	4	0.25	One of two components = 1
6-Leg –quadriceps exercise gym*	5+4 climbing questions = 9	0.11 stairs	
7-Lifting exercise gym	4	0.25	1
8-Pushing-pulling exercise optional	5 optional	0.2	1
Home**			
9-General- questions	7	0.14	1
10-Cycling -home	7	0.14	1
11-Walking-home	9	0.11	
Lower limb exercise			
12-General questions	1	1	1
13-Climbing stairs	4	0.25	One of three components = 1
14-Getting up out of the chair	4	0.25	
15-Quadriceps training with Thera band	6	0.15	
Upper limb exercise home			
16-Biceps training with Thera band -home	5	0.2	One of three components = 1
17-Pushing against the wall-home	5	0.2	
Total	88	Basic exercises and optional exercises	12
	83	Basic exercise only	11
	40	Supervised Training including optional exercises	7
	35	Supervised Training including core exercise only	6
	48	Home Training	5

Table 1: Exercise components and adherence scoring criteria.

Data analysis

Data were analysed by using SPSS software (version 23). Statistically, descriptive data were used to describe demographic characteristics of participants and the median values, maximum and minimum values of physiotherapists’ adherence to recommended guidelines protocol. The adherence levels were previously classified. Adherence was considered to be good if higher than 74%, moderate if between 50% -74% and poor if less than 50% [25].

Results

A total of 27 COPD patients from a pulmonary rehabilitation program were invited for this study. Twelve patients consented to participate and completed the interviews (See figure 1). The demographic characteristics of the sample were described in table 2. Of the twelve patients four have selected training with core exercises only whereas the other eight preferred to do both the core and optional exercises.

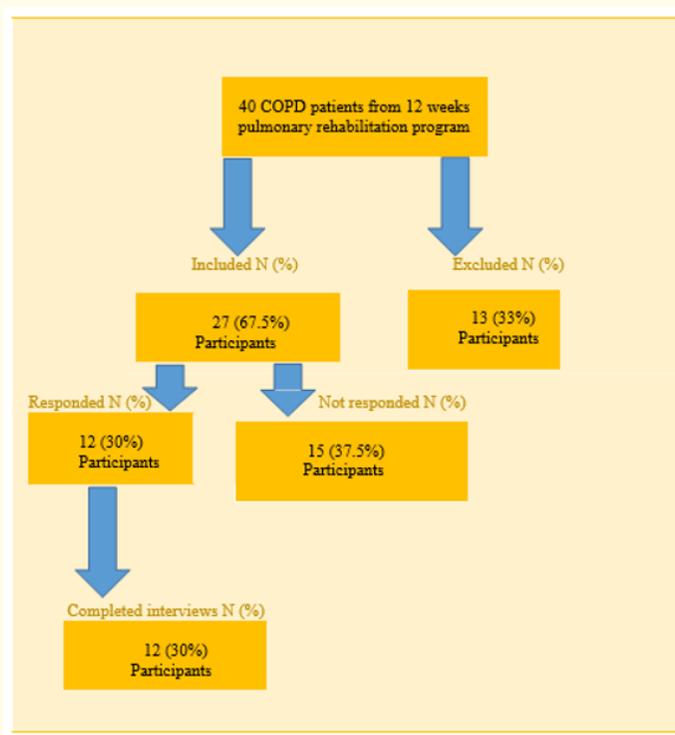


Figure 1: Flow chart of participants.

Characteristics		Number(n); mean of age; ± SD
Male	N (%)	x (xx %)
Female	N (%)	x (xx %)
Mean of age (year) ± SD		Xx (± xx)

Table 2: Demographic characteristics of COPD patients (n = 12).

The adherence percentages of core exercises and core with optional exercises were described in table 3. The adherence percentages of supervised and home training were described in table 4. The median percentage of adherence to core exercises components by physiotherapists’ was 54.9% whereas the minimum and the maximum percentage of physiotherapists’ adherence to core exercises were respectively, 31.0% and 65.5%. Also, the median percentage of physiotherapists’ adherence to core and optional exercises components was 54.4% whereas the minimum and the maximum percentage of physiotherapists’ adherence to core and optional exercises were respectively, 33.5 % and 66.5% (See table 5).

Participants	Adherence scores for core exercises with optional exercises	Adherence percentages for core exercises
1	49.7%	50.6%
2		62.1%
3	64%	62.6%
4		54.2%
5		65.5%
6	36.4%	36.0%
7		55.7%
8	54.7%	57.9%
9	35.7%	35.3%
10	34.4%	35.7
11	33.5%	31%
12	55.8%	57.2%

Table 3: Adherence percentages to core exercises and core with optional exercises.

Participants	Adherence percentages for supervised training	Adherence percentages for home training
1	47.5%	53%
2	75%	62.2%
3	71%	54.4%
4	84.1%	16.2%
5	83%	44.6%
6	48.1%	20%
7	62%	59.4%
8	64.7%	40.8%
9	62.2%	0%
10	62%	0%
11	57.4%	0%
12	67.5%	39.2%

Table 4: Adherence percentages of Supervised and Home training.

Values	Core exercises	Core and optional exercises
Median percentage of adherence	54.9%	54.4%
Maximum adherence percentage	65.5%	66.5%
Minimum adherence percentage	31.0%	33.5%

Table 5: Median values of adherence percentages to core exercises and core exercise with optional exercises.

The median percentage of adherence in supervised training program was 63.4% whereas the maximum and minimum percentage of adherence were respectively, 84.1% and 47.5%. Also, the median percentage of adherence in home training program was 40% whereas the maximum and minimum percentage of adherence were respectively, 62.2% and 0% (See table 6).

Values	Supervised training	Home training
Median percentage of adherence	63.4%	40%
Maximum adherence percentage	84.1%	62.2%
Minimum adherence percentage	47.5%	0%

Table 6: Median values of adherence percentages for supervised and home training.

Discussion

The aim of the study was to investigate and assess the level of adherence of physiotherapists to pulmonary rehabilitation protocol on patients with COPD during 8 weeks of exercise training in pulmonary rehabilitation program. The findings from this study demonstrate a moderate level of adherence by physiotherapists' to core exercises and with optional exercises based on the usual guidelines training protocol during pulmonary rehabilitation program. This indicates that physiotherapists were only moderately following the instructions and details of standardised training protocol when they delivered both core exercises and core exercise plus optional exercises training components to patients during their 8 weeks of supervised and home training.

The physiotherapists' compliance in this study did not reach excellent levels. Possible explanations include staffing issues which is considered as an important element for the physiotherapists' adherence to recommended guidelines training [26]. A high work load for physiotherapists supervising a large training group may create difficulty in adhering to the guidelines training protocols [27]. The training for 40 COPD patients was supervised by two physiotherapists and two assistants during the 12-week pulmonary rehabilitation program. One physiotherapist with help of assistant supervised training program for 20 patients and this may negatively influence the level of physiotherapist's adherence to training protocol. Alternatively, training workshops and education courses were found to represent successful strategies for enhancing physiotherapists' compliance levels to recommended guidelines [28]. So, the physiotherapists may have limited training workshops and courses with the standardised pulmonary rehabilitation protocol. This may reflect negatively in their performance and reduce their alignment in perfectly implementing the training protocol during pulmonary rehabilitation program. Low adherence scores were found in the home training program. The patients completed their exercises at home without direct supervision and this may present a challenge for them to memorise the details of recommended home exercises provided by physiotherapists. Moreover, it should be noted that the questionnaire is highly detailed with a complex training protocol structure [24]. It may be hard for COPD patients to memorize the numerous physiotherapists' instructions during their training especially home training part. According to patients' feedback, some patients were not instructed to do home training. This can be due that patients may bias their feedback regarding home training instructions provided by physiotherapists to hide their poor adherence to home training. As a result, the patients' answers and feedback during the interviews may not precisely represent the adherence level by physiotherapists during pulmonary rehabilitation program.

A variation in the levels of physiotherapists' adherence to recommended guidelines exists in the published literature. A slightly lower levels of physiotherapist's adherence were also previously reported by Bekkering, *et al* [29]. In their study, the effect of an active strategy on implementation process of clinical guidelines for low back pain was evaluated. The adherence of physiotherapists to recommended guidelines in treating low back pain was poor and the reported overall adherence score was 42%. Also, they revealed that the physiotherapists aligned with low back pain guidelines in 20% of patients regarding the recommended number of treatment session. Whereas adequate advice was given for 91% of their patients. Also, they stated that 63% of the variance in adherence was created at patient level

whereas 27% can be raised from the physiotherapist side. Previous published studies on the other hand, reported higher levels of physiotherapists adherence to the recommended guidelines [20,22,23]. In randomised controlled trial by Effing, *et al.* [23] the physiotherapists' adherence to the COPE active training protocol was excellent (median adherence score was 96%). The sample size for that study was large and physiotherapists were enrolled in training program on COPE active protocol before starting the trial which reflected positively on the adherence scores. Also, Van de Sant [22], reported good geriatric physiotherapists' adherence to the Coach2 Move strategy in treating older patients with mobility related issues with average adherence of 77%. The adherence to coach2movie strategy was evaluated by assessing the electronic patients' files and interviewing geriatric physiotherapists. In their study, physiotherapists were familiar with coach 2 move strategy. Also, they were continuously guided by a researcher in implementing the strategy in their RCT which positively influenced the level of physiotherapists' adherence in implementing the new strategy during their trial. Donohue, *et al.* [20] assessed physiotherapists' adherence to Irish guidelines in acute stroke and their data was extracted through physiotherapists' feedback to an online survey. They reported excellent adherence by physiotherapists and the overall adherence score was > 80%.

However, both Donohue, *et al.* [20] and van de Sant [22] assessed physiotherapists' compliance by extracting data from either patients' files or self-reported feedback by physiotherapists which was considered an open window for occurrence of bias [30]. Also, self-reported feedback by physiotherapists through survey or interviews tend to be overestimated [30]. Moreover, Donohue and his colleagues assessed general indicators of adherence however did not look at adherence levels to guidelines details. Also, the information from physiotherapists' reports may not be precise about levels of adherence in implementing guidelines protocols [31]. Therefore, the high adherence scores may not reflect precisely the real adherence levels of physiotherapists in these studies. In our study, the questionnaire has been developed to cover all of the details of recommended guidelines training protocol which give a clear image about the level of physiotherapists' adherence to guidelines based protocol during pulmonary rehabilitation training. Also, all interviews in our study were electronically recorded to reduce the chance for occurrence of bias.

Alternatively, participants in their interviews may intentionally provide less precise information about the instructions and verbal commands provided to them by physiotherapists during their 8 weeks training. This may be due to improper education and communication styles of physiotherapists leading to poor patient understanding of instructions and creating difficulty for patients to follow exactly physiotherapists' instructions [32].

However, an important limitation of this study was the response rate of 30 % (n = 12) of patients who completed the interviews and provided feedback about physiotherapists' adherence to recommended training protocols from the first 8 weeks of the 12 week pulmonary rehabilitation program. This response rate may influence the impression about levels of physiotherapists' adherence in a pulmonary rehabilitation program away from the real adherence levels of physiotherapists during delivering training protocol. However, this response rate still represents saturation point of information about physiotherapists' alignment with standardised training protocols in a pulmonary rehabilitation program.

Conclusion and Recommendation

This study demonstrated that physiotherapists moderately adhere to pulmonary rehabilitation training protocol during the first 8 weeks of training of a 12-week pulmonary rehabilitation program. Moreover, the low adherence' levels by physiotherapists were mostly reported at home training program. Further research evaluating physiotherapists' adherence levels to guidelines based protocols in pulmonary rehabilitation programs should use a larger sample size to draw more conclusive results. As part of any future interview based observational research, different communication styles by physiotherapists such as face to face, brochures and lectures could be used to facilitate participants understanding of pulmonary rehabilitation training protocols and assist them to memorise the instructions given by physiotherapists. This will ensure precise information is provided by participants regarding physiotherapists' adherence during interviews.

Clinical Message

- Education and training for physiotherapists on recommended guidelines enhance their alignment in implementing guidelines based protocols during pulmonary rehabilitation programs.
- Assessing physiotherapists’ alignment with recommended guidelines assists in developing strategies for optimizing the quality of care delivery during pulmonary rehabilitation.

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Disclosure

The authors report no conflicts of interest in this work.

General questions	Yes or No
1. How often were you asked to come to the Repat for physiotherapy sessions? (prompt - times per week)	
2. For how many weeks did you take part in the program? (8 weeks)	
3. How long did each exercise session last? (60/min)	
4. When you were doing your exercises, did your physiotherapist check your posture?	
5. Were you ever asked to indicate how short of breath you were after exercises (using a 1-10 scale)?	
6. If ‘yes’: how often (e.g. each exercise, each session)?	
7. If ‘yes’: Did your physiotherapist ask you to have a rest during exercising if you were short of breath? (I.e. interval training).	
8. Were you ever asked to indicate how fatigued you were after exercises (using a 1-10 scale)?	
9. If ‘yes’: how often (e.g. each exercise, each session)?	
10. If ‘yes’: Did your physiotherapist ask you to work harder/do more if you were not overly fatigued? (i.e. exercise progression).	
11. What causes you to stop most exercises: shortness of breath or fatigue?	
12. What exercises were you asked to do during the physiotherapy sessions at the Repat? (Walking, Biking, Lifting, Walking stairs/quadriceps training, Pushing/pulling)	
Cycling	
13. Were you asked to exercise on the bike during the PR sessions at the Repat?	
14. For how long did you use the bike?	
15. Were you asked to cycle without resting, or did you have rests in between?	
16. Did the physiotherapist ask you to cycle faster or for a longer time?	
17. How often did he/she do that?	
Walking	
18. Were you asked to exercise on the treadmill during the PR sessions at the Repat?	
19. For how long did you use the treadmill?	
20. Were you asked to walk without resting, or did you have rests in between?	
21. Did the physiotherapist ask you to walk faster or for a longer time?	
22. How often did he/she do that?	

Climbing stairs	
23. Were you asked to perform 'walking stairs' exercises or stepping on and off a 'step'?	
24. If yes: How often/long were you asked to do this? (1 x 2 min/2 x 1 min/3 x 0.5 min)	
25. Were you asked to do this exercise longer/quicker?	
26. How often the physiotherapist did makes the exercise harder (e.g. every week, every second week, and each session)?	
Lifting	
27. Were you asked by the physiotherapist to do 'lifting' exercise?	
28. If 'yes': How often did you have to repeat the exercise? E.g. Always sets including a standardised number of exercises, e.g. 3 x 8 movements per exercise (max. 1 min rest in between) or 3x30 (max. 1 min rest in between).	
29. Did the physiotherapist make it harder for you each exercise? (e.g. more weight, separate training per arm).	
30. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, and each session)?	
Leg exercise	
31. Were you asked by the physiotherapist to do leg exercises?	
32. If 'yes': How often did you have to repeat the exercise? (E.g. Always sets including a standardised number of exercises, e.g. 3 x 8 repeats per session).	
33. Did the physiotherapist makes it harder for you each exercise? (E.g. more weight, exercising for longer period).	
34. How often the physiotherapist did makes the exercise harder (e.g. every week, every second week, and each session)?	
35. How much resting time were you allowed to have in between sets?	
Pushing/pulling-optional	
36. Were you asked by the physiotherapist to do pushing/pulling exercises?	
37. If 'yes': How often did you have to repeat the exercise? (E.g. Always sets including a standardised number of exercises, e.g. 3x30 repeats per session).	
38. Did the physiotherapist make it harder for you each exercise? (E.g. more weight, exercising for longer period).	
39. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, each session)?	
40. How much resting time were you allowed to have in between sets?	
Home exercise-general questions	
41. Were you asked to do exercises at home by your physiotherapist? (If NO: end of interview)	
42. How many times per week were you asked to exercise at home?	
43. How long were you asked to practice at home by your physiotherapist?	
44. How often did the physiotherapist check whether you had performed the home workexercises?	
45. Did you record your home exercises in a diary?	
46. (If yes) How often did the physiotherapist check your homework exercise diary?	
47. What exercises were you asked to do at home? (Walking; Cycling; Walking stairs; Getting in and out chair; Quadriceps Exercises with Thera band; Biceps and triceps training with Thera band; Push against wall; Other)	
Home-cycling	
48. Did your physiotherapist ask you to do 'cycling exercises' at home?	
49. How long were you asked to do this exercise?	
50. Were you asked to do this cycling exercise uninterrupted or were you told to rest in between?	

51. Did the physiotherapist ask you how the cycling exercises' at home were going?	
52. How often did the physiotherapist ask this?	
53. Was this the same for the whole training period (8 weeks) or did it change?	
54. Did you increase the minutes that you had to cycle over time?	
Home -walking	
55. Did your physiotherapist ask you to do 'walking exercises' at home?	
56. How long were you asked to these exercises?	
57. Were you asked to do this walking exercise uninterrupted or were you allowed to rest in between?	
58. Did your physiotherapist ask you to use a pedometer? (may need to explain what this is)	
59. Did the physiotherapist ask you how the 'walking exercises' at home were going?	
60. How often did the physiotherapist ask this?	
61. Did the physiotherapist ask you to give a score for your shortness of breath and fatigue after having performed the 'walking exercise'? (may need to re-prompt the Borg scale)	
62. If 'yes': Did you ever notice that your physiotherapist asked you to walk longer/faster after you indicated that you were not very short of breath/tired?	
63. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, and each session)?	
Home-leg exercise	
64. Did the physiotherapist ask you to do strength exercises for your legs at home?	
Home-walking stairs	
65. Were you asked to walk up and down stairs as an exercise at home by the physiotherapist?	
66. If yes: How often were you asked to repeat the exercise? (E.g. 3 x 8 repeats)	
67. Were the stair-climbing exercises ever made harder by the physiotherapist, for example by increasing the number of times to do it/asked to do it faster?	
68. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, each session)?	
Home-chair exercise-optional	
69. Did the physiotherapist ask you to stand up and sit down on a chair at home (If NO: ask about exercises with the arms)	
70. If yes: How often did you repeat the exercise? (E.g. 3 x 8 repeats)	
71. Were the sit to stand exercises ever made harder by the physiotherapist (e.g. by increasing the frequency of repeats/asked to do it faster)	
72. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, each session)?	
Home-leg exercise with Thera band	
73. Did your physiotherapist ask you to do a leg exercise with an elastic band at home?	
74. If yes: How often did you have to repeat the exercise? (E.g. 3 x 8 repeats)	
75. Was the exercise ever made harder by the physiotherapist, e.g. by increasing the frequency of repeats	
76. How often did the physiotherapist make the exercise harder; (e.g. making the elastic tighter, more repeats?)	
77. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, each session)?	
78. How much resting time were you allowed to have in between sets?	
Home-arm exercise with Thera band optional	
79. Did your physiotherapist ask you to do an arm exercise with an elastic band at home? (If no: end of interview)?	

80. If yes: How often were you asked to repeat the exercise? (E.g. 3x8 repeats)	
81. Were you allowed to rest in between?	
82. Did the physiotherapist sometimes make the exercise harder; (e.g. making the elastic tighter, more repeats).	
83. If yes, how often did the physiotherapist makes the exercise harder (e.g. every week, every second week, each session)?	
Home-push away from wall-optional	
84. Did your physiotherapist ask you to do arm exercises in which you had to push yourself away from a wall?	
85. If yes: How often were you asked to repeat the exercise? (E.g. 3x8 repeats)	
86. Were you allowed to rest in between?	
87. Did the physiotherapist sometimes make the exercise harder; (e.g. increase of distance between feet and wall, more repeats)	
88. How often did the physiotherapist make the exercise harder (e.g. every week, every second week, each session)?	

Appendix 1: Identical simi structured questionnaire.

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Volume 8 Issue 10 October 2019

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