

BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjopen.bmj.com>).

If you have any questions on BMJ Open's open peer review process please email info.bmjopen@bmj.com

BMJ Open

Clinical practice guidelines and experts consensuses of rehabilitation for coronavirus disease 2019 (COVID-19): a protocol of systematic review

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-060767
Article Type:	Protocol
Date Submitted by the Author:	14-Feb-2022
Complete List of Authors:	Zhang, Yue; Chengdu University of Traditional Chinese Medicine, Li, YuXi; Chengdu University of Traditional Chinese Medicine Zhong, Dongling; Chengdu University of Traditional Chinese Medicine, Liu, Xiaobo; Chengdu University of Traditional Chinese Medicine Zhu, Yuanyuan; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Jin, Rongjiang; Chengdu University of Traditional Chinese Medicine; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Li, Juan; Chengdu University of Traditional Chinese Medicine
Keywords:	COVID-19, REHABILITATION MEDICINE, Protocols & guidelines < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

SCHOLARONE™
Manuscripts

Clinical practice guidelines and experts consensuses of rehabilitation

for coronavirus disease 2019 (COVID-19): a protocol of systematic review

Yue Zhang¹, Yuxi Li¹, Dongling Zhong¹, Xiaobo Liu¹, Yuanyuan Zhu², Rongjiang Jin^{1,2*}, Juan Li^{1*}

1 School of Health Preservation and Rehabilitation, Chengdu University of Traditional Chinese Medicine, 610075, Chengdu, China;

2 Department of rehabilitation, Chinese and Western Medicine Hospital of Panzhihua, 617000, Panzhihua, China.

YZ, YXL and DLZ contributed equally to this work and shared first authorship.

*Correspondence

School of Health Preservation and Rehabilitation, Chengdu University of Traditional Chinese Medicine, 610075, Chengdu, Sichuan, China, Rongjiang Jin, Email: cdzyydxjrj@126.com and Juan Li, Email: 785939016@qq.com.

Word count: 1918 words

Abstract

Introduction: Coronavirus disease 2019 (COVID-19) is a highly infectious disease, characterized by respiratory, physical and psychological dysfunctions. Rehabilitation could effectively alleviate the symptoms and promote the recovery of physical and mental health of COVID-19 patients. Recently, rehabilitation medical institutions have issued clinical practice guidelines (CPGs) and experts consensuses involved recommendations of rehabilitation assessment and therapy for COVID-19. This systematic review aims to assess the methodological quality and reporting quality, and summarize the recommendations of rehabilitation assessment and therapy for COVID-

1
2
3
4 19, so as to give quick references for front-line clinicians, therapists and patients, and
5
6 provide reasonable suggestions for future guideline makers.
7
8

9 **Methods and analysis:** We will search electronic databases and websites of
10 governments or organizations for eligible CPGs and expert consensus. Two reviewers
11 will independently select study, extract data, and assess methodological quality and
12 reporting quality by the Appraisal of Guidelines for Research & Evaluation (AGREE)
13 II tool and the Reporting Items for Practice Guidelines in healthcare (RIGHT) statement.
14 The above results will be narratively described and presented as tables or figures.
15
16
17
18
19
20
21
22
23

24 **Ethics and dissemination:** Ethics approval is not necessary for this protocol of
25 systematic review because we will use information from published documents. Our
26 findings will be published in a peer-reviewed journal according to the PRISMA
27 guidelines.
28
29
30
31
32
33

34 **Systematic review registration:** PROSPERO (CRD42020190761)
35
36

37 **Keywords:** COVID-19, rehabilitation, clinical practice guidelines, expert consensus,
38 systematic review
39
40
41
42

43 **Strengths and limitations of this study**

44

- 45 ● This is the first systematic review to assess the methodological quality and
46 reporting quality of included CPGs and expert consensus strictly following the
47 AGREE II instrument and the RIGHT tool.
48
- 49 ● This systematic review will provide comprehensive summary of recommendations
50 in CPGs and expert consensus for COVID-19, so as to give quick references for
51
52
53
54
55
56
57
58
59
60

1
2
3
4 front-line clinicians, therapists and patients, and provide reasonable suggestions
5
6 for future guideline makers.
7

- 8
- 9 ● This study will only include CPGs and expert consensus published in Chinese
10 and English, the language bias is inevitable.
11
- 12
- 13
- 14 ● We can't solve the inconsistency of the recommendations of rehabilitation for
15 patients with COVID-19, and we plan to conduct a meta-analysis to solve the
16 problem later.
17
18
19
20
21

22 **Introduction**

23
24 Coronavirus disease 2019 (COVID-19) was declared as a pandemic by the World
25 Health Organization (WHO) on 11 March 2020, which has affected more than 200
26 countries, with 404,910,528 confirmed cases and 5,783,776 deaths worldwide until
27 February 11, 2022.¹⁻³ COVID-19 has posed a huge threat to the global public health,
28 economy, and other aspects of people's daily life. During hospitalization, COVID-19
29 patients may suffer from respiratory, cardiopulmonary, exercise and psychological
30 dysfunctions.^{4 5} Furthermore, discharged COVID-19 patients may continue to suffer
31 from different degrees of multiple dysfunction, limitation in ability of daily living
32 (ADL) and social participation.^{6 7}
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47

48 In order to reduce the complications and disability rate and improve the overall function
49 of patients at different stages of COVID-19, rehabilitation should be carried out early.⁴
50
51
52
53
54
55
56
57
58
59
60
8 9 At present, a number of professional institutions have successively formulated
clinical practice guidelines (CPGs) and expert consensus of rehabilitation for
COVID-19, including recommendations of rehabilitation assessment and therapy.¹⁰⁻¹⁴

1
2
3
4 However, front-line clinicians could not make quick and proper choices among
5
6 numerous CPGs and expert consensuses with different quality.
7
8

9 Therefore, it is critical to summarize recommendations of rehabilitation for COVID-19
10
11 and identify the quality of CPGs and expert consensuses of rehabilitation, so as to
12
13 provide some valuable suggestions for guideline users and the formulation of related
14
15 guidelines of rehabilitation for COVID-19 in the future. The purpose of this systematic
16
17 review is to assess the methodological quality and reporting quality of these CPGs and
18
19 expert consensuses with the Appraisal of Guidelines for Research & Evaluation
20
21 (AGREE) II tool and the Reporting Items for Practice Guidelines in healthcare (RIGHT)
22
23 statement, and summarize the current recommendations of rehabilitation for COVID-
24
25 19.
26
27
28
29
30
31

32 **Methods**

33 **Protocol registration and reporting**

34
35 This protocol was reported according to the Preferred Reporting Items for Systematic
36
37 Reviews and Meta-Analysis-Protocol (PRISMA-P) statement (see checklist in
38
39 Additional file 1),¹⁵ and has been registered on the International Prospective Register
40
41 Of Systematic Reviews (PROSPERO) (Registration number CRD42020190761).
42
43
44
45
46
47

48 **Eligibility criteria**

49 *Inclusion criteria*

50
51
52
53 **Study design** We will include CPGs and expert consensuses of rehabilitation for
54
55 COVID-19 issued by nationally or internationally recognized government authorities,
56
57 medical/academic societies, or organizations.
58
59
60

1
2
3
4 **Participants** Patients who were clinically diagnosed (using any recognized diagnostic
5
6 criteria, such as real-time quantitative polymerase chain reaction detection of new
7
8 coronavirus nucleic acid was positive, and highly homologous with known new
9
10 coronavirus¹⁶) with COVID-19 will be included. There will be no restrictions on age,
11
12 gender, race or nation.
13
14
15

16
17 **Study contents** CPGs and expert consensuses that provide recommendations of
18
19 traditional Chinese medicine (TCM) rehabilitation techniques (e.g. Tuina/massage,
20
21 acupuncture and moxibustion, Taichi, Baduanjin etc.) and modern functional recovery
22
23 techniques (e.g. respiratory and peripheral muscle training, psychosocial evaluation and
24
25 support, exercise training, occupational therapies etc.) will be included.
26
27
28

29 30 *Exclusion criteria*

31
32 We will exclude CPGs and expert consensuses that are not published in Chinese and
33
34 English, the review and interpretation, old versions, and the management of other
35
36 diseases during the epidemic.
37
38
39

40 41 **Search strategy**

42
43 We will search PubMed, Embase, Chinese Biomedical Literature Database (CBM),
44
45 Chinese Science and Technology Periodical Database (VIP), Wanfang database
46
47 (Wanfang Data) and China National Knowledge Infrastructure (CNKI) databases from
48
49 inception to October 2021. In addition, we will search other sources of guidelines,
50
51 including the National Guideline Clearinghouse (NGC), Guidelines International
52
53 Network (GIN), Scottish Intercollegiate Guidelines Network (SIGN), National Institute
54
55 for Health and Clinical Excellence (NICE), and WHO. Search terms will include words
56
57
58
59
60

1
2
3
4 related to rehabilitation therapy, COVID-19, guidelines and expert consensuses. The
5
6 search strategy for PubMed is shown in Additional file 2, and the modified strategies
7
8 will be applied to other electronic databases. We will search the relevant websites of
9
10 advising body or healthcare organization and review the reference lists of potentially
11
12 eligible citations.
13
14
15

16 17 **Study selection**

18
19
20 All the retrieved records will be imported into EndNote X9 reference management
21
22 software. After filtering the duplicates, two reviewers (YZ and YXL) will
23
24 independently screen the titles and abstracts to identify eligible records and then
25
26 download full texts for further screening. Any disagreements will be resolved in
27
28 discussion with a third reviewer (JL) to reach consensus.
29
30
31

32 33 **Quality assessment**

34
35 We will evaluate methodological quality and reporting quality of included CPGs and
36
37 expert consensuses using the AGREE II tool and the RIGHT statement, respectively.
38
39 Trained assessors (YZ and YYZ) will pre-assess and discuss the samples of eligible
40
41 records. After that, they will independently appraise the quality of included CPGs and
42
43 expert consensuses. Discrepancies will be discussed and resolved through consulting a
44
45 third reviewer(RJJ).
46
47
48
49

50 51 **methodological quality**

52
53 The AGREE II instrument was developed to evaluate the development and
54
55 methodological quality of guidelines that has been found to have high construct
56
57 validity.¹⁷ The AGREE II consists of two overall assessment and 23 items arranged into
58
59
60

1
2
3
4 six domains: 1) scope and purpose, 2) stakeholder involvement, 3) rigour of
5
6 development, 4) clarity of presentation, 5) applicability and 6) editorial independence.

7
8
9 Each item is ranked on a seven-point scale (1: strongly disagree to 7: strongly agree).

10
11 To assess the degree of agreement between reviewers, the intraclass correlation
12
13 coefficient (ICC) will be calculated using Statistical Package for Social Sciences (SPSS)

14
15
16 25.0. The scores will be defined as: poor 0.0-0.2, fair 0.21-0.4, moderate 0.41-0.6, good
17
18 0.61-0.8 and very good 0.81-1.00.¹⁸

21 22 **reporting quality**

23
24 The RIGHT statement was used to evaluate the reporting quality of the CPGs and expert
25
26 consensus, which helped guideline makers to write and report guidelines
27
28 transparently and standardly.¹⁹ It included seven domains as follows: 1) basic
29
30 information, 2) background, 3) evidence, 4) recommendations, 5) review and quality
31
32 assurance, 6) funding, declaration and management of interest, and 7) other information.

33 34 35 **Data extraction**

36
37 Two reviewers (DLZ and XBL) will extract data independently using a standardized
38
39 data extraction form. We will extract the following items: (1) characteristics of CPGs
40
41 and expert consensus: title, country of origin and publication year; (2) stage of disease;
42
43 (3) recommended rehabilitation assessment; (4) recommended rehabilitation treatment;
44
45 (5) related contents of methodological quality and reporting quality. The extracted data
46
47 will be cross-checked by two reviewers. Any disagreements will be resolved through
48
49 team discussion.

50 51 52 **Data analysis**

1
2
3
4 Textual descriptive synthesis and tables will be used to present the recommended
5
6 rehabilitation assessment and therapy for different stages or different dysfunctions of
7
8 patients with COVID-19. We will list the reporting rate of each items and overall rate
9
10 in tables to reflect the methodological quality and reporting quality of included CPGs
11
12 and expert consensuses.
13
14
15

16 **Patient and public involvement**

17
18 Patients and public were not involved in the design and conduction of this study.
19
20
21

22 **Discussion**

23
24 Studies showed that 80% of COVID-19 patients suffered from one or more
25
26 dysfunctions, mainly including fatigue (58%), dyspnea (24%), muscle/joint pain
27
28 (43.8%) and anxiety/sadness (46.1%).^{20 21} Rehabilitation played an significant role in
29
30 the prognosis of COVID-19 patients.^{9 22 23} Numerous CPGs and expert consensuses of
31
32 rehabilitation for COVID-19 patients have been published with varying quality.²²⁻²⁵
33
34 CPGs and expert consensuses are developed to assist practitioners and patients to make
35
36 decisions about appropriate healthcare for specific circumstances.²⁶ However, low
37
38 methodological quality may reduce the reliability of CPG and expert consensuses,
39
40 decrease compliance of CPG and expert consensuses in clinical practice, cause waste
41
42 of medical resources and lead to confusion to clinicians, therapists and patients. The
43
44 reporting quality of CPG and expert consensuses is also important, non-standard
45
46 reporting could decrease the clarity and integrity of the content, and could not provide
47
48 clear guidance for guidelines users.
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4 AGREE II tool has become an internationally accepted guidelines appraisal tool, which
5
6 could identify the methodological limitations of current guidelines.²⁷ In our previous
7
8 study, we used AGREE II tool to appraise the methodological quality of guidelines for
9
10 the treatment of COVID-19 patients with Chinese herbal medicine, the results showed
11
12 that the methodological quality of most guidelines was poor, especially in the fields of
13
14 rigour of development and editorial independence, which suggested that evidence
15
16 quality and recommendation strength, the views and preferences of the target
17
18 population, conflicts of interest should be considered more in the development of
19
20 guidelines.²⁸ RIGHT instrument has been developed to improve the reporting quality
21
22 of the guidelines and promote the dissemination and implementation of the guidelines.¹⁹
23
24 RIGHT checklist covers the most important information to be reported in the guidelines,
25
26 which could be used as a reference tool to help guideline developers to report the
27
28 guidelines in a standard, explicit and transparent way, so as to help clinicians, therapists
29
30 and patients better understand and apply the guidelines. Researchers could also use
31
32 RIGHT tool to assess the reporting quality of CPGs and expert consensuses. High
33
34 quality CPGs and expert consensuses could save medical resources and costs, and
35
36 improve patient care and safety. As we known, CPGs and expert consensuses of
37
38 rehabilitation for COVID-19 patients are developing rapidly, which help clinicians,
39
40 therapists and patients to make clinical decisions and assist patients to carry out home
41
42 rehabilitation independently, so it is necessary to evaluate the methodological and
43
44 reporting quality of CPGs and expert consensuses. Therefore, we will conduct quality
45
46 assessment to aid clinicians, therapists and patients choose high quality CPGs and
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4 expert consensuses, and summarize recommendations according to stages of COVID-
5
6 19 or different body-dysfunctions.
7

8
9 To our knowledge, this is the first systematic review to evaluate the methodological
10
11 and reporting quality of CPGs and expert consensuses on rehabilitation for patients with
12
13 COVID-19 according to AGREE II and RIGHT tools, respectively. The protocol
14
15 amendments on PROSPERO will be updated if necessary and we intend to publish this
16
17 study in peer-reviewed journal. It is hoped that our results could provide reasonable
18
19 suggestions for guideline makers to develop higher quality CPGs and expert
20
21 consensuses or improve existing ones, and give quick references of rehabilitation
22
23 therapy for clinicians and patients who are in the battle against COVID-19.
24
25
26
27
28
29
30
31

32 **Abbreviations:**

33
34 COVID-19: Coronavirus disease 2019; WHO: World Health Organization; ADL:
35
36 activities of daily living; CPGs: Clinical Practice Guidelines; TCM: traditional Chinese
37
38 medicine; AGREE: the Appraisal of Guidelines for Research & Evaluation; RIGHT:
39
40 Reporting Items for Practice Guidelines in healthcare; PRISMA: Preferred Reporting
41
42 Items for Systematic Reviews and Meta-Analysis; PROSPERO: Prospective Register
43
44 of Systematic Reviews; CBM: Chinese Biomedical Literature Database; VIP: Chinese
45
46 Science and Technology Periodical Database; Wanfang Data: Wanfang database;
47
48 CNKI: China National Knowledge Infrastructure; NGC: The National Guideline
49
50 Clearinghouse; GIN: Guidelines International Network; SIGN: Scottish Intercollegiate
51
52
53
54
55
56
57
58
59
60

1
2
3
4 Guidelines Network; NICE: National Institute for Health and Clinical Excellence; ICC:
5
6
7 Intraclass Correlation Coefficient; SPSS: Statistical Package for Social Sciences.
8

9 **Declarations**

10 **Ethics approval and consent to participate**

11
12
13
14 No ethics approval is required for this systematic review because we will be using
15
16
17 information from published documents. Our findings will be published in a peer-
18
19
20 reviewed journal according to the PRISMA guidelines.
21

22 **Consent for publication**

23
24
25 Not applicable.
26

27 **Availability of data and materials**

28
29
30 Not applicable.
31

32 **Authors' contributions**

33
34
35 Rongjiang Jin and Juan Li designed the study. Yue Zhang, Yuxi Li and Dongling Zhong
36
37
38 drafted the manuscript. Yuxi Li and Yue Zhang searched the literature. Yue Zhang and
39
40
41 Yuanyuan Zhu conducted the quality assessment. Dongling Zhong and Xiaobo Liu
42
43
44 analyzed the data. Yue Zhang, Yuxi Li and Dongling Zhong contributed equally to this
45
46
47 work and shared first authorship. All authors approved the manuscript.
48

49 **Funding statement**

50
51
52 This work will be supported by the Department of Science and Technology of Sichuan
53
54
55 Province (No. 2019YFS0019). The funder has no role in developing this protocol.
56

57 **Competing interests**

58
59
60 The authors declare that they have no competing interests.

Acknowledgements

Not applicable.

References

1. Munster VJ, Koopmans M, van Doremalen N, et al. A Novel Coronavirus Emerging in China - Key Questions for Impact Assessment. *The New England journal of medicine* 2020;382(8):692-94. doi: 10.1056/NEJMp2000929 [published Online First: 2020/01/25]
2. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *Jama* 2020;323(13):1239-42. doi: 10.1001/jama.2020.2648 [published Online First: 2020/02/25]
3. Organization WH. WHO Coronavirus (COVID-19) Dashboard. 2021 [Available from: <https://covid19.who.int/>].
4. Kurtaiş Aytür Y, Füsün Köseoglu B, Özyemişçi Taşkıran Ö, et al. Pulmonary rehabilitation principles in SARS-COV-2 infection (COVID-19): The revised guideline for the acute, subacute, and post-COVID-19 rehabilitation. *Turkish journal of physical medicine and rehabilitation* 2021;67(2):129-45. doi: 10.5606/tftrd.2021.8821 [published Online First: 2021/08/17]
5. McPeake J, Shaw M, MacTavish P, et al. Long-term outcomes following severe COVID-19 infection: a propensity matched cohort study. *BMJ open respiratory research* 2021;8(1) doi: 10.1136/bmjresp-2021-001080 [published Online First: 2021/12/11]
6. Xu X, Shi YN, Wang RY, et al. Home-based traditional Chinese medicine nursing interventions for discharged patients with COVID-19: a rapid review of Chinese guidelines. *Integrative medicine research* 2020;9(3):100479. doi: 10.1016/j.imr.2020.100479 [published Online First: 2020/08/09]
7. China NHCotPsRo. Notice of the General Office of the National Health Commission on Issuing the Rehabilitation Plan for Discharged Patients with novel coronavirus Pneumonia (Trial)[Letter from the National Health Administration (2020)189] 2020 [Available from: http://www.gov.cn/zhengce/zhengceku/2020-03/05/content_5487160.htm].
8. XIE Y. Rehabilitation treatment of novel coronavirus pneumonia patients. *Journal of Fujian University of Traditional Chinese Medicine* 2020;30:5-6.
9. Zhao HM, Yu PM, Wang C. Future pulmonary rehabilitation perspectives following coronavirus disease 2019 in China. *Chinese medical journal* 2021;134(17):2045-47. doi: 10.1097/cm9.0000000000001700 [published Online First: 2021/09/14]
10. Liu K, Zhang W, Yang Y, et al. Respiratory rehabilitation in elderly patients with COVID-19: A randomized controlled study. *Complementary therapies in clinical practice* 2020;39:101166. doi: 10.1016/j.ctcp.2020.101166 [published Online First: 2020/05/08]
11. Societies SCoPRoWFOCM, Minorities TBoPDotCMAo. Expert Consensus on Rehabilitation of Chinese Medicine for COVID-19 (First Edition). *Acta Chinese Medicine* 2020
12. Xia W, Hua Q, Wang G, et al. Standard for rehabilitation diagnosis and treatment of COVID-19 with integration of traditional Chinese and Western medicine. *Rehabilitation Medicine* 2020;30(2):85-92 .

13. Vitacca M, Carone M, Clini EM, et al. Joint Statement on the Role of Respiratory Rehabilitation in the COVID-19 Crisis: The Italian Position Paper. *Respiration; international review of thoracic diseases* 2020;1-7. doi: 10.1159/000508399
14. Zheng D, Li L, Wang Y, et al. Treatment of Respiratory and motor rehabilitation During medical Observation of Novel coronavirus Pneumonia (Draft). *World Latest Medicine Information* 2020;20(66)
15. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ (Clinical research ed)* 2016;354:i4086. doi: 10.1136/bmj.i4086 [published Online First: 2016/07/23]
16. China NHCotPsRo, Medicine TpsRoCSAof C. Diagnosis and treatment plan of novel coronavirus (trial eighth edition). *Infect Dis Info* 2020;33:289-96. doi: 10.3969/j.issn.1007-8134.2020.04.001
17. Brouwers MC, Kho ME, Browman GP, et al. Development of the AGREE II, part 2: assessment of validity of items and tools to support application. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne* 2010;182(10):E472-8. doi: 10.1503/cmaj.091716 [published Online First: 2010/06/02]
18. Kiriakova V, Cooray SD, Yeganeh L, et al. Management of bone health in women with premature ovarian insufficiency: Systematic appraisal of clinical practice guidelines and algorithm development. *Maturitas* 2019;128:70-80. doi: 10.1016/j.maturitas.2019.07.021 [published Online First: 2019/09/29]
19. Chen Y, Yang K, Marušić A, et al. A Reporting Tool for Practice Guidelines in Health Care: The RIGHT Statement. *Annals of internal medicine* 2017;166(2):128-32. doi: 10.7326/m16-1565 [published Online First: 2016/11/29]
20. Lopez-Leon S, Wegman-Ostrosky T, Perelman C, et al. More than 50 Long-term effects of COVID-19: a systematic review and meta-analysis. *medRxiv : the preprint server for health sciences* 2021 doi: 10.1101/2021.01.27.21250617 [published Online First: 2021/02/04]
21. Barros-Leite B, Lima MRO, Caminha M, et al. Short-term functional changes after hospital discharge by COVID-19 through teleconsultation at a reference service in Northeast Brazil: A cross-sectional study. *Journal of medical virology* 2021 doi: 10.1002/jmv.27410 [published Online First: 2021/10/23]
22. Association CM, China W-FCCi, Association CH, et al. Consensus of Framework and Protocol of Rehabilitation of Coronavirus Disease 2019 Using WHO-FICs *Chin J Rehabil Theory Pract* 2020
23. Chinese Association of Rehabilitation Medicine RRCoCA, of Rehabilitation Medicine CRGoCSoPM, Rehabilitation a. Recommendations for respiratory rehabilitation of coronavirus disease 2019 in adult. *Chin J Tuberc Respir Dis* 2020;43
24. Society C, Physicians CAoC. Guidelines for Diagnosis, Treatment and Prevention of Coronavirus Diseases in Chinese Adults in 2019. *Natl Med J China* 2021:1-64.
25. Branch CMAPMaR. Experts consensus on rehabilitation of coronavirus disease 2019. *West China Medical Journal* 2020;35(5)
26. Institute of Medicine Committee on Standards for Developing Trustworthy Clinical Practice G. In: Graham R, Mancher M, Miller Wolman D, et al., eds. *Clinical Practice Guidelines We Can Trust*. Washington (DC): National Academies Press (US)

1
2
3 Copyright 2011 by the National Academy of Sciences. All rights reserved. 2011.

4 27. Brouwers MC, Kho ME, Browman GP, et al. AGREE II: advancing guideline development,
5 reporting and evaluation in health care. *CMAJ : Canadian Medical Association journal =*
6 *journal de l'Association medicale canadienne* 2010;182(18):E839-42. doi:
7 10.1503/cmaj.090449 [published Online First: 2010/07/07]
8

9
10 28. Li YX, Li J, Zhang Y, et al. Clinical Practice Guidelines and Experts' Consensuses for Treatment
11 of Coronavirus Disease 2019 (COVID-19) Patients with Chinese Herbal Medicine: A
12 Systematic Review. *Chinese journal of integrative medicine* 2020;26(10):786-93. doi:
13 10.1007/s11655-020-3431-x [published Online First: 2020/10/09]
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Additional file 1. PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item	Location where item is reported
ADMINISTRATIVE INFORMATION			
Title:			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Not applicable	Not applicable
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Authors:			
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	11
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	Not applicable
Support:			
Sources	5a	Indicate sources of financial or other support for the review	11
Sponsor	5b	Provide name for the review funder and/or sponsor	11
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	11
INTRODUCTION			
Rationale	6	Describe the rationale for the review in the context of what is already known	3-4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	5
METHODS			
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5-6
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits such that it could be repeated	Appendix 2

Study records:			
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	6
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently in duplicate), any processes for obtaining and confirming data from investigators	7
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	7
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	8
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	6-7
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I ² or Kendall's τ)	8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	Not applicable

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (where available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

Additional file 2. Search Strategy for PubMed

#1	Search COVID-19[Title/Abstract]
#2	Search COVID-19 pneumonia[Title/Abstract]
#3	Search novel coronavirus[Title/Abstract]

#4	Search novel coronavirus pneumonia[Title/Abstract]
#5	Search 2019-nCoV[Title/Abstract]
#6	Search 2019-nCoV pneumonia[Title/Abstract]
#7	Search #1 OR #2 OR #3 OR #4 OR #5 OR #6
#8	Search rehabilitation[MeSH Terms]
#9	Search respiratory rehabilitation [Title/Abstract]
#10	Search pulmonary rehabilitation [Title/Abstract]
#11	Search exercise therap* [Title/Abstract]
#12	Search traditional Chinese medicine rehabilitation[Title/Abstract]
#13	Search #8 OR #9 OR #10 OR #11 OR #12
#14	Search (guideline OR practice guideline OR consensus development conference OR consensus OR consensus statement OR expert consensus OR standards OR recommendation)[Title/Abstract]
#15	Search #7 AND #13 AND #14

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item	Location where item is reported
ADMINISTRATIVE INFORMATION			
Title:			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Not applicable	Not applicable
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Authors:			
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	11
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	Not applicable
Support:			
Sources	5a	Indicate sources of financial or other support for the review	11
Sponsor	5b	Provide name for the review funder and/or sponsor	11
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	11
INTRODUCTION			
Rationale	6	Describe the rationale for the review in the context of what is already known	3-4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	5
METHODS			
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5-6
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits such that it could be repeated	Appendix 2

Study records:			
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	6
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently in duplicate), any processes for obtaining and confirming data from investigators	7
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	7
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	8
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	6-7
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I ² and Kendall's τ)	8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	Not applicable

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite where available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

BMJ Open

Clinical practice guidelines and expert consensus statements on rehabilitation for patients with COVID-19: protocol for a systematic review

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-060767.R1
Article Type:	Protocol
Date Submitted by the Author:	09-Jun-2022
Complete List of Authors:	Zhang, Yue; Chengdu University of Traditional Chinese Medicine, Li, YuXi; Chengdu University of Traditional Chinese Medicine Zhong, Dongling; Chengdu University of Traditional Chinese Medicine, Liu, Xiaobo; Chengdu University of Traditional Chinese Medicine Zhu, Yuanyuan; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Jin, Rongjiang; Chengdu University of Traditional Chinese Medicine; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Li, Juan; Chengdu University of Traditional Chinese Medicine
Primary Subject Heading:	Rehabilitation medicine
Secondary Subject Heading:	Evidence based practice
Keywords:	COVID-19, REHABILITATION MEDICINE, Protocols & guidelines < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

SCHOLARONE™
Manuscripts

1
2
3 **Clinical practice guidelines and expert consensus statements on rehabilitation for**
4 **patients with COVID-19: protocol for a systematic review**
5
6

7 Yue Zhang¹, Yuxi Li¹, Dongling Zhong¹, Xiaobo Liu¹, Yuanyuan Zhu², Rongjiang
8 Jin^{1,2*}, Juan Li^{1*}
9

10 1 School of Health Preservation and Rehabilitation, Chengdu University of Traditional
11 Chinese Medicine, 610075, Chengdu, China;
12
13

14
15 2 Department of rehabilitation, Chinese and Western Medicine Hospital of Panzhihua,
16 617000, Panzhihua, China.
17
18

19 YZ, YXL and DLZ contributed equally to this work and shared first authorship.
20
21

22
23 ***Correspondence**
24

25
26 Rongjiang Jin, School of Health Preservation and Rehabilitation, Chengdu University
27 of Traditional Chinese Medicine, 610075, Chengdu, China, email:
28 cdzyydxjrj@126.com; telephone number: 13568851883;
29
30

31
32
33 Juan Li, School of Health Preservation and Rehabilitation, Chengdu University of
34 Traditional Chinese Medicine, 610075, Chengdu, China, email: 785939016@qq.com;
35
36
37
38
39 telephone number: 18224494675.
40
41

42 **Keywords:** Methodological quality, reporting quality, AGREE II, RIGHT statement,
43
44 systematic review
45
46
47
48
49

50 Word count: 2375words
51

52
53 **Abstract**
54

55
56 **Introduction:** Coronavirus disease 2019 (COVID-19) is a highly infectious disease,
57
58 characterized by respiratory, physical and psychological dysfunctions. Rehabilitation
59
60

1
2
3
4 could effectively alleviate the symptoms and promote the recovery of physical and
5
6 mental health of patients with COVID-19. Recently, rehabilitation medical institutions
7
8 have issued clinical practice guidelines (CPGs) and expert consensus statements
9
10 involved recommendations of rehabilitation assessments and therapies for COVID-19.
11
12 This systematic review aims to assess the methodological quality and reporting quality,
13
14 evaluate the heterogeneity of the recommendations and summarize the
15
16 recommendations of rehabilitation assessments and therapies for COVID-19, so as to
17
18 give quick references for front-line clinicians, therapists and patients, and provide
19
20 reasonable suggestions for future guideline makers.
21
22
23
24
25

26
27 **Methods and analysis:** We will search electronic databases [PubMed, Embase,
28
29 Chinese Biomedical Literature Database (CBM), Chinese Science and Technology
30
31 Periodical Database (VIP), Wanfang database and China National Knowledge
32
33 Infrastructure (CNKI)] and websites of governments or organizations [e.g. The
34
35 National Guideline Clearinghouse (NGC), Guidelines International Network (GIN),
36
37 National Institute for Health and Clinical Excellence (NICE), Scottish Intercollegiate
38
39 Guidelines Network (SIGN), and WHO] for eligible CPGs and expert consensus
40
41 statements issued from inception to August 2022. The CPGs and expert consensus
42
43 statements published in Chinese and English, and presenting recommendations of
44
45 traditional Chinese medicine rehabilitation techniques and modern functional recovery
46
47 techniques for COVID-19 will be included. While, reviews, interpretations, old
48
49 versions of CPGs and expert consensus statements, or the management of other diseases
50
51 during the epidemic will be excluded. Two reviewers will independently scrutinize
52
53
54
55
56
57
58
59
60

1
2
3
4 study, extract data, appraise the methodological quality following the Appraisal of
5
6 Guidelines for Research & Evaluation (AGREE) II tool, and assess the reporting quality
7
8 with the Reporting Items for Practice Guidelines in healthcare (RIGHT) statement. We
9
10 will use the Measurement Scale of Rate of Agreement (MSRA) to evaluate the
11
12 heterogeneity of the recommendation in different CPGs and expert consensus
13
14 statements. And we will also summarize the recommendations of rehabilitation for
15
16 COVID-19. The above results will be narratively described and presented as tables or
17
18 figures. Besides, the degree of agreement between reviewers will be calculated using
19
20 intraclass correlation coefficient (ICC).
21
22
23
24
25

26
27 **Ethics and dissemination:** Ethics approval is not necessary for this protocol of
28
29 systematic review because we will use information from published documents. Our
30
31 findings will be published in a peer-reviewed journal according to the PRISMA
32
33 guidelines.
34
35
36

37
38 **Systematic review registration:** PROSPERO (CRD42020190761)
39

40 **Strengths and limitations of this study**

- 41
42
43 ● This is the first systematic review to comprehensively evaluate the methodological
44
45 quality and reporting quality of included CPGs and expert consensus statements
46
47 strictly following the AGREE II instrument and the RIGHT statement.
48
49
- 50
51 ● We will use the MSRA to compare the heterogeneity of recommendations in
52
53 different CPGs and expert consensus statements.
54
55
- 56
57 ● The reviewers will be trained to use the AGREE II instrument and RIGHT tool,
58
59 and ICC will be calculated to test the consistency between two assessors.
60

- This study will include CPGs and expert consensus statements published in Chinese and English, the language bias is inevitable.
- The validity of the recommendations on rehabilitation for patients with COVID-19 can not be evaluated.

Introduction

Coronavirus disease 2019 (COVID-19) was declared as a pandemic by the World Health Organization (WHO) on 11 March 2020, which has affected more than 200 countries, with 524,339,768 confirmed cases and 6,281,260 deaths worldwide until May 25, 2022.^[1-3] COVID-19 has posed a huge threat to the global public health, economy, and other aspects of people's daily life.^[4] During hospitalization, patients with COVID-19 may suffer from dysfunctions of multisystem, including respiratory, cardiovascular, hematological, renal, digestive, neurological, psychiatric and metabolic system etc.^[5-7] Among discharged patients with COVID-19, 76% of them have at least one or more symptoms, the most common symptoms were fatigue or muscle weakness (63%) and sleep difficulties (26%), accompanied by anxiety or depression (23%).^[8] Meanwhile, COVID-19 vaccination as a safe and effective strategy has been developed to reduce mortality and severe ICU admission (both in general healthy population and clinically special population).^[9] Recently, long COVID-19 syndrome has been used to describe persistent or developmental symptoms and signs after acute COVID-19.^[10] Long COVID-19 syndrome is manifested as fatigue or muscle weakness, sleep difficulties, palpitations, joint/muscle pain, dizziness, chest pain and so on.^[8-11] Long COVID-19 affects people's ability to resume normal life and work, increases the

1
2
3
4 medical burden and the loss of economy and productivity.^[10] Therefore, infection with
5
6 COVID-19 and its long-term sequelae worth attention because the function of these
7
8 people may deteriorate and require social welfares/medical health care in the future.^[12]
9
10
11 A systematic review of 5 randomized controlled trials have confirmed rehabilitation
12
13 could improve dyspnea, muscle strength, walking capacity, sit-to-stand performance,
14
15 anxiety and quality of life of patients with COVID-19.^[13] In order to reduce the
16
17 complications and disability rate and improve the overall function of patients at
18
19 different stages of COVID-19, rehabilitation therapies should be carried out as early as
20
21 possible.^[5 14 15] So far, numerous CPGs and expert consensus statements of
22
23 rehabilitation for COVID-19 patients have been published.^[16-19] CPGs and expert
24
25 consensus statements are developed to assist practitioners and patients to make
26
27 decisions about appropriate healthcare for specific circumstances.^[20] Notwithstanding,
28
29 the different emphases of the guidelines, inconsistent or biased recommendations, low
30
31 certainty of evidences in CPGs and expert consensus statements may decrease clinical
32
33 application.^[21 22] Moreover, low methodological quality may reduce the reliability of
34
35 CPGs and expert consensus statements, attenuate compliance of CPGs and expert
36
37 consensus statements in clinical practice, cause waste of medical resources and lead to
38
39 confusion to clinicians, therapists and patients.^[23 24] The reporting quality of CPGs and
40
41 expert consensus statements is also important. Non-standard reporting could decrease
42
43 the clarity and integrity of the content, and could not provide clear guidance for
44
45 guidelines users.^[25] Therefore, CPGs and expert consensus statements with high
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4 methodological quality and reporting quality can save medical resources and costs, and
5
6 improve patients care and safety.
7

8
9 To the best of our knowledge, the methodological quality and reporting quality of CPGs
10
11 and expert consensus statements have not been evaluated. Thus, the purpose of this
12
13 systematic review is to assess the methodological quality and reporting quality of CPGs
14
15 and expert consensus statements with the Appraisal of Guidelines for Research &
16
17 Evaluation (AGREE) II tool and the Reporting Items for Practice Guidelines in
18
19 healthcare (RIGHT) statement. Moreover, the heterogeneity of recommendations in
20
21 different CPGs and expert consensus statements will be investigated using the
22
23 Measurement Scale of Rate of Agreement (MSRA) and the current recommendations
24
25 of rehabilitation for COVID-19 will be summarized, so as to provide some valuable
26
27 suggestions for guideline users and the formulation of related guidelines of
28
29 rehabilitation for COVID-19 in the future.
30
31
32
33
34
35
36

37 **Methods and analysis**

38 **Protocol registration**

39
40 This protocol has been registered on the International Prospective Register of
41
42 Systematic Reviews (PROSPERO) (registration number CRD42020190761).
43
44
45
46
47

48 **Eligibility criteria**

49 *Inclusion criteria*

50
51
52 The inclusion criteria are as following: (1) CPGs and expert consensus statements of
53
54 rehabilitation for COVID-19 are issued by nationally or internationally recognized
55
56 government authorities, medical/academic societies, or organizations; (2) CPGs and
57
58
59
60

1
2
3
4 expert consensus statements focus on patients with COVID-19. Patients with COVID-
5
6 19 who are clinically diagnosed using any recognized diagnostic criteria (such as real-
7
8 time quantitative polymerase chain reaction detection of new coronavirus nucleic acid
9
10 was positive, and highly homologous with known new coronavirus^[26]). There are no
11
12 restrictions on age, gender, race or nation; (3) CPGs and expert consensus statements
13
14 that provide recommendations of traditional Chinese medicine rehabilitation
15
16 techniques (e.g. tuina, acupuncture, moxibustion, and taichi etc.) and modern functional
17
18 recovery techniques (e.g. respiratory training, peripheral muscle training, psychosocial
19
20 support and occupational therapies etc.). (4) If there are multiple versions of the CPGs
21
22 and expert consensus statements, we will include the latest version.
23
24
25
26
27
28
29

30 *Exclusion criteria*

31
32 We will exclude CPGs and expert consensus statements that are not published in
33
34 Chinese and English, the reviews, interpretations or the management of other diseases
35
36 during the epidemic.
37
38
39

40 **Search strategy**

41
42 We will search PubMed, Embase, Chinese Biomedical Literature Database (CBM),
43
44 Chinese Science and Technology Periodical Database (VIP), Wanfang database and
45
46 China National Knowledge Infrastructure (CNKI) databases from inception to August
47
48 2022. In addition, we will search other sources of guidelines, including the National
49
50 Guideline Clearinghouse (NGC), Guidelines International Network (GIN), Scottish
51
52 Intercollegiate Guidelines Network (SIGN), National Institute for Health and Clinical
53
54 Excellence (NICE), and WHO. Search terms will include words related to rehabilitation
55
56
57
58
59
60

1
2
3
4 therapy, COVID-19, guidelines and expert consensus statements. The full search
5
6 strategy is shown in supplementary file 1. We will also search the relevant websites of
7
8 advising body or healthcare organization and review the reference lists of potentially
9
10 eligible citations. The PRISMA flow chart is shown in supplementary file 2.
11
12
13

14 **Study selection**

15
16 All the retrieved records will be imported into EndNote X9 reference management
17
18 software. After filtering the duplicates, two reviewers (YZ and YXL) will
19
20 independently review the titles and abstracts to identify eligible records and then
21
22 download full texts for further screening. Any disagreements will be resolved in
23
24 discussion with a third reviewer (JL) to reach consensus.
25
26
27
28
29

30 **Data extraction**

31
32 Two reviewers (DLZ and XBL) will extract data independently using a standardized
33
34 data extraction form. We will extract the following items: (1) characteristics of CPGs
35
36 and expert consensus statements: title, country of origin and publication year; (2) stages
37
38 of disease; (3) recommended rehabilitation assessment; (4) recommended rehabilitation
39
40 treatment; (5) related contents of methodological quality and reporting quality. The
41
42 extracted data will be cross-checked by two reviewers. Any disagreements will be
43
44 resolved through team discussion.
45
46
47
48
49
50

51 **Quality assessment**

52
53 We will evaluate methodological quality and reporting quality of included CPGs and
54
55 expert consensus statements using the AGREE II tool and the RIGHT statement,
56
57 respectively. Two assessors (YZ and YYZ) will study the AGREE II User's Manual
58
59
60

1
2
3
4 and appraise guidelines with the My AGREE PLUS online appraisal platform
5
6 (www.agreetrust.org) to practice the use of AGREE II tool. Two assessors (YXL and
7
8 DLZ) will study RIGHT checklist and detailed explanatory documents with examples
9
10 (www.annals.org). Trained assessors will pre-assess and discuss the samples of eligible
11
12 records. After that, they will independently assess the methodological quality and
13
14 reporting quality of included CPGs and expert consensus statements. Discrepancies will
15
16 be discussed and resolved through consulting a third reviewer(RJJ).
17
18
19
20
21

22 **methodological quality**

23
24 The AGREE II instrument is developed to evaluate the development and
25
26 methodological quality of guidelines with high construct validity.^[27] The AGREE II
27
28 consists of two overall assessment with 23 items covering six domains: 1) scope and
29
30 purpose (items 1-3), 2) stakeholder involvement (items 4-6), 3) rigour of development
31
32 (items 7-14), 4) clarity of presentation (items 15-17), 5) applicability (items 18-21) and
33
34 6) editorial independence (items 22-23). Each item is ranked on a seven-point scale (1:
35
36 strongly disagree to 7: strongly agree). The standardized score of each domain is
37
38 calculated using the AGREE II formula [(Obtained score from all raters – Minimum
39
40 possible score from all raters) / (Maximum possible score for all raters – Minimum
41
42 possible score for all raters)] × 100. According to the criteria of previous guideline
43
44 appraisals, 5 or 6 domains score > 60% are usually considered as high quality, 3 or 4
45
46 domains score > 60% are usually considered as moderate quality, 2 or fewer domains
47
48 score > 60% are usually considered as low quality.^[28 29]
49
50
51
52
53
54
55
56
57

58 **reporting quality**

1
2
3
4 The RIGHT statement is used to evaluate the reporting quality of the CPGs and expert
5
6 consensus statements, which helps guideline makers to report guidelines transparently
7
8 and standardly.^[25] It includes seven domains (22 items in total) as following: 1) basic
9
10 information (items 1–4), 2) background (items 5–9), 3) evidence (items 10–12), 4)
11
12 recommendations (items 13–15), 5) review and quality assurance (items 16–17), 6)
13
14 funding, declaration and management of interest (items 18–19), and 7) other
15
16 information (items 20–22). Each item will be judged as “Yes” (relevant information is
17
18 sufficiently reported) or “No” (relevant information is lacking).^[30]
19
20
21
22
23
24

25 **Heterogeneity assessment in rehabilitation entries**

26
27 If at least 4 CPGs and expert consensus statements recommend similar rehabilitation
28
29 suggestion for patients with COVID-19, we will use the Measurement Scale of Rate of
30
31 Agreement (MSRA) to compare the heterogeneity of this recommendation in different
32
33 CPGs and expert consensus statements.^[31-33] The scoring criteria is as following: 0% –
34
35 20%: radically different; 20% – 40%: numerous major differences; 40% – 60%: some
36
37 major differences; 60% – 80%: only minor differences; 80% – 100%: essentially
38
39 identical.^[34 35]
40
41
42
43
44

45 **Data analysis**

46
47 To assess the degree of agreement between reviewers, the intraclass correlation
48
49 coefficient (ICC) will be calculated using Statistical Package for Social Sciences (SPSS)
50
51 25.0. The scores will be defined as: poor 0.0-0.2, fair 0.21-0.4, moderate 0.41-0.6, good
52
53 0.61-0.8 and very good 0.81-1.00.^[36]
54
55
56
57
58
59
60

1
2
3
4 Textual descriptive synthesis and tables will be used to present the recommended
5
6 rehabilitation assessments and therapies for different stages or different dysfunctions
7
8 of COVID-19. We will list the reporting rate of each items and overall rate in tables to
9
10 reflect the methodological quality and reporting quality of included CPGs and expert
11
12 consensus statements.
13
14
15

16 **Patient and public involvement**

17
18 Patients and public are not involved in the design and conduction of this study.
19
20
21

22 **Ethics and dissemination**

23
24 No ethics approval is required for this systematic review because we will use
25
26 information from published documents. Our findings will be published in a peer-
27
28 reviewed journal according to the PRISMA guidelines.
29
30
31

32 **Strengths and limitations of this study**

33
34 This systematic review has several strengths. Firstly, to our knowledge, this will be the
35
36 first systematic review to comprehensively assess the methodological quality and
37
38 reporting quality of CPGs and expert consensus statements on rehabilitation for
39
40 COVID-19. Secondly, the appraisers will be extensively trained to use the AGREE II
41
42 instrument and RIGHT tool, and ICC will be calculated to test the consistency between
43
44 two assessors. Thirdly, MSRA will be used to evaluate the heterogeneity of
45
46 recommendations in the CPGs and expert consensus statements. Fourthly, we will
47
48 summarize the recommendations of rehabilitation assessments and therapies for
49
50 COVID-19 in CPGs and expert consensus statements according to the stages of disease
51
52 or different dysfunctions.
53
54
55
56
57
58
59
60

1
2
3
4 However, there are some limitations in this study: (1) We will search CPGs and expert
5
6 consensus statements published in Chinese and English, language bias may exist. (2)
7
8
9 The validity of the recommendations on rehabilitation for COVID-19 can not be
10
11 evaluated.
12

13
14 The protocol amendments on PROSPERO will be updated if necessary and we intend
15
16 to publish this study in peer-reviewed journal. It is hoped that our results could provide
17
18 reasonable suggestions for guideline makers to develop higher quality CPGs and expert
19
20 consensus statements or improve existing ones, and give quick references of
21
22 rehabilitation therapy for clinicians and patients who are in the battle against COVID-
23
24
25
26
27 19.
28
29
30
31

32 **Declarations**

33 **Consent for publication**

34
35 Not applicable.
36
37

38 **Contributors**

39
40 RJJ and JL designed the study. YZ, YXL and DLZ drafted the manuscript. YXL and
41
42 YZ will search the literature. YZ, YYZ, YXL and DLZ will conduct the quality
43
44 assessment. DLZ and XBL will analyze the data. YZ, YXL and DLZ contributed
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

53 **Funding**

54
55 This work will be supported by the Department of Science and Technology of Sichuan
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

Competing interests

The authors declare that they have no competing interests.

References

1. Munster VJ, Koopmans M, van Doremalen N, et al. A Novel Coronavirus Emerging in China - Key Questions for Impact Assessment. *The New England journal of medicine* 2020;382(8):692-94. doi: 10.1056/NEJMp2000929 [published Online First: 2020/01/25]
2. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *Jama* 2020;323(13):1239-42. doi: 10.1001/jama.2020.2648 [published Online First: 2020/02/25]
3. Organization WH. WHO Coronavirus (COVID-19) Dashboard. 2021 [Available from: <https://covid19.who.int/>].
4. Agostini F, Mangone M, Ruiu P, et al. Rehabilitation setting during and after Covid-19: An overview on recommendations. *Journal of rehabilitation medicine* 2021;53(1):jrm00141. doi: 10.2340/16501977-2776 [published Online First: 2020/12/08]
5. Kurtaiş Aytür Y, Fusun Köseoglu B, Özyemişçi Taşkiran Ö, et al. Pulmonary rehabilitation principles in SARS-COV-2 infection (COVID-19): The revised guideline for the acute, subacute, and post-COVID-19 rehabilitation. *Turkish journal of physical medicine and rehabilitation* 2021;67(2):129-45. doi: 10.5606/tftrd.2021.8821 [published Online First: 2021/08/17]
6. McPeake J, Shaw M, MacTavish P, et al. Long-term outcomes following severe COVID-19 infection: a propensity matched cohort study. *BMJ open respiratory research* 2021;8(1) doi: 10.1136/bmjresp-2021-001080 [published Online First: 2021/12/11]
7. Yan Z, Yang M, Lai CL. Long COVID-19 Syndrome: A Comprehensive Review of Its Effect on Various Organ Systems and Recommendation on Rehabilitation Plans. *Biomedicines* 2021;9(8) doi: 10.3390/biomedicines9080966 [published Online First: 2021/08/28]
8. Huang C, Huang L, Wang Y, et al. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. *Lancet (London, England)* 2021;397(10270):220-32. doi: 10.1016/s0140-6736(20)32656-8 [published Online First: 2021/01/12]
9. Yan Z, Yang M, Lai CL. COVID-19 Vaccinations: A Comprehensive Review of Their Safety and Efficacy in Special Populations. *Vaccines* 2021;9(10) doi: 10.3390/vaccines9101097 [published Online First: 2021/10/27]
10. The L. Understanding long COVID: a modern medical challenge. *Lancet (London, England)* 2021;398(10302):725. doi: 10.1016/s0140-6736(21)01900-0 [published Online First: 2021/08/30]
11. Huang L, Yao Q, Gu X, et al. 1-year outcomes in hospital survivors with COVID-19: a longitudinal cohort study. *Lancet (London, England)* 2021;398(10302):747-58. doi: 10.1016/s0140-6736(21)01755-4 [published Online First: 2021/08/30]
12. Yan ZP, Yang M, Lai CL. COVID-19 Vaccines: A Review of the Safety and Efficacy of Current Clinical Trials. *Pharmaceuticals (Basel, Switzerland)* 2021;14(5) doi: 10.3390/ph14050406 [published Online First: 2021/05/01]

13. Fugazzaro S, Contri A, Esseroukh O, et al. Rehabilitation Interventions for Post-Acute COVID-19 Syndrome: A Systematic Review. *International journal of environmental research and public health* 2022;19(9) doi: 10.3390/ijerph19095185 [published Online First: 2022/05/15]
 14. XIE Y. Rehabilitation treatment of novel coronavirus pneumonia patients. *Journal of Fujian University of Traditional Chinese Medicine* 2020;30:5-6.
 15. Zhao HM, Yu PM, Wang C. Future pulmonary rehabilitation perspectives following coronavirus disease 2019 in China. *Chinese medical journal* 2021;134(17):2045-47. doi: 10.1097/cm9.0000000000001700 [published Online First: 2021/09/14]
 16. Society C, Physicians CAoC. Guidelines for Diagnosis, Treatment and Prevention of Coronavirus Diseases in Chinese Adults in 2019. *Natl Med J China* 2021:1-64.
 17. Association CM, China W-FCCi, Association CH, et al. Consensus of Framework and Protocol of Rehabilitation of Coronavirus Disease 2019 Using WHO-FICs *Chin J Rehabil Theory Pract* 2020
 18. Branch CMAPMaR. Experts consensus on rehabilitation of coronavirus disease 2019. *West China Medical Journal* 2020;35(5)
 19. Chinese Association of Rehabilitation Medicine RRCoCA, of Rehabilitation Medicine CRGoCSoPM, Rehabilitation a. Recommendations for respiratory rehabilitation of coronavirus disease 2019 in adult. *Chin J Tuberc Respir Dis* 2020;43
 20. Institute of Medicine Committee on Standards for Developing Trustworthy Clinical Practice G. In: Graham R, Mancher M, Miller Wolman D, et al., eds. *Clinical Practice Guidelines We Can Trust*. Washington (DC): National Academies Press (US)
- Copyright 2011 by the National Academy of Sciences. All rights reserved. 2011.
21. Radwan M, Akbari Sari A, Rashidian A, et al. Appraising the methodological quality of the clinical practice guideline for diabetes mellitus using the AGREE II instrument: a methodological evaluation. *JRSM open* 2017;8(2):2054270416682673. doi: 10.1177/2054270416682673 [published Online First: 2017/02/17]
 22. Vähäniemi A, Välimäki M, Pekurinen V, et al. Quality and utilization of the Finnish clinical practice guideline in schizophrenia: evaluation using AGREE II and the vignette approach. *Neuropsychiatric disease and treatment* 2019;15:1239-48. doi: 10.2147/ndt.S192752 [published Online First: 2019/06/14]
 23. Zhu B, Liu Y, Wang H, et al. Clinical guidelines of UTIs in children: quality appraisal with AGREE II and recommendations analysis. *BMJ open* 2022;12(4):e057736. doi: 10.1136/bmjopen-2021-057736 [published Online First: 2022/04/29]
 24. Fan Y, Zhang G, Zhang Z, et al. Critical Appraisal of Guidelines for Antithrombotic Therapy in Atrial Fibrillation Post-Percutaneous Coronary Intervention. *Global heart* 2022;17(1):14. doi: 10.5334/gh.1104 [published Online First: 2022/03/29]
 25. Chen Y, Yang K, Marušić A, et al. A Reporting Tool for Practice Guidelines in Health Care: The RIGHT Statement. *Annals of internal medicine* 2017;166(2):128-32. doi: 10.7326/m16-1565 [published Online First: 2016/11/29]
 26. China NHCotPsRo, Medicine TpsRoCSAof C. Diagnosis and treatment plan of novel coronavirus (trial eighth edition). *Infect Dis Info* 2020;33:289-96. doi: 10.3969/j.issn.1007-8134.2020.04.001

- 1
2
3 27. Brouwers MC, Kho ME, Browman GP, et al. Development of the AGREE II, part 2: assessment
4 of validity of items and tools to support application. *CMAJ : Canadian Medical Association*
5 *journal = journal de l'Association medicale canadienne* 2010;182(10):E472-8. doi:
6 10.1503/cmaj.091716 [published Online First: 2010/06/02]
7
- 8 28. Armstrong JJ, Rodrigues IB, Wasiuta T, et al. Quality assessment of osteoporosis clinical
9 practice guidelines for physical activity and safe movement: an AGREE II appraisal.
10 *Archives of osteoporosis* 2016;11:6. doi: 10.1007/s11657-016-0260-9 [published Online
11 First: 2016/01/14]
12
- 13 29. Knight S, Takagi M, Fisher E, et al. A Systematic Critical Appraisal of Evidence-Based Clinical
14 Practice Guidelines for the Rehabilitation of Children With Moderate or Severe Acquired
15 Brain Injury. *Archives of physical medicine and rehabilitation* 2019;100(4):711-23. doi:
16 10.1016/j.apmr.2018.05.031 [published Online First: 2018/07/04]
17
- 18 30. Liu K, Ma Y, Yang Y, et al. Evaluation of the reporting quality of clinical practice guidelines
19 on prostate cancer using the RIGHT checklist. *Annals of translational medicine*
20 2021;9(14):1173. doi: 10.21037/atm-21-2956 [published Online First: 2021/08/26]
21
- 22 31. Li JX, Shi YM, An LY, et al. Quality assessment of the guidelines for the management of
23 malignant pleural effusions and ascites. *World journal of surgical oncology* 2020;18(1):331.
24 doi: 10.1186/s12957-020-02097-y [published Online First: 2020/12/15]
25
- 26 32. Yi KQ, Yang T, Yang YM, et al. Appraisal of the diagnostic procedures of acute pancreatitis in
27 the guidelines. *Systematic reviews* 2021;10(1):17. doi: 10.1186/s13643-020-01559-4
28 [published Online First: 2021/01/10]
29
- 30 33. Zhao XH, Yang T, Ma XD, et al. Heterogeneity of nutrition care procedures in nutrition
31 guidelines for cancer patients. *Clinical nutrition (Edinburgh, Scotland)* 2020;39(6):1692-
32 704. doi: 10.1016/j.clnu.2019.08.022 [published Online First: 2019/09/23]
33
- 34 34. Pentheroudakis G, Stahel R, Hansen H, et al. Heterogeneity in cancer guidelines: should we
35 eradicate or tolerate? *Annals of oncology : official journal of the European Society for*
36 *Medical Oncology* 2008;19(12):2067-78. doi: 10.1093/annonc/mdn418 [published Online
37 First: 2008/07/30]
38
- 39 35. Wang X, Yang YM, Yang T, et al. Evaluation of pharmacotherapy recommendations in
40 guidelines for inflammatory bowel disease. *Journal of clinical pharmacy and therapeutics*
41 2021;46(3):599-609. doi: 10.1111/jcpt.13368 [published Online First: 2021/02/06]
42
- 43 36. Kiriakova V, Cooray SD, Yeganeh L, et al. Management of bone health in women with
44 premature ovarian insufficiency: Systematic appraisal of clinical practice guidelines and
45 algorithm development. *Maturitas* 2019;128:70-80. doi: 10.1016/j.maturitas.2019.07.021
46 [published Online First: 2019/09/29]
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Supplementary file 1. Search Strategy

Search Strategy for PubMed

Number	Search terms
#1	Coronavirus[MeSH Terms]
#2	coronavirus infections[MeSH Terms]
#3	COVID-19[Title/Abstract] OR COVID-19 pneumonia[Title/Abstract] OR novel coronavirus[Title/Abstract] OR novel coronavirus pneumonia[Title/Abstract] OR coronaviru*[Title/Abstract] OR 2019-ncov [Title/Abstract] OR 2019-ncov pneumonia[Title/Abstract] OR novel cov[Title/Abstract] OR severe acute respiratory syndrome cov2[Title/Abstract] OR SARS-CoV-2[Title/Abstract] OR severe acute respiratory disease[Title/Abstract]
#4	#1 OR #2 OR #3
#5	rehabilitation [MeSH Terms]
#6	rehab*[Title/Abstract] OR respiratory rehabilitation [Title/Abstract] OR pulmonary rehabilitation [Title/Abstract] OR exercise therap* [Title/Abstract] OR physio[Title/Abstract] OR physiotherap*[Title/Abstract] OR physical therap*[Title/Abstract] OR PT[Title/Abstract] OR traditional Chinese medicine rehabilitation [Title/Abstract]
#7	#5 OR #6
#8	guideline[Title/Abstract] OR practice guideline[Title/Abstract] OR CPG[Title/Abstract] OR consensus development conference[Title/Abstract] OR consensus[Title/Abstract] OR consensus statement[Title/Abstract] OR expert consensus[Title/Abstract] OR standards[Title/Abstract] OR recommendation[Title/Abstract]
#9	#4 AND #7 AND #8

Search Strategy for Embase

Number	Search terms
#1	'coronavirus disease 2019'/exp
#2	'covid-19':ti,ab,kw OR 'covid-19 pneumonia':ti,ab,kw OR 'novel coronavirus':ti,ab,kw OR 'novel coronavirus pneumonia':ti,ab,kw OR coronaviru*:ti,ab,kw OR '2019 ncov':ti,ab,kw OR '2019-ncov pneumonia':ti,ab,kw OR 'novel cov':ti,ab,kw OR 'severe acute respiratory syndrome cov2':ti,ab,kw OR 'sars cov 2':ti,ab,kw OR 'severe acute respiratory disease':ti,ab,kw
#3	#1 OR #2
#4	'rehabilitation'/exp
#5	rehab*:ti,ab,kw OR 'respiratory rehabilitation':ti,ab,kw OR 'pulmonary rehabilitation':ti,ab,kw OR 'exercise therap*':ti,ab,kw OR physio:ti,ab,kw OR

	physiotherap*:ti,ab,kw OR 'physical therap*':ti,ab,kw OR pt:ti,ab,kw OR 'traditional chinese medicine rehabilitation':ti,ab,kw
#6	#4 OR #5
#7	'guideline'/exp
#8	guideline:ti,ab,kw OR 'practice guideline':ti,ab,kw OR cpg:ti,ab,kw OR 'consensus development conference':ti,ab,kw OR consensus:ti,ab,kw OR 'consensus statement':ti,ab,kw OR 'expert consensus':ti,ab,kw OR standards:ti,ab,kw OR recommendation:ti,ab,kw
#9	#7 OR #8
#10	#3 AND #6 AND #9

Search Strategy for CBM

Number	Search terms
#1	COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 2019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭[常用字段:智能]
#2	康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 中医康复 OR 太极拳 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺 OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩[常用字段:智能]
#3	指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明[常用字段:智能]
#4	#1 AND #2 AND #3

Search Strategy for VIP

Number	Search terms
#1	题名或关键词:COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 2019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭
#2	题名或关键词:康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 中医康复 OR 太极拳 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺 OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩
#3	题名或关键词:指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明
#4	#1 AND #2 AND #3

Search Strategy for Wan Fang database

Number	Search terms
#1	题名或关键词:COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭
#2	题名或关键词:康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 太极拳 OR 中医康复 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺

	OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩
#3	题名或关键词:指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明
#4	#1 AND #2 AND #3

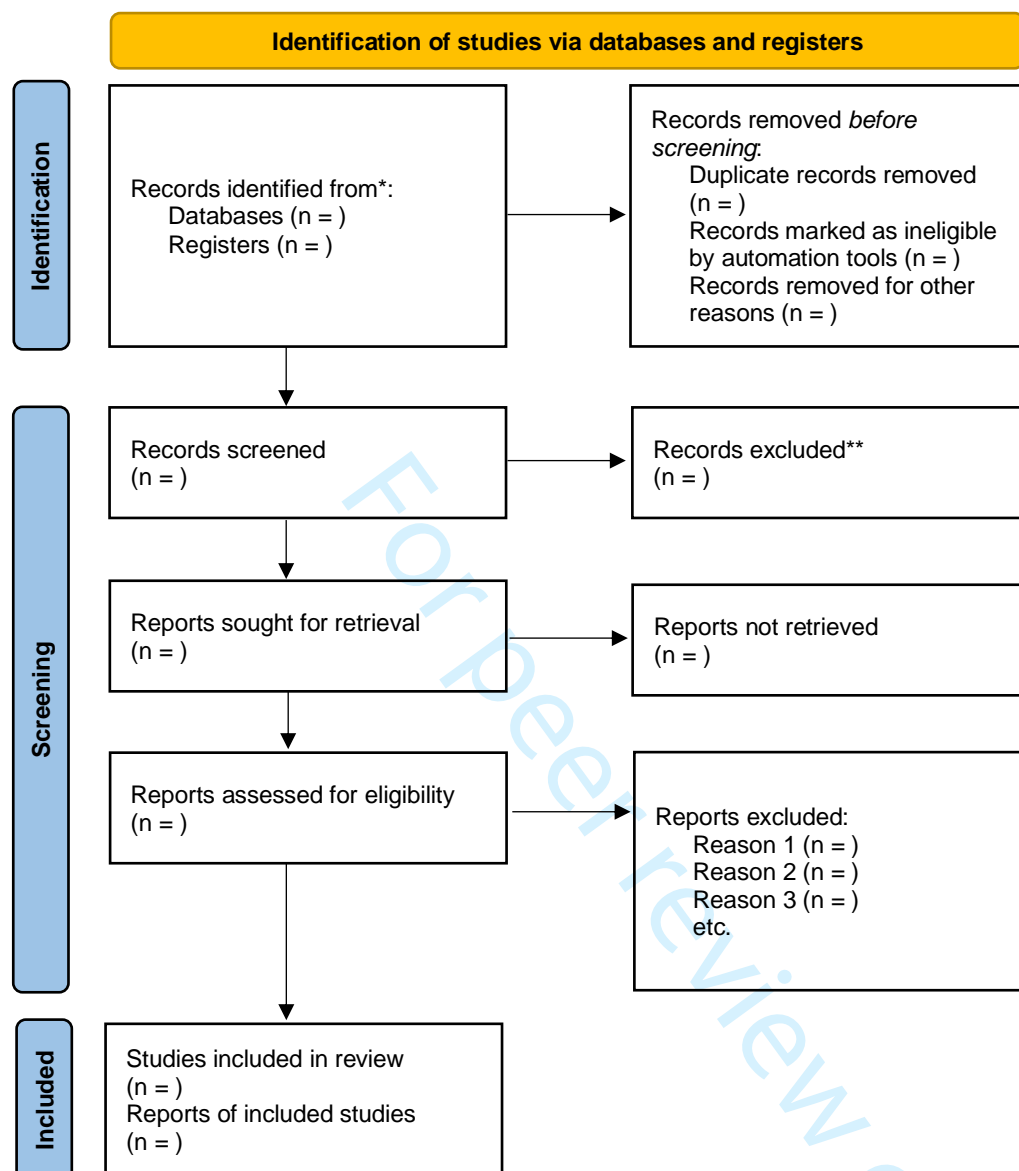
Search Strategy for CNKI

Number	Search terms
#1	SU='COVID-19'+ 'SARS-CoV-2'+ '冠状病毒'+ '严重急性呼吸综合征'+ '非典型肺炎'+ '2019 新型冠状病毒'+ '肺炎'+ '呼吸衰竭'
#2	SU='康复'+ '呼吸康复'+ '肺康复'+ '运动训练'+ '物理疗法'+ '中医康复'+ '太极拳'+ '八段锦'+ '六字诀'+ '传统功法'+ '冥想'+ '针刺'+ '艾灸'+ '灸法'+ '穴位敷贴'+ '推拿'+ '按摩'
#3	SU='指南'+ '专家共识'+ '专家意见'+ '指导意见'+ '建议'+ '方案'+ '标准'+ '规范'+ '推荐'+ '共识声明'
#4	#1 AND #2 AND #3
	SU=主题

Search Strategy for NGC, GIN, SIGN, NICE and WHO

Number	Search terms
#1	COVID-19 OR COVID-19 pneumonia OR novel coronavirus OR novel coronavirus pneumonia OR coronaviru OR 2019-ncov OR 2019-ncov pneumonia OR novel cov OR severe acute respiratory syndrome cov2 OR SARS-CoV-2 OR severe acute respiratory disease
#2	rehabilitation OR respiratory rehabilitation OR pulmonary rehabilitation OR exercise therapy OR OR physiotherapy OR physical therapy OR traditional Chinese medicine rehabilitation
#3	#1 AND #2

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

BMJ Open

Clinical practice guidelines and expert consensus statements on rehabilitation for patients with COVID-19: protocol for a systematic review

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-060767.R2
Article Type:	Protocol
Date Submitted by the Author:	12-Jul-2022
Complete List of Authors:	Zhang, Yue; Chengdu University of Traditional Chinese Medicine, Li, YuXi; Chengdu University of Traditional Chinese Medicine Zhong, Dongling; Chengdu University of Traditional Chinese Medicine, Liu, Xiaobo; Chengdu University of Traditional Chinese Medicine Zhu, Yuanyuan; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Jin, Rongjiang; Chengdu University of Traditional Chinese Medicine; Panzhihua City Hospital of Integrated Traditional Chinese and Western Medicine Li, Juan; Chengdu University of Traditional Chinese Medicine
Primary Subject Heading:	Rehabilitation medicine
Secondary Subject Heading:	Evidence based practice
Keywords:	COVID-19, REHABILITATION MEDICINE, Protocols & guidelines < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

SCHOLARONE™
Manuscripts

1
2
3 **Clinical practice guidelines and expert consensus statements on rehabilitation for**
4 **patients with COVID-19: protocol for a systematic review**
5
6

7 Yue Zhang^{1*}, Yuxi Li^{1*}, Dongling Zhong^{1*}, Xiaobo Liu¹, Yuanyuan Zhu², Rongjiang
8 Jin^{1,2}, Juan Li¹
9

10 1 School of Health Preservation and Rehabilitation, Chengdu University of Traditional
11 Chinese Medicine, 610075, Chengdu, China;
12
13

14
15 2 Department of rehabilitation, Chinese and Western Medicine Hospital of Panzhihua,
16 617000, Panzhihua, China.
17
18

19 *YZ, YL and DZ contributed equally to this work and share first authorship.
20
21

22
23 **Correspondence to:**
24

25
26 Juan Li, School of Health Preservation and Rehabilitation, Chengdu University of
27 Traditional Chinese Medicine, 610075, Chengdu, China, email: 785939016@qq.com;
28
29 telephone number: 18224494675.
30
31
32
33
34
35

36 **Keywords:** Methodological quality, reporting quality, AGREE II, RIGHT statement,
37 systematic review.
38
39
40
41
42
43
44

45 **Abstract**
46

47 **Introduction:** Coronavirus disease 2019 (COVID-19) is a highly infectious disease,
48 characterized by respiratory, physical and psychological dysfunctions. Rehabilitation
49 could effectively alleviate the symptoms and promote recovery of the physical and
50 mental health of patients with COVID-19. Recently, rehabilitation medical institutions
51 have issued clinical practice guidelines (CPGs) and expert consensus statements
52
53
54
55
56
57
58
59
60

1
2
3
4 involving recommendations for rehabilitation assessments and rehabilitation therapies
5
6 for COVID-19. This systematic review aims to assess the methodological quality and
7
8 reporting quality of the guidance documents, evaluate the heterogeneity of the
9
10 recommendations, and summarize the recommendations with respect to rehabilitation
11
12 assessments and rehabilitation therapies for COVID-19 to provide a give quick
13
14 reference for front-line clinicians, therapists, and patients, as well as reasonable
15
16 suggestions for future guidelines.
17
18
19
20

21
22 **Methods and analysis:** The electronic databases PubMed, Embase, Chinese
23
24 Biomedical Literature Database (CBM), Chinese Science and Technology Periodical
25
26 Database (VIP), Wanfang Database and China National Knowledge Infrastructure
27
28 (CNKI), and websites of governments or organizations (e.g. National Guideline
29
30 Clearinghouse, Guidelines International Network, National Institute for Health and
31
32 Clinical Excellence, Scottish Intercollegiate Guidelines Network, and WHO) will be
33
34 searched for eligible CPGs and expert consensus statements issued from inception to
35
36 August 2022. CPGs and expert consensus statements published in Chinese or English
37
38 and presenting recommendations for modern functional recovery techniques and/or of
39
40 traditional Chinese medicine rehabilitation techniques for COVID-19 will be included.
41
42
43
44
45
46
47
48 Reviews, interpretations, old versions of CPGs and expert consensus statements, and
49
50 those for the management of other diseases during the pandemic will be excluded. Two
51
52 reviewers will independently review each article, extract data, appraise the
53
54 methodological quality following the Appraisal of Guidelines for Research &
55
56 Evaluation (AGREE) II tool, and assess the reporting quality with the Reporting Items
57
58
59
60

1
2
3
4 for Practice Guidelines in Healthcare (RIGHT) statement. The Measurement Scale of
5
6 Rate of Agreement (MSRA) will be used to evaluate the heterogeneity of the
7
8 recommendations in different CPGs and expert consensus statements. Agreement
9
10 between reviewers will be calculated using the intraclass correlation coefficient. We
11
12 will also summarize the recommendations for rehabilitation in patients with COVID-
13
14 19. The results will be narratively described and presented as tables or figures.

15
16
17
18
19 **Ethics and dissemination:** Ethics approval is not needed for this systematic review
20
21 because only information from published documents will be used. The findings will be
22
23 submitted for publication in a peer-reviewed journal and reported in accordance with
24
25 PRISMA guidelines.

26
27
28
29
30 **Systematic review registration number:** PROSPERO, CRD42020190761.

31 32 33 34 35 **Strengths and limitations of this study**

- 36
37 ● This systematic review will comprehensively evaluate the methodological and
38
39 reporting quality of clinical practice guidelines (CPGs) and expert consensus
40
41 statements, strictly following the Appraisal of Guidelines for Research &
42
43 Evaluation (AGREE) II instrument and the Reporting Items for Practice Guidelines
44
45 in Healthcare (RIGHT) statement.
- 46
47 ● The Measurement Scale of Rate of Agreement will be used to compare the
48
49 heterogeneity of recommendations in different CPGs and expert consensus
50
51 statements.
52
53
54
55
56
57
58
59
60

- The reviewers will be trained to use the AGREE II instrument and the RIGHT tool, and the intraclass correlation coefficient will be calculated to test the consistency between the two assessors.
- This study will include CPGs and expert consensus statements published in Chinese or English, so any guidance produced in other languages will be excluded.
- The validity of the recommendations on rehabilitation for coronavirus disease 2019 (COVID-19) patients cannot be evaluated.

Introduction

Coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO) on 11 March 2020 and has affected more than 200 countries, with 551,226,298 confirmed cases and 6,345,595 deaths worldwide until July 8, 2022.^[1-3]

COVID-19 has posed a huge threat to global public health, the economy, and other aspects of people's daily life.^[4] During hospitalization, COVID-19 patients may suffer from multisystem dysfunctions, including respiratory, cardiovascular, hematological, renal, digestive, neurological, psychiatric, and metabolic systems.^[5-7] Of those patients with discharged COVID-19, 76% of them have at least one or more symptoms, the most common symptoms were fatigue or muscle weakness (63%) and sleep difficulties (26%), accompanied by anxiety or depression (23%).^[8] Meanwhile, COVID-19 vaccination has been developed as a safe and effective strategy to reduce mortality and severe ICU admission (both in the general healthy population and clinically vulnerable population).^[9] Recently, long COVID-19 syndrome has been used to describe persistent

1
2
3
4 or developmental symptoms and signs after acute COVID-19.^[10] Long COVID-19
5
6 syndrome is manifested as fatigue or muscle weakness, sleep difficulties, palpitations,
7
8 joint/muscle pain, dizziness, chest pain and so on.^[8 11] Long COVID-19 affects people's
9
10 ability to resume normal life and work, increases the medical burden, and causes the
11
12 loss of economy and productivity.^[10] Therefore, COVID-19 infection and its long-term
13
14 sequelae are worthy of attention because the function of these people may deteriorate
15
16 and require social welfares/medical health care in the future.^[12]

17
18
19
20
21
22 A systematic review of five randomized controlled trials confirmed that rehabilitation
23
24 could improve dyspnea, muscle strength, walking capacity, sit-to-stand performance,
25
26 anxiety and quality of life of COVID-19 patients.^[13] Rehabilitation therapies should be
27
28 carried out as early as possible to reduce the complications and disability rate and
29
30 improve the patients' overall function at different stages of COVID-19.^[5 14 15] So far,
31
32 numerous clinical practice guidelines (CPGs) and expert consensus statements of
33
34 rehabilitation for COVID-19 patients have been published,^[16-19] and they have been
35
36 developed to assist practitioners and patients in making decisions about appropriate
37
38 healthcare for specific circumstances.^[20] Notwithstanding, the different emphases of
39
40 the guidelines, inconsistent or biased recommendations, low certainty of evidences in
41
42 CPGs and expert consensus statements may decrease clinical application.^[21 22]
43
44
45 Moreover, low methodological quality may reduce the reliability of CPGs and expert
46
47 consensus statements, attenuate compliance of CPGs and expert consensus statements
48
49 in clinical practice, waste medical resources and lead to confusion among clinicians,
50
51 therapists, and patients.^[23 24] The reporting quality of CPGs and expert consensus
52
53
54
55
56
57
58
59
60

1
2
3
4 statements are also important. Non-standard reporting could decrease the clarity and
5
6 integrity of the content, and not provide clear guidance for guidelines users.^[25]
7

8
9 Therefore, CPGs and expert consensus statements with high methodological quality
10
11 and reporting quality can save medical resources and costs, and improve patients care
12
13 and safety.
14

15
16 The methodological quality and reporting quality of CPGs and expert consensus
17
18 statements have not been evaluated. Thus, this systematic review aims to assess the
19
20 methodological quality and reporting quality of CPGs and expert consensus statements
21
22 with the Appraisal of Guidelines for Research & Evaluation (AGREE) II tool and the
23
24 Reporting Items for Practice Guidelines in Healthcare (RIGHT) statement. Moreover,
25
26 the heterogeneity of recommendations in different CPGs and expert consensus
27
28 statements will be investigated using the Measurement Scale of Rate of Agreement
29
30 (MSRA) and the current recommendations of rehabilitation for COVID-19 will be
31
32 summarized to provide some valuable suggestions for guideline users and the
33
34 formulation of related guidelines of rehabilitation for COVID-19 in the future.
35
36
37
38
39
40
41
42
43
44

45 **Methods and analysis**

46 **Protocol registration**

47
48 This protocol was registered on the International Prospective Register of Systematic
49
50 Reviews (PROSPERO) (CRD42020190761).
51
52

53 **Eligibility criteria**

54 *Inclusion criteria*

1
2
3
4 The inclusion criteria are: (1) CPGs and expert consensus statements of rehabilitation
5
6 for COVID-19 issued by nationally or internationally recognized government
7
8 authorities, medical/academic societies, or organizations; (2) CPGs and expert
9
10 consensus statements focusing on COVID-19 patients. COVID-19 patients who are
11
12 clinically diagnosed using any recognized diagnostic criteria (such as positive real-time
13
14 quantitative polymerase chain reaction detection of new coronavirus nucleic acid, and
15
16 highly homologous with known new coronavirus^[26]). There are no restrictions on age,
17
18 gender, race, or nationality; (3) CPGs and expert consensus statements that provide
19
20 recommendations for modern functional recovery techniques (e.g. respiratory training,
21
22 peripheral muscle training, psychosocial support and occupational therapies, etc.)
23
24 and/or traditional Chinese medicine rehabilitation techniques (e.g. tuina, acupuncture,
25
26 moxibustion, Tai Chi, etc.); (4) If there are multiple versions of the CPGs and expert
27
28 consensus statements, only the latest version will be included.
29
30
31
32
33
34
35
36

37 *Exclusion criteria*

38
39 CPGs and expert consensus statements not published in Chinese and English, and
40
41 reviews, interpretations, and guidance for the management of other diseases during the
42
43 pandemic will be excluded.
44
45
46
47

48 **Search strategy**

49
50 The databases PubMed, Embase, Chinese Biomedical Literature Database (CBM),
51
52 Chinese Science and Technology Periodical Database (VIP), Wanfang, and China
53
54 National Knowledge Infrastructure (CNKI) will be searched from inception to August
55
56 2022. In addition, other international online repositories of guidelines, including the
57
58
59
60

1
2
3
4 National Guideline Clearinghouse (NGC), Guidelines International Network (GIN),
5
6
7 Scottish Intercollegiate Guidelines Network (SIGN), National Institute for Health and
8
9 Clinical Excellence (NICE), and WHO will be searched using terms related to
10
11
12 rehabilitation therapy, COVID-19, guidelines and expert consensus statements. The
13
14 full search strategies of each database are displayed in supplementary file 1. The
15
16 relevant websites of advising bodies or healthcare organizations (such as the European
17
18 Society of Physical and Rehabilitation Medicine, American Congress of Rehabilitation
19
20 Medicine, Canadian Association of Physical Medicine and Rehabilitation, etc.) will
21
22 also be searched. Rehabilitation experts in this field will be consulted, and the reference
23
24 lists of potentially eligible citations will be reviewed. PRISMA flow chart is
25
26 demonstrated in supplementary file 2.
27
28
29
30
31
32

33 **Study selection**

34
35 All retrieved records will be imported into EndNote X9 reference management software.
36
37
38 After removing the duplicates, two reviewers (YZ and YXL) will independently review
39
40 the titles and abstracts to identify eligible records and download the full texts for
41
42 further screening. Any disagreements will be resolved in discussion with a third
43
44 reviewer (JL).
45
46
47

48 **Data extraction**

49
50
51 Two reviewers (DLZ and XBL) will extract the data independently using a standardized
52
53 data extraction form, including: (1) the characteristics of CPGs and expert consensus
54
55 statements: title, country of origin and publication year; (2) stages of disease; (3)
56
57 recommended rehabilitation assessment; (4) recommended rehabilitation treatment; (5)
58
59
60

1
2
3
4 related contents of methodological quality and reporting quality. The extracted data will
5
6 be cross-checked by two reviewers, and any disagreements will be resolved through
7
8 team discussion.
9

10 11 **Quality assessment**

12
13
14 The methodological quality and reporting quality of the included CPGs and expert
15
16 consensus statements will be evaluated using AGREE II tool and RIGHT statement,
17
18 respectively. Two assessors (YZ and YYZ) will study the AGREE II User's Manual
19
20 and appraise guidelines with My AGREE PLUS online appraisal platform
21
22 (www.agreetrust.org) to practice the AGREE II tool. Two assessors (YXL and DLZ)
23
24 will study RIGHT checklist and detailed explanatory documents with examples
25
26 (www.annals.org). Trained assessors will pre-assess and discuss the samples of eligible
27
28 records, then independently assess the methodological quality and reporting quality of
29
30 the included CPGs and expert consensus statements. Discrepancies will be discussed
31
32 and resolved through consultation with a third reviewer (RJJ).
33
34
35
36
37
38
39

40 41 **Methodological quality**

42
43 The AGREE II instrument is developed to evaluate the development and
44
45 methodological quality of guidelines with high construct validity.^[27] The AGREE II
46
47 consists of two overall assessment with 23 items covering six domains: (1) scope and
48
49 purpose (items 1-3), (2) stakeholder involvement (items 4-6), (3) rigour of development
50
51 (items 7-14), (4) clarity of presentation (items 15-17), (5) applicability (items 18-21)
52
53 and (6) editorial independence (items 22-23). Each item is ranked on a seven-point
54
55 scale (1: strongly disagree to 7: strongly agree), and the standardized score is calculated
56
57
58
59
60

1
2
3
4 using the AGREE II formula [(Obtained score from all raters – Minimum possible score
5 from all raters) / (Maximum possible score for all raters – Minimum possible score for
6 all raters)] × 100. According to the criteria of previous guideline appraisals, 5 or 6
7 domains scoring > 60% are usually considered as high quality, 3 or 4 domains scoring >
8 60% are usually considered as moderate quality, 2 or fewer domains scoring > 60% are
9 usually considered as low quality.^[28 29]

19 **Reporting quality**

21 The RIGHT statement is used to evaluate the reporting quality of the CPGs and expert
22 consensus statements, which helps to report guidelines transparently and standardly.^[25]

23 It includes seven domains (22 items in total): (1) basic information (items 1-4), (2)
24 background (items 5-9), (3) evidence (items 10-12), (4) recommendations (items 13-
25 15), (5) review and quality assurance (items 16-17), (6) funding, declaration and
26 management of interest (items 18-19), and (7) other information (items 20-22). Each
27 item is judged as “Yes” (relevant information is sufficiently reported) or “No” (relevant
28 information is lacking).^[30]

43 **Heterogeneity assessment in rehabilitation entries**

44 If at least four CPGs and expert consensus statements recommend similar rehabilitation
45 suggestions for COVID-19 patients, the Measurement Scale of Rate of Agreement
46 (MSRA) will be used to compare the heterogeneity of this recommendation in different
47 CPGs and expert consensus statements.^[31-33] The scoring criteria are 0%-20%: radically
48 different; 20%-40%: numerous major differences; 40%-60%: some major differences;
49 60%-80%: only minor differences; 80%-100%: essentially identical.^[34 35]

Data analysis

To assess the agreement between reviewers, the intraclass correlation coefficient (ICC) will be calculated using Statistical Package for Social Sciences (SPSS) 25.0. The scores will be defined as: poor 0.0-0.2, fair 0.21-0.4, moderate 0.41-0.6, good 0.61-0.8 and very good 0.81-1.00.^[36]

The recommended rehabilitation assessments and therapies will be presented in textual descriptive synthesis and tables, with a clinical staging system (including early, development, critical, and recovery stage) used to stratify our findings if the clear clinical staging of COVID-19 is provided in the CPGs and expert consensus statements. Otherwise, our findings will be stratified according to the International Classification of Functioning, Disability and Health (ICF) framework (including body function and structure, activity, and participation). The reporting rate of each item and overall rate will be listed in tables to reflect the methodological quality and reporting quality of the included CPGs and expert consensus statements.

Patient and public involvement

None.

Ethics and dissemination

No ethics approval is required for this systematic review because only information from published documents will be used. Our findings will be submitted for publication in a peer-reviewed journal and reported in accordance with PRISMA guidelines.

Discussion

This systematic review has several strengths. First, to our knowledge, this will be the first systematic review to comprehensively assess the methodological quality and reporting quality of CPGs and expert consensus statements on rehabilitation for COVID-19. Second, the appraisers will be extensively trained to use the AGREE II instrument and the RIGHT tool, and ICC will be calculated to test the consistency between the assessors. Third, the MSRA will be used to evaluate the heterogeneity of recommendations in the CPGs and expert consensus statements. Fourth, we will summarize the recommendations of rehabilitation assessments and therapies for COVID-19 in CPGs and expert consensus statements according to the disease stages or different dysfunctions.

Nonetheless, this study has some limitations. First, there may be language bias as only CPGs and expert consensus statements published in Chinese or English will be included. Second, the validity of the recommendations on rehabilitation for COVID-19 cannot be evaluated.

It is anticipated that the review findings will lead to the development of reasonable suggestions to develop higher-quality CPGs and expert consensus statements or to improve existing guidelines, and quick references for COVID-19 rehabilitation therapies for clinicians and patients.

Declarations

Acknowledgments

We acknowledge Home for researchers editorial team for the linguistic editing and proofreading during the preparation of this manuscript.

Consent for publication

Not applicable.

Contributors

JL designed the study. YZ, YXL and DLZ drafted the manuscript. YXL and YZ will search the literature. YZ, YYZ, YXL and DLZ will conduct the quality assessment. DLZ and XBL will analyze the data. RJJ and JL revised the manuscript. YZ, YXL and DLZ contributed equally to this work and shared first authorship. All authors approved the manuscript.

Funding

This work will be supported by the Department of Science and Technology of Sichuan Province (No. 2019YFS0019) and Sichuan Province Science and Technology Support Program in Sichuan (No. 2014SZ0154). The funder has no role in developing this protocol.

Competing interests

The authors declare that they have no competing interests.

References

1. Munster VJ, Koopmans M, van Doremalen N, et al. A Novel Coronavirus Emerging in China - Key Questions for Impact Assessment. *The New England journal of medicine* 2020;382(8):692-94. doi: 10.1056/NEJMp2000929 [published Online First: 2020/01/25]
2. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *Jama* 2020;323(13):1239-42. doi: 10.1001/jama.2020.2648 [published Online First: 2020/02/25]

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
3. Organization WH. WHO Coronavirus (COVID-19) Dashboard. 2021 [Available from: <https://covid19.who.int/>].
4. Agostini F, Mangone M, Ruiu P, et al. Rehabilitation setting during and after Covid-19: An overview on recommendations. *Journal of rehabilitation medicine* 2021;53(1):jrm00141. doi: 10.2340/16501977-2776 [published Online First: 2020/12/08]
5. Kurtaiş Aytür Y, Füsün Köseoglu B, Özyemişçi Taşkıran Ö, et al. Pulmonary rehabilitation principles in SARS-COV-2 infection (COVID-19): The revised guideline for the acute, subacute, and post-COVID-19 rehabilitation. *Turkish journal of physical medicine and rehabilitation* 2021;67(2):129-45. doi: 10.5606/tftrd.2021.8821 [published Online First: 2021/08/17]
6. McPeake J, Shaw M, MacTavish P, et al. Long-term outcomes following severe COVID-19 infection: a propensity matched cohort study. *BMJ open respiratory research* 2021;8(1) doi: 10.1136/bmjresp-2021-001080 [published Online First: 2021/12/11]
7. Yan Z, Yang M, Lai CL. Long COVID-19 Syndrome: A Comprehensive Review of Its Effect on Various Organ Systems and Recommendation on Rehabilitation Plans. *Biomedicines* 2021;9(8) doi: 10.3390/biomedicines9080966 [published Online First: 2021/08/28]
8. Huang C, Huang L, Wang Y, et al. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. *Lancet (London, England)* 2021;397(10270):220-32. doi: 10.1016/s0140-6736(20)32656-8 [published Online First: 2021/01/12]
9. Yan Z, Yang M, Lai CL. COVID-19 Vaccinations: A Comprehensive Review of Their Safety and Efficacy in Special Populations. *Vaccines* 2021;9(10) doi: 10.3390/vaccines9101097 [published Online First: 2021/10/27]
10. The L. Understanding long COVID: a modern medical challenge. *Lancet (London, England)* 2021;398(10302):725. doi: 10.1016/s0140-6736(21)01900-0 [published Online First: 2021/08/30]
11. Huang L, Yao Q, Gu X, et al. 1-year outcomes in hospital survivors with COVID-19: a longitudinal cohort study. *Lancet (London, England)* 2021;398(10302):747-58. doi: 10.1016/s0140-6736(21)01755-4 [published Online First: 2021/08/30]
12. Yan ZP, Yang M, Lai CL. COVID-19 Vaccines: A Review of the Safety and Efficacy of Current Clinical Trials. *Pharmaceuticals (Basel, Switzerland)* 2021;14(5) doi: 10.3390/ph14050406 [published Online First: 2021/05/01]
13. Fugazzaro S, Contri A, Esseroukh O, et al. Rehabilitation Interventions for Post-Acute COVID-19 Syndrome: A Systematic Review. *International journal of environmental research and public health* 2022;19(9) doi: 10.3390/ijerph19095185 [published Online First: 2022/05/15]
14. XIE Y. Rehabilitation treatment of novel coronavirus pneumonia patients. *Journal of Fujian University of Traditional Chinese Medicine* 2020;30:5-6.
15. Zhao HM, Yu PM, Wang C. Future pulmonary rehabilitation perspectives following coronavirus disease 2019 in China. *Chinese medical journal* 2021;134(17):2045-47. doi: 10.1097/cm9.0000000000001700 [published Online First: 2021/09/14]
16. Society C, Physicians CAoC. Guidelines for Diagnosis, Treatment and Prevention of Coronavirus Diseases in Chinese Adults in 2019. *Natl Med J China* 2021:1-64.
17. Association CM, China W-FCCi, Association CH, et al. Consensus of Framework and Protocol of Rehabilitation of Coronavirus Disease 2019 Using WHO-FICs *Chin J Rehabil Theory Pract* 2020

- 1
2
3 18. Branch CMAPMaR. Experts consensus on rehabilitation of coronavirus disease 2019. *West*
4 *China Medical Journal* 2020;35(5)
5
6 19. Chinese Association of Rehabilitation Medicine RRCoCA, of Rehabilitation Medicine
7 CRGoCSoPM, Rehabilitation a. Recommendations for respiratory rehabilitation of
8 coronavirus disease 2019 in adult. *Chin J Tuberc Respir Dis* 2020;43
9
10 20. Institute of Medicine Committee on Standards for Developing Trustworthy Clinical Practice G.
11 In: Graham R, Mancher M, Miller Wolman D, et al., eds. *Clinical Practice Guidelines We*
12 *Can Trust*. Washington (DC): National Academies Press (US)
13
14

15 Copyright 2011 by the National Academy of Sciences. All rights reserved. 2011.

- 16 21. Radwan M, Akbari Sari A, Rashidian A, et al. Appraising the methodological quality of the
17 clinical practice guideline for diabetes mellitus using the AGREE II instrument: a
18 methodological evaluation. *JRSM open* 2017;8(2):2054270416682673. doi:
19 10.1177/2054270416682673 [published Online First: 2017/02/17]
20
21 22. Vähäniemi A, Välimäki M, Pekurinen V, et al. Quality and utilization of the Finnish clinical
22 practice guideline in schizophrenia: evaluation using AGREE II and the vignette approach.
23 *Neuropsychiatric disease and treatment* 2019;15:1239-48. doi: 10.2147/ndt.S192752
24 [published Online First: 2019/06/14]
25
26 23. Zhu B, Liu Y, Wang H, et al. Clinical guidelines of UTIs in children: quality appraisal with
27 AGREE II and recommendations analysis. *BMJ open* 2022;12(4):e057736. doi:
28 10.1136/bmjopen-2021-057736 [published Online First: 2022/04/29]
29
30 24. Fan Y, Zhang G, Zhang Z, et al. Critical Appraisal of Guidelines for Antithrombotic Therapy in
31 Atrial Fibrillation Post-Percutaneous Coronary Intervention. *Global heart* 2022;17(1):14.
32 doi: 10.5334/gh.1104 [published Online First: 2022/03/29]
33
34 25. Chen Y, Yang K, Marušić A, et al. A Reporting Tool for Practice Guidelines in Health Care:
35 The RIGHT Statement. *Annals of internal medicine* 2017;166(2):128-32. doi:
36 10.7326/m16-1565 [published Online First: 2016/11/29]
37
38 26. China NHCotPsRo, Medicine TpsRoCSAof C. Diagnosis and treatment plan of novel
39 coronavirus (trial eighth edition). *Infect Dis Info* 2020;33:289-96. doi: 10.3969/j.issn.1007-
40 8134.2020.04.001
41
42 27. Brouwers MC, Kho ME, Browman GP, et al. Development of the AGREE II, part 2: assessment
43 of validity of items and tools to support application. *CMAJ : Canadian Medical Association*
44 *journal = journal de l'Association medicale canadienne* 2010;182(10):E472-8. doi:
45 10.1503/cmaj.091716 [published Online First: 2010/06/02]
46
47 28. Armstrong JJ, Rodrigues IB, Wasiuta T, et al. Quality assessment of osteoporosis clinical
48 practice guidelines for physical activity and safe movement: an AGREE II appraisal.
49 *Archives of osteoporosis* 2016;11:6. doi: 10.1007/s11657-016-0260-9 [published Online
50 First: 2016/01/14]
51
52 29. Knight S, Takagi M, Fisher E, et al. A Systematic Critical Appraisal of Evidence-Based Clinical
53 Practice Guidelines for the Rehabilitation of Children With Moderate or Severe Acquired
54 Brain Injury. *Archives of physical medicine and rehabilitation* 2019;100(4):711-23. doi:
55 10.1016/j.apmr.2018.05.031 [published Online First: 2018/07/04]
56
57
58
59
60

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
30. Liu K, Ma Y, Yang Y, et al. Evaluation of the reporting quality of clinical practice guidelines on prostate cancer using the RIGHT checklist. *Annals of translational medicine* 2021;9(14):1173. doi: 10.21037/atm-21-2956 [published Online First: 2021/08/26]
31. Li JX, Shi YM, An LY, et al. Quality assessment of the guidelines for the management of malignant pleural effusions and ascites. *World journal of surgical oncology* 2020;18(1):331. doi: 10.1186/s12957-020-02097-y [published Online First: 2020/12/15]
32. Yi KQ, Yang T, Yang YM, et al. Appraisal of the diagnostic procedures of acute pancreatitis in the guidelines. *Systematic reviews* 2021;10(1):17. doi: 10.1186/s13643-020-01559-4 [published Online First: 2021/01/10]
33. Zhao XH, Yang T, Ma XD, et al. Heterogeneity of nutrition care procedures in nutrition guidelines for cancer patients. *Clinical nutrition (Edinburgh, Scotland)* 2020;39(6):1692-704. doi: 10.1016/j.clnu.2019.08.022 [published Online First: 2019/09/23]
34. Pentheroudakis G, Stahel R, Hansen H, et al. Heterogeneity in cancer guidelines: should we eradicate or tolerate? *Annals of oncology : official journal of the European Society for Medical Oncology* 2008;19(12):2067-78. doi: 10.1093/annonc/mdn418 [published Online First: 2008/07/30]
35. Wang X, Yang YM, Yang T, et al. Evaluation of pharmacotherapy recommendations in guidelines for inflammatory bowel disease. *Journal of clinical pharmacy and therapeutics* 2021;46(3):599-609. doi: 10.1111/jcpt.13368 [published Online First: 2021/02/06]
36. Kiriakova V, Cooray SD, Yeganeh L, et al. Management of bone health in women with premature ovarian insufficiency: Systematic appraisal of clinical practice guidelines and algorithm development. *Maturitas* 2019;128:70-80. doi: 10.1016/j.maturitas.2019.07.021 [published Online First: 2019/09/29]

Supplementary file 1. Search Strategy

Search Strategy for PubMed

Number	Search terms
#1	Coronavirus[MeSH Terms]
#2	coronavirus infections[MeSH Terms]
#3	COVID-19[Title/Abstract] OR COVID-19 pneumonia[Title/Abstract] OR novel coronavirus[Title/Abstract] OR novel coronavirus pneumonia[Title/Abstract] OR coronaviru*[Title/Abstract] OR 2019-ncov [Title/Abstract] OR 2019-ncov pneumonia[Title/Abstract] OR novel cov[Title/Abstract] OR severe acute respiratory syndrome cov2[Title/Abstract] OR SARS-CoV-2[Title/Abstract] OR severe acute respiratory disease[Title/Abstract]
#4	#1 OR #2 OR #3
#5	rehabilitation [MeSH Terms]
#6	rehab*[Title/Abstract] OR respiratory rehabilitation [Title/Abstract] OR pulmonary rehabilitation [Title/Abstract] OR exercise therap* [Title/Abstract] OR physio[Title/Abstract] OR physiotherap*[Title/Abstract] OR physical therap*[Title/Abstract] OR PT[Title/Abstract] OR traditional Chinese medicine rehabilitation [Title/Abstract]
#7	#5 OR #6
#8	guideline[Title/Abstract] OR practice guideline[Title/Abstract] OR CPG[Title/Abstract] OR consensus development conference[Title/Abstract] OR consensus[Title/Abstract] OR consensus statement[Title/Abstract] OR expert consensus[Title/Abstract] OR standards[Title/Abstract] OR recommendation[Title/Abstract]
#9	#4 AND #7 AND #8

Search Strategy for Embase

Number	Search terms
#1	'coronavirus disease 2019'/exp
#2	'covid-19':ti,ab,kw OR 'covid-19 pneumonia':ti,ab,kw OR 'novel coronavirus':ti,ab,kw OR 'novel coronavirus pneumonia':ti,ab,kw OR coronaviru*:ti,ab,kw OR '2019 ncov':ti,ab,kw OR '2019-ncov pneumonia':ti,ab,kw OR 'novel cov':ti,ab,kw OR 'severe acute respiratory syndrome cov2':ti,ab,kw OR 'sars cov 2':ti,ab,kw OR 'severe acute respiratory disease':ti,ab,kw
#3	#1 OR #2
#4	'rehabilitation'/exp
#5	rehab*:ti,ab,kw OR 'respiratory rehabilitation':ti,ab,kw OR 'pulmonary rehabilitation':ti,ab,kw OR 'exercise therap*':ti,ab,kw OR physio:ti,ab,kw OR

	physiotherap*:ti,ab,kw OR 'physical therap*':ti,ab,kw OR pt:ti,ab,kw OR 'traditional chinese medicine rehabilitation':ti,ab,kw
#6	#4 OR #5
#7	'guideline'/exp
#8	guideline:ti,ab,kw OR 'practice guideline':ti,ab,kw OR cpg:ti,ab,kw OR 'consensus development conference':ti,ab,kw OR consensus:ti,ab,kw OR 'consensus statement':ti,ab,kw OR 'expert consensus':ti,ab,kw OR standards:ti,ab,kw OR recommendation:ti,ab,kw
#9	#7 OR #8
#10	#3 AND #6 AND #9

Search Strategy for CBM

Number	Search terms
#1	COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 2019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭[常用字段:智能]
#2	康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 中医康复 OR 太极拳 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺 OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩[常用字段:智能]
#3	指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明[常用字段:智能]
#4	#1 AND #2 AND #3

Search Strategy for VIP

Number	Search terms
#1	题名或关键词:COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 2019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭
#2	题名或关键词:康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 中医康复 OR 太极拳 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺 OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩
#3	题名或关键词:指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明
#4	#1 AND #2 AND #3

Search Strategy for Wan Fang database

Number	Search terms
#1	题名或关键词:COVID-19 OR SARS-CoV-2 OR 冠状病毒 OR 严重急性呼吸综合征 OR 非典型肺炎 OR 019 新型冠状病毒 OR 肺炎 OR 呼吸衰竭
#2	题名或关键词:康复 OR 呼吸康复 OR 肺康复 OR 运动训练 OR 物理疗法 OR 太极拳 OR 中医康复 OR 八段锦 OR 六字诀 OR 传统功法 OR 冥想 OR 针刺

	OR 艾灸 OR 针灸 OR 灸法 OR 穴位敷贴 OR 推拿 OR 按摩
#3	题名或关键词:指南 OR 专家共识 OR 专家意见 OR 指导意见 OR 建议 OR 方案 OR 标准 OR 规范 OR 推荐 OR 共识声明
#4	#1 AND #2 AND #3

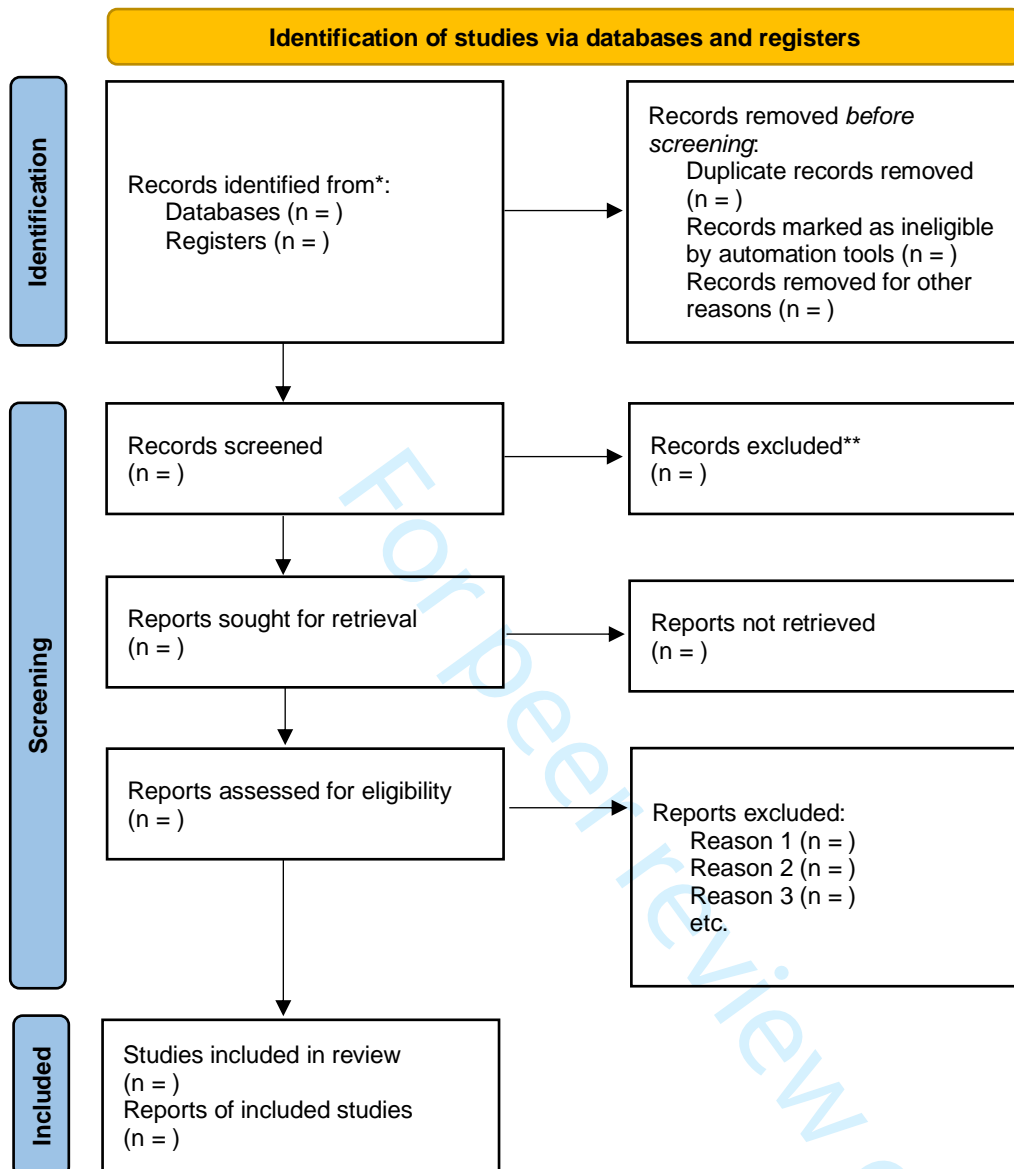
Search Strategy for CNKI

Number	Search terms
#1	SU='COVID-19'+ 'SARS-CoV-2'+ '冠状病毒'+ '严重急性呼吸综合征'+ '非典型肺炎'+ '2019 新型冠状病毒'+ '肺炎'+ '呼吸衰竭'
#2	SU='康复'+ '呼吸康复'+ '肺康复'+ '运动训练'+ '物理疗法'+ '中医康复'+ '太极拳'+ '八段锦'+ '六字诀'+ '传统功法'+ '冥想'+ '针刺'+ '艾灸'+ '灸法'+ '穴位敷贴'+ '推拿'+ '按摩'
#3	SU='指南'+ '专家共识'+ '专家意见'+ '指导意见'+ '建议'+ '方案'+ '标准'+ '规范'+ '推荐'+ '共识声明'
#4	#1 AND #2 AND #3
SU=主题	

Search Strategy for NGC, GIN, SIGN, NICE and WHO

Number	Search terms
#1	COVID-19 OR COVID-19 pneumonia OR novel coronavirus OR novel coronavirus pneumonia OR coronaviru OR 2019-ncov OR 2019-ncov pneumonia OR novel cov OR severe acute respiratory syndrome cov2 OR SARS-CoV-2 OR severe acute respiratory disease
#2	rehabilitation OR respiratory rehabilitation OR pulmonary rehabilitation OR exercise therapy OR OR physiotherapy OR physical therapy OR traditional Chinese medicine rehabilitation
#3	#1 AND #2

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>