TUGAS AKHIR KARDIOPULMONAL
RESUM JURNAL

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Program Studi S1 Fisioterapi Fakultas Ilmu Kesehatan
Universitas 'Aisiyiyah Yogyakarta
Tahun Ajaran 2020-2021

Jurnal ke-1

JRSR 7 (2020) 178-183

Journal of Rehabilitation Sciences and Research

Journal Home Page: jrsr.sums.ac.ir

Original Article

Effects of Regular Aerobic with Nasal Breathing Exercise Training on Olfactory Rehabilitation in Asthmatic Patients with Chronic Rhino Sinusitis

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ARTICLE INFO

Article History:
Received:
31/01/2020
Revised:
20/10/2020
Accepted:
07/11/2020

Keywords:
Aerobic exercise
Olfaction disorder
Rehabilitation
Sinusitis

Please cite this article as: Zarneshan A. Effects of Regular Aerobic with Nasal Breathing Exercise Training on Olfactory Rehabilitation in Asthmatic Patients with Chronic Rhino Sinusitis. JRSR. 2020;7(4):178-183.

ABSTRACT

Background: Chronic rhinosinusitis (CRS) is the most common cause of smell loss and has a strong association with asthma. Breathing exercise training has been known to be an effective treatment for decreasing asthma symptoms. However, its effect on the olfactory disorder in asthmatic patients with CRS is unknown. This research aimed to investigate the effects of regular aerobic with nasal breathing exercise training on olfactory rehabilitation in asthmatic patients with CRS.

Methods: In this quasi-experimental study, thirty-five inactive asthmatic women with CRS and olfaction disorder (mean age=34.7±7.5 years) were selected and grouped into experimental (n=18) and control (n=17) groups. The experimental group participated in an aerobic and breathing exercise program (60 min/day, three days a week), and the control group refrained from participating in regular exercise for 12 weeks. Self-rated olfactory acuity and function questionnaires were used to assess changes in exercise-induced olfactory acuity and function. **Results:** After 12 weeks, the exercise group improved smell function (P=0.002) and exhibited significantly increased acuity in smelling the odor of gas (P=0.019) compared with the control group. Body mass index (BMI) decreased (P=0.019) and forced expiratory volume in 1 second (FEV1) increased (P=0.002) significantly in the exercise group. There was a negative relationship between mean change in BMI and mean change in acuity in smelling the odor of gas (r=-0.381, P=0.024). **Conclusion:** According to the self-report olfactory acuity and function questionnaires, the improvement in the smell function of asthmatic patients with chronic sinusitis after 12 weeks of regular aerobic with nasal breathing exercise was promising and should be studied further.

Introduction

Olfactory dysfunction is prevalent (30% - 80%) in patients with chronic rhinosinusitis (CRS), a disease that affects 12.5% of the adult population [1]. CRS is the most common cause of smell loss [2] and has a strong association with asthma. The evidence indicates a high prevalence of CRS in asthmatic patients [3]. It further indicates that patients with CRS have lower forced expiratory volume in the first second (FEV1) compared with healthy people [4]. According to the results of a study by Caglar et al., odor threshold value, discrimination, and identification were lower in the patient group with FEV1<80% compared with the healthy control group [5]. Despite the fact that olfactory dysfunction has a significant impact on the quality of life of patients with CRS and asthma, it is often overlooked by patients and doctors and its clinical management and treatment are still limited [6]. The treatment of posttraumatic olfactory dysfunction with corticosteroids and regular, structured exposure to odors through olfactory training (OT) [7]

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as well as olfactory rehabilitation after endoscopic sinus surgery in patients with chronic sinusitis and nasal polyps have been studied [8], but no research was found that used exercise therapy to improve olfactory function in patients with CRS. Having an active lifestyle or changing the respiratory pattern at maximal work may be an effective way to improve a

function in 38 individuals. With the difference between mean changes of olfaction in the exercise and control groups (2.4) and its standard deviation (2.3) [11], using the following formula with 80% power using a cutoff for statistical significance of 0.05 [15], and considering approximately 20% of the drop, 17 participants were required in each group; a total of 35 participants were included in this study.

Samples were randomly divided into experimental (n=18: receiving specific exercise training) and control groups (n=17: normal daily activities).

Aerobic Exercise Training

Exercise in the present study was designed by the researcher based on the American College Sports Medicine (ACSM) guidelines [16] and the results of previous studies [11-13].

The exercise group trained (three days/week/evening) for 12 weeks. Each training session began with 15 minutes of warm-up, continued with a 30-minute walk/run on a treadmill with 60-80% of HR_{max}, and a final 15 minutes of breathing exercises. Before the start of training, subjects were trained on how to work with treadmills and safety. Training began with 60% of maximum heart rate in the first two weeks and gradual increases in subsequent meetings (Table 1). Control of exercise intensity (based on heart rate) was performed by Polar heart rate monitors. In this program, the ACSM guidelines were used to limit any problems such as exercise-induced asthma (EIA). Patients were encouraged to warm up long-term, drink plenty of water before and after the exercise session, and inhale through the nose and exhale through the mouth as much as possible when exercising [9]. The control group refrained from participating in regular exercise for 12 weeks of the study protocol.

Aerobic and Breathing Exercises Training

Exercises employed nasal breathing and sitting comfortably with good posture, which are described in Table 1 (exercises number 2 to 6) and are shown in Figure 1.

Self-Reported Olfactory Acuity

Due to the limitation of olfactory test clinics and standard olfactory evaluation tests, we were compelled to use questionnaires to gain information about the

Table 1: Aerobic and breathing exercises training in the experimental group

Exercise	**Performance**
Number 1: 30-minute walking/running on a treadmill, inhaling through the nose and exhaling through the mouth. Each session of training began with 15 minutes of walking on the treadmill for warm-up.	
Number 2: Eyes closed, the left hand over the left knee, right nostril closed with the right thumb, inhaling slowly through the left nostril, the remaining the fingers placed on the forehead, exhaling slowly through the mouth (Figure 1, A).	
Number 3:	

Question	Responses	Scores
How do you consider your olfaction at this moment?	Poor	1
	Fair	2
	Good	3
	Very good	4
How do you consider your taste at this moment?	Poor	1
	Fair	2
	Good	3
	Very good	4
How often can you smell perfume?	Never	1
	Sometimes	2
	Usually	3
	Always	4
How often can you smell food?	Never	1
	Sometimes	2
	Usually	3
	Always	4
How often can you smell the odor of gas leaking?	Never	1
	Sometimes	2
	Usually	3
	Always	4
How often can you smell smoke?	Never	1
	Sometimes	2
	Usually	3
	Always	4
Do you have any difficulties in your daily life due to alterations in your perception of odors?	I have no difficulty.	1
	I have few difficulties.	2
	I have some difficulties.	3
	I have many difficulties.	4

Self-Reported Olfactory Function

The self-reported olfactory function questionnaire used to evaluate patients who reported their olfactory function at the end of the protocol was designed based on research by Rawal et al. [19]. The researcher asked patients to use a seven-point scale to rate their smell function at the time of the study (very poor to excellent), compared to before the exercise protocol, and to rate the flavor of food at

the time of the study compared to before the exercise protocol (extremely weaker to extremely stronger). The self-reported olfactory acuity and function questions used in the present study were translated into Persian by native translators. Difficulties of translation and the given average score by translators according to a 100-point Visual Analogue Scale (VAS) from zero (easy translation) to 100 (difficult translation) was below 30. The translated Persian text was reverse translated to English to compare the translations. In the qualitative review of the questionnaire, the researcher asked experts to provide the necessary feedback on the questionnaire. The translation quality (sentences are clear, simple and understandable words used, use of specialized and artificial terms avoided) was confirmed by two other translators and a group of experts. Professional otolaryngologists, pulmonologists, and exercise physiologists assessed the self-rated olfactory acuity and function survey for content validity, instrument construction, and appropriateness. To determine content validity, the content validity index (CVI) was

Table 3: Clinical characteristics and Body mass index (BMI), forced expiratory volume in 1 second (FEV1) changes after exercise training in patients

	Experimental		Control		P*	P**
	Pre-(mean±SD)	Post-(mean±SD)	Pre-(mean±SD)	Post-(mean±SD)		
Age	32.9±7.5		36.7±8.2		0.363	
Asthma duration(yrs)	8.9±4.5		9.4±5		0.819	
Olfactory loss duration(yrs)	5.2±3.7		6.3±3.1		0.519	
BMI	29.9±4.2	28.8±4.3	28.9±4.1	29.4±4.2	0.342	0.019**
FEV1	75.5±10.1	84.4±11.6	71.4±14.3	69.2±15.1	0.330	0.001**

*Unpaired t-test to compare the baseline characteristics between groups; ** ANCOVA to compare the differences between the groups after protocol; Significance of change at the level of 0.05. BMI: Body mass index; FEV1: Forced expiratory volume in 1 second

Table 4: Results of self-rated olfactory acuity questionnaire before and after nasal breathing exercises in experimental and control groups

Mean score in consideration of	Experimental		Control		Mann-Whitney U	P
	Before	After	Before	After		
Olfaction	1.5±0.51	2.2±0.81	1.5±0.51	1.6±0.49	91.50	0.030*
Taste	1.8±0.43	1.9±0.42	1.8±0.75	1.7±0.47	119.0	0.168
Smell of perfume	1.9±1.1	2.2±0.78	1.8±0.43	1.8±0.52	117.0	0.197
Smell of food	1.8±0.67	2.1±0.58	2.3±0.77	2.1±0.60	152.0	1.000
The smell of gas	1.9 ±1.1	2.3±0.84	1.6±0.62	1.7±0.58	90.00	0.019*
The smell of smoke	2.1±1.3	2.7±1.1	2.3±0.49	2.4±0.51	128.5	0.403
*Difficulties in daily life due to changes in the perception of odors	3.6±0.50	3.0±0.54	3.4±0.61	3/5±0/74	97.50	0.042*

Four-point scales: minimum score to poor sense=1 and maximum score to stronger sense=4; * Have no difficulty=1, have many difficulties=4; Mann- Whitney U to compare the differences between the groups after the protocol

Table 5: Comparison of self-rated olfactory function mean scores in experimental and control groups after the protocol

Mean score in consideration of	Experimental	Control	Mann-Whitney U	P
Smell at time of study	4.17±1.3	3.3±1.1	93.0	0.042*
Smell at time of study compared to prior to the exercise protocol	4.6±0.69	3.7±0.66	63.0	0.002*
Flavor of food at the time of study compared to the pre-exercise protocol	4.0±0.77	3.6±0.86	119.0	0.226

Seven-point scale: very poor=1 to excellent=7; *Mann-Whitney U, Significance of change at the level of 0.05

respectively. After exercise training, 5 (28%) patients reported improvement to a good level, 1 (5%) reported a very good level, 3 (170%) considered it poor, and 9 (50%) considered it fair. Only one patient reported her taste as good, and none of the experimental participants considered their taste as very good after exercise training. The ability to smell

affects either general health or brain function [10], obesity [21], nasal volume [26], and upper respiratory tract infection [27] and may facilitate neuroplasticity of the olfaction system [11]. The effect of exercise in the prevention of acute respiratory infection [28] and nasal inflammation [29] has been shown. Inflammatory changes within the olfactory mucosa may be the cause of olfactory deficits in patients with chronic sinusitis [30]. Studies have found an association between olfactory impairment and neurodegenerative disease [31]. Evidence also indicates a correlation between human olfactory function and nasal volumetric measurements [32]. Yon DK et al. reported an association between serum lipid levels and peripheral olfactory function, allergic rhinitis, and nasal symptoms [33].

Exercise enhances neurogenesis and cognitive function and lowers the risk of cognitive impairment [10]. Additionally, studies have shown that physical exercise increases nasal volume and has a vasoconstrictor effect over nasal mucosa, which may also affect olfaction [26]. The findings indicated that exercise increases the nasal airway patency by discharging the sympathetic nerve and can also decrease the thickness of the mucosa [34].

Therefore, nasal breathing exercise training may have a beneficial effect on olfactory improvement by changing in brain function, inflammation, blood lipids, or other conductive or sensorineural factors. It appears that in this study, twelve weeks of regular treadmill aerobic exercise with an intensity of 60% to 80% MHR improved the olfactory system by decreasing BMI.

evaluation was based on self-reports. Though the use of self-report questionnaires by past studies [17, 19] can be of value for the present study, the satisfaction of patients with the improvement in their sense of smell gives us hope and feedback that indicates aerobic nasal breathing exercise training is an effective factor in improving olfaction. Future more extensive studies are suggested for more robust results in this area.

Conclusion

According to self-report olfactory acuity and function questionnaires, the improvement in the smell function of asthmatic patients with chronic sinusitis was promising and should be studied further. This is a new study that showed that nasal breathing during an intensive activity (80%MHR) in asthmatic patients with CRS who mainly breathe through their mouths can be useful in modulating olfactory performance.

Acknowledgments

The researcher of the present study is grateful to all participants.

Conflict of Interest: None declared.

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Jurnal ke-2

BURNS xxx (2020) xxx

A B S T R A C T

Purpose: The purpose of this study was to clarify the efficacy of chest physiotherapy (CPT) in patients with inhalation injury in the acute phase. *PATIENTS AND methods:* This was a single-institution retrospective study of patients with inhalation injury admitted to the Chukyo Hospital Burn Center from April 2004 to March 2014 who required endotracheal intubation for respiratory care. The patients were divided into two groups: the CPT group and the conventional physical therapy group. We compared the two groups according to the incidence of pneumonia, length of ICU/hospital stay, and level of activities of daily living at discharge. To match subject backgrounds, we conducted a propensity score matching analysis, and using a Cox regression analysis, we evaluated the effect of CPT on the first pneumonia event. *Results:* Of 271 patients admitted to the burn center, 139 patients were included. The incidence of pneumonia in the CPT group was significantly lower and these patients required fewer days until they could sit on the edge of the bed compared with the conventional physical therapy group. In a Cox regression model, the hazard ratio for the first incidence of pneumonia in the CPT group vs. the conventional therapy group was 0.27 (95% confidence interval: 0.13

programs.

The patients were divided into two groups: the CPT group and the conventional physical therapy group (control group). Conventional physical therapy comprised muscle strength training, range-of-motion exercises, and activities of daily living (ADL) exercises. Patients were assigned to a protocol on order of the burn physicians. As CPT was introduced after 2007, it has been performed more frequent- ly since then.

The ADL levels were evaluated according to the 10 criteria of the Barthel Index, whose index points are measured from 0 to 100, with 0 indicating that the patients required total assistance and 100 indicating that they required no assistance at all. The main purpose of this study was to track the incidence of pneumonia, which was diagnosed by the attending burn physicians. The diagnostic criteria adhered to the American Burn Association guidelines [7]. In addition, we referenced diagnostic criteria defined as a new and persistent infiltrate via chest radiographs associated with at least one of the following: purulent tracheal secretions, a body temperature of 38.5

expiratory rib cage compression, and 3) instruction on coughing. Postural drainage

Chest Physical Therapy	1 Expiratory rib cage compression • Discharge sputum • Reduction of respiratory workload • Prevention of atelectasis • Improve ventilation by manual compression 2 Postural drainage • Remove respiratory secretions by gravity 3 Cough exercises • Remove respiratory secretions by coughing	Consisting of breathing assistance, postural drainage, and cough exercises 1. Manual expiratory rib cage compression technique 1) Apply pressure manually in the direction of physiological movement of the rib cage during the expiratory phase 2) Remove pressure at the time of inspiration *Point* *Apply pressure AT LEAST exceeding resting END-TIDAL position* 2. Postural drainage 1) Pinpoint the location of atelectasis and secretion by chest X ray image and/or physical assessment 2) Change body position so that the atelectasis is up. 3) Discharge respiratory secretions with the aid of gravity 3. Cough exercises Encourage the patient to cough up sputum with respiratory control, deep-breathing exercises, and forced expiration technique (ACBT: active cycle of breathing techniques)
Conventional Physical Therapy	• Prevent joint contracture • Prevent muscle weakness • Prevent disuse syndrome • Prevent deep-vein thrombosis • Improve abilities of activity of daily living	1. Range of motion (ROM) exercises Start within two days after the operation with little load after consultation with the surgeons Pain control is performed, if required. 2. Resistance training Pain control is performed, if required. 3. Early mobilization Start from a head-up position and advance to the sitting on the edge of bed position, standing position, and ambulation

3. Results

We included 271 patients. Demographics of the patients with inhalation injuries before and after the start of the CPT program are shown in Table 3. The patient flow diagram is presented in Fig. 1. During the study period, 132 patients fulfilled the inclusion criteria. The CPT group included 85 patients, and the control group included 47 patients. The baseline characteristics of the study population are shown in Table 4. Before matching, the %TBSA of the CPT group was significantly lower than that of the control group. In addition, both the AIS score for inhalation injury and the P/F ratio in the CPT group were significantly higher than those of the control group. The presence of chest burns was higher in the CPT group than that in the control group, but the difference was not significant. We found no significant differences in age or sex between the two groups.

The patient outcomes are listed in Table 5. Before matching, the incidence of pneumonia was lower, mechanical ventilation days were shorter, and the first day that the patient could sit on the edge of the bed was earlier in the CPT group than in the control group. Additionally, the ADL levels at discharge as indicated by the Barthel index of the CPT group were better than those of the control group. Furthermore, more patients in the CPT group underwent two or more thoracic surgeries than in the control group. However, after propensity matching, there was no statistically significant difference in the number of thoracic surgeries undergone. Even after the propensity score matching analysis, the CPT group was associated with a significantly lower incidence of pneumonia and earlier time to sitting on the edge of the bed than the control group.

Table 3

Data are expressed as group median [IQR] or number.

AIS: Abbreviated Injury Scale; CPT: chest physical therapy; ICU: intensive care unit; TBSA: total body surface area.

P value for 2004

Data are expressed as group median [IQR] or number.

AIS: Abbreviated Injury Scale; APACHE: Acute Physiology and Chronic Health Evaluation; CPT: chest physical therapy; P/F: PaO_2:FiO_2; TBSA: total body surface area.

p Value for CPT group vs. control group.

All seven variables were used in the propensity score calculation.

Within the matched pairs, we used a Mann

conventional therapy. To our knowledge, this is the first report to clearly show the efficacy of CPT in patients with inhalation injury.

In the United States, CPT for the purpose of expectorating sputum typically seems to consist of a combination of postural drainage, percussion, and vibration [1,2,19,20]. In Japan and some other countries, however, a different protocol is used that includes manual expiratory rib cage compression, postural drainage, and coughing exercises to improve respira- tory function after elective surgery or in chronic obstructive pulmonary diseases [21]. In a white rabbit atelectasis model, expiratory rib cage compression was proved to improve oxygenation, ventilation, respiratory system compliance, and mucus clearance [22], and Berti et al. reported that expiratory rib cage compression shortened the number of mechanical ventilator days and the length of ICU stay [23]. Expiratory rib cage compression helps the patients not only to expectorate sputum but also to improve ventilation and dyspnea and reduce the effort of breathing. This technique involves facilitating deep breaths and increasing the inspira- tory volume as an attempt to reduce the respiratory rate and breathing effort.

Postural drainage combined with the expiratory rib cage compression produces a synergic effect on the movement of respiratory secretions into the main bronchus, resulting in effective removal of secretions. The active cycle breathing technique after extubation helps patients to expectorate sputum, thus preventing pneumonia. These techniques are used for postoperative patients, patients with chronic ob- structive pulmonary disease, and other conditions affecting the lungs.

Some researchers recommended CPT for patients with inhalation injury [2,24], and one report in particular men- tioned the efficacy of CPT for inhalation injury [25]. Okhovatian and Zoubine compared two rehabilitation protocols for burn patients to elucidate rehabilitation-related problems [26]. In

would be safe even after graft surgery as long as maximum care is taken not to disturb the skin graft when performing CPT on patients with chest burns. Our results also suggested that the reduction in the incidence of pneumonia shortened the duration of mechanical ventilation, thus requiring fewer days until the patients could sit on the edge of the bed and stand up. Some reports show early rehabilitation interventions for critically ill patients in the ICU not only prevent respiratory complications but also delirium and ICU-acquired weakness [30

5. Conclusions

Our findings indicated that performing CPT for patients with inhalation injury may reduce the incidence of pneumonia and facilitate patient mobilization following inhalation injury.

Authors' contribution

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in *Burns*.

Conception and design of study: TK, AO and KT. Acquisition of data: TK and AO. Analysis and/or interpretation of data: DK, TK and AO. Drafting the manuscript: TK and AO.

Revising the manuscript critically for important intellectual content: MK, KT and HO.

Approval of the version of the manuscript to be published (the names of all authors must be listed): TK, AO, KT, DK, MK and HO.

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Journal of Physiotherapy 66 (2020) 73

PHYSIOTHERAPY

A B S T R A C T

This document outlines recommendations for physiotherapy management for COVID-19 in the acute hospital setting. It includes: recommendations for physiotherapy workforce planning and preparation; a screening tool for determining requirement for physiotherapy; and recommendations for the selection of physio- therapy treatments and personal protective equipment. It is intended for use by physiotherapists and other relevant stakeholders in the acute care setting caring for adult

cough (68%), fatigue (38%), sputum production (34%) and/or short- ness of breath (19%).[4] The spectrum of disease severity ranges from asymptomatic infection or mild upper respiratory tract illness through to severe viral pneumonia with respiratory failure and/or death. Current reports estimate that 80% of cases are asymptomatic or mild; 15% of cases are severe (infection requiring oxygen); and 5% are critical requiring ventilation and life support.[2]

Preliminary reports indicate that chest radiographs may have diagnostic limitations in COVID-19.[6] Clinicians need to be aware that lung

Box 1.	Physiotherapy workforce planning and preparation recommendations.
1.1	Plan for an increase in the required physiotherapy workforce. For example: • allow additional shifts for part-time staff • offer staff the ability to electively cancel leave • recruit a pool of casual staff • recruit academic and research staff, staff who have recently retired or are currently working in non-clinical roles • work different shift patterns (eg, 12-hour shifts, extended evening shifts)
1.2	Identify potential additional staff who could be deployed to areas of higher activity associated with COVID-19 admissions (eg, infectious disease ward, ICU and/or high dependency unit and other acute areas). Prioritise staff for deployment who have previous cardiorespiratory and critical care experience.
1.3	Physiotherapists are required to have specialised knowledge, skills and decision-making to work within ICU. Physiotherapists with previous ICU experience should

physiotherapists often work in acute hospital wards and ICUs. In particular, cardiorespiratory physiotherapy focuses on the manage- ment of acute and chronic respiratory conditions and aims to improve physical recovery following an acute

who show signs of inadequate airway clearance and they can assist in positioning patients with severe respiratory failure associated with COVID-19, including the use of prone position to optimise oxygenation.[12]

Given the intensive medical management for some COVID-19 patients

co-existing respiratory or
neuromuscular comorbidity (eg,

Consider physiotherapy referral for airway clearance Physiotherapy may be indicated, particularly if weak cough, productive, evidence of pneumonia on imaging and/or secretion retention Staff use airborne precautions If not ventilated, where possible, the patient should wear a surgical mask during any physiotherapy	Early optimisation of care and involvement of ICU is recommended Physiotherapy referral Use droplet precautions	Use airborne precautions if close contact required or possible aerosol generating procedures If not ventilated, where possible, the patient should wear a surgical mask during any physiotherapy

COVID-19 = coronavirus disease 2019, CT = computed tomography, ICU = intensive care unit, SpO_2 = oxyhaemoglobin saturation.

Table 2

Example of an ICU physiotherapy resource plan.

Phase	Bed capacity	Description and location of patients	Physiotherapy

		hospitals	Patients will be provided treatment in isolation rooms	storage in isolation Additional respiratory equipment
Tier 2	Further expansion to maximum ICU capacity	The number of patients with COVID-19 exceeds the availability of isolation rooms, necessitating the care of infectious patients outside the	Calculation for additional FTE as above Infections ICU Pod	Additional chair resources may be required Keep separate sets of chairs,

Tier 4	Additional beds created across clinical areas in other parts of the hospital (eg, cardiology, operating theatres)	Large-scale emergency	Calculation for additional FTE as above	Additional chair resources may be required Keep separate sets of chairs, tilt tables, etc, for infectious and non-infectious patients

COVID-19 = coronavirus disease 2019, FTE = full-time equivalent, HDU = high dependency unit, ICU = intensive care unit.

Table 3

•

Use of metered-dose inhalers or spacers is preferred where possible.[12] If a nebuliser is required, liaise with local guidelines for directions to minimise

acute inpatient physiotherapy (all), rehabilitation interventions in the ICU (all), physiotherapy administration (PT, IB, RG, AJ, RM, ShP), systematic reviews (PT, CB, CG, RG, CH, MK, SP, ShP, LV), guideline methodology (PT, IB, RG, CH, MK, RM, ShP, LV), and epidemiology (CH, MK).

Table 4

Additional respiratory interventions in the ICU.

Intubation and mechanical ventilation	Patients with worsening hypoxia, hypercapnia, acidaemia, respiratory fatigue, haemodynamic instability or those with altered mental status should be considered for early invasive mechanical ventilation if appropriate.[12]
	The risk of aerosol transmission is reduced once a patient is intubated with a closed ventilator circuit.[12]
Recruitment manoeuvres	Although current evidence does not support the routine use of recruitment manoeuvres in non-COVID-19 ARDS, they could be considered in patients with COVID-19 on a case-by-case basis.[12]
Prone positioning	Anecdotal reports from international centres dealing with large numbers of critically ill patients with COVID-19-related ARDS suggest that prone ventilation is an effective strategy in mechanically ventilated patients.[12] In adult patients with COVID-19 and severe ARDS, prone ventilation for 12 to 16 hours per day is recommended.[22,23] It

aerosolising procedure and this must be considered in clinical decision making.[12]

ARDS = acute respiratory distress syndrome, COVID-19 = coronavirus disease 2019, ICU = intensive care unit.

Guidance was based on the most recent and relevant COVID-19 clinical practice guidelines from highly-respected organisations, national physiotherapy organisations and peer-reviewed studies; these sources were transparently reported. The authors represent an international group of physiotherapists, with extensive clinical experience in the ICU and on the wards. They are also academic physiotherapists with experience in the leadership, conduct and execution of rigorous sys- tematic reviews, clinical studies (including prospective cohort studies and international multi-centre trials), and clinical practice guidelines. The recommendations have been endorsed by international physio- therapy organisations.[b] Translations of the recommendations are available in Appendix 1 on the eAddenda.

There are also some limitations. Given the recent presentation of COVID-19, clinical guidance may change as more is learnt about the natural history of this disease. Recommendations were extrapolated based on best evidence for current management of critically ill pa- tients and long-term outcomes in critical illness survivors. No patient was included in the author group. While the recommendations apply to physiotherapy interventions in the acute-care setting, longer-term follow-up of survivors is needed.

Recommendations for physiotherapy workforce planning and preparation

COVID-19 is placing

For patients admitted to ICU, additional strategies may be used; these are summarised in Table 4. With increasing acuity, there is an increased risk of dispersion of aerosolised virus into the healthcare environment due to the nature of critical illness, higher viral load and the performance of aerosol-generating procedures. It is recom- mended that airborne PPE precautions should be used to care for all patients with COVID-19 in ICU.[12]

Recommendations for the delivery of physiotherapy interventions, including personal protective equipment requirements

Physiotherapy management principles – respiratory care

Examples of physiotherapy-led respiratory interventions (or chest physiotherapy) are provided below.

Airway clearance techniques

Airway clearance techniques include positioning, active cycle of breathing, manual

Box 3.	Recommendations for physiotherapy respiratory interventions.
Personal protective equipment	
3.1	It is strongly recommended that airborne precautions are utilised during respiratory physiotherapy interventions.
Cough etiquette	
3.2	Both patients and staff should practise cough etiquette and hygiene. During techniques that may provoke a cough, education should be provided to enhance cough etiquette and hygiene: • Ask the patient to cover their cough by coughing into their elbow or sleeve or into a tissue. Tissues should then be disposed and hand hygiene performed. • In addition, if possible, physiotherapists should position themselves

	and they must all wear PPE, as described. Entry and exit from the room should be minimised during the procedure.[12] This may not be able to be maintained when cohorting is required because of the volume of patients presenting with COVID-19.
3.5	BubblePEP is not recommended for patients with COVID-19 because of uncertainty around the potential for aerosolisation, which is similar to the caution the WHO places on bubble CPAP.[23]
3.6	There is no evidence for incentive spirometry in patients with COVID-19.
3.7	

3

Box 3. Continued	
Positioning, including gravity-assisted drainage	
3.14	Physiotherapists can continue to advise on positioning requirements for patients.
Prone positioning	
3.15	Physiotherapists may have a role in the implementation of prone positioning in the ICU. This may include leadership within ICU

	may then be performed by the nursing staff already in an isolation room, with guidance provided, if needed, by the physiotherapist who is outside the room.
4.3	Direct physiotherapy interventions should only be considered when there are

Box 5. Recommendations regarding personal protective equipment for physiotherapists.

5.1	All staff must be trained in correct donning and dof

motion and muscle strength.

Mobilisation and rehabilitation

Examples of mobilisation and rehabilitation include bed mobility, sitting out of bed, sitting balance, sit to stand, walking, tilt table, standing hoists, upper/lower limb ergometry and exercise programs. Box 4 outlines recommendations for implementing these activities in patients with COVID-19.

Personal protective equipment considerations

It is imperative that physiotherapists understand the measures in place to prevent transmission of COVID-19. Box 5 provides

Physiotherapy management principles – mobilisation, exercise and rehabilitation interventions

Physiotherapists are responsible for providing musculoskeletal, neurological and cardiopulmonary rehabilitation tasks, as outlined below.

Range of motion exercises

recommendations for this. Patients with

cohorted to patients without COVID-19 within the hospital.[12] In an open ICU or ward-cohorted areas with one or more patients with COVID-19, it is recommended that staff members in the whole area are required to use airborne PPE precautions.[12] Box 5 describes how the movement from dedicated isolation rooms to open cohorting might evolve within an ICU.

Footnotes: [a] An international team of expert researchers and cli-

Australia; Tony Cassar, Princess Alexandra Hospital, Australia; Claire Hackett, Princess Alexandra Hospital, Australia; Kate McCleary, Sunshine Coast University Hospital, Australia; Lauren

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Resum jurnal ke-1

Judul : Pengaruh Latihan Aerobik Reguler dengan Latihan Pernapasan Hidung terhadap Rehabilitasi Penciuman pada Penderita Asma dengan Sinusitis Kronis

Abstrak

Latihan senam pernapasan telah dikenal sebagai pengobatan yang efektif untuk mengurangi gejala asma. Namun, efeknya pada gangguan penciuman pada pasien asma dengan CRS tidak diketahui. Penelitian ini bertujuan untuk mengetahui pengaruh latihan aerobik teratur dengan latihan pernapasan hidung terhadap rehabilitasi penciuman pada pasien asma dengan CRS. Kelompok eksperimen berpartisipasi dalam program latihan aerobik dan pernapasan, dan kelompok kontrol menahan diri untuk tidak berpartisipasi dalam latihan rutin selama 12 minggu. Kuesioner ketajaman dan fungsi penciuman yang dinilai sendiri digunakan untuk menilai perubahan ketajaman dan fungsi penciuman yang diinduksi oleh olahraga. Indeks massa tubuh menurun dan volume ekspirasi paksa dalam 1 detik meningkat secara signifikan pada kelompok latihan. Ada hubungan negatif antara rata-rata perubahan BMI dan rata-rata perubahan ketajaman dalam mencium bau gas.

Pendahuluan

CRS adalah penyebab paling umum dari hilangnya bau dan memiliki hubungan yang kuat dengan asma. Bukti menunjukkan prevalensi CRS yang tinggi pada pasien asma. Setelah pelatihan, tingkat BMI menurunkan F, dan FEV1 meningkatkan F secara signifikan pada kelompok eksperimen dibandingkan dengan kontrol P.

Metode

Dalam penelitian kuasi-eksperimental yang dilakukan antara 4 Februari dan 11 Oktober 2016, wanita penderita asma dengan diagnosis CRS diperkenalkan oleh spesialis asma dari Klinik Sahand di Urmia, Iran, dan dinilai kelayakannya. Secara total, tiga puluh lima pasien yang memenuhi syarat berpartisipasi dalam penelitian ini. Kriteria kelayakan untuk dimasukkan adalah memiliki usia antara 20 dan 40 tahun dan riwayat gangguan penciuman selama lebih dari satu tahun. Kriteria eksklusi adalah kehamilan, penyakit kardiovaskular mayor, ginjal, metabolik, atau masalah paru lainnya, kecelakaan atau operasi sinus, patensi hidung yang sangat buruk, tumor ganas, multiple sclerosis, merokok, program diet atau olahraga teratur selama enam bulan sebelum penelitian, dan mengubah pengobatan selama penelitian.Karakteristik demografi dan klinis pasien seperti usia, durasi asma, dan durasi hilangnya penciuman telah disetujui. Studi yang dipublikasikan ini mempertimbangkan efek intervensi latihan aerobik pada fungsi penciuman pada 38 individu.

Latihan Aerobik

Kelompok latihan dilatih selama 12 minggu. Setiap sesi latihan dimulai dengan pemanasan selama 15 menit, dilanjutkan dengan berjalan / lari selama 30 menit di atas treadmill dengan 60-80% HRmaks, dan latihan pernapasan terakhir selama 15 menit. Kelompok kontrol menahan diri untuk tidak berpartisipasi dalam olahraga teratur selama 12 minggu dari protokol penelitian.

ExercisePerformance

Berjalan / berlari di atas treadmill, menarik napas melalui hidung dan menghembuskan napas melalui mulut. Setiap sesi latihan dimulai dengan 15 menit berjalan di atas treadmill untuk pemanasan. Nafas hidung dalam, mengisi dada, terus menghirup, menghembuskan napas perlahan melalui mulut.
Kualitas terjemahan dikonfirmasi oleh dua penerjemah lain dan sekelompok ahli. Ahli otolaringologi profesional, ahli paru, dan ahli fisiologi olahraga menilai survei ketajaman dan fungsi penciuman yang dinilai sendiri untuk validitas konten, konstruksi instrumen, dan kesesuaian. Untuk menentukan validitas isi dihitung indeks validitas isi. Item dengan CVI 0.8 dianggap memiliki validitas isi yang baik.

Latihan berupa :

1. 30 menit berjalan / berlari di atas treadmill, menghirup melalui hidung dan menghembuskan napas melalui mulut. Setiap sesi latihan dimulai dengan 15 menit berjalan di atas treadmill untuk pemanasan
2. Mata tertutup, tangan kiri di atas lutut kiri, lubang hidung kanan ditutup dengan ibu jari kanan, tarik napas perlahan melalui lubang hidung kiri, sisa jari ditempatkan di dahi, menghembuskan napas perlahan melalui mulut.
3. Latihan 1 berjalan dengan perubahan posisi tangan
4. Tangan di atas lutut, tarik napas perlahan melalui hidung, embuskan perlahan melalui mulut.
5. Saat meregangkan atau memutar tubuh, menghirup perlahan melalui hidung, menghembuskan napas perlahan melalui mulut selama tubuh kembali.

Analisis Statistik

Uji Mann-Whitney U digunakan untuk membandingkan ketajaman penciuman yang dinilai sendiri dan perbedaan fungsi antara dua kelompok. Hubungan antara perubahan rata-rata BMI, FEV1, dan rata-rata perubahan fungsi penciuman diukur dengan korelasi Spearman.

Hasil

Setelah pelatihan, tingkat BMI menurunkan F, dan FEV1 meningkat F secara signifikan pada kelompok eksperimen dibandingkan dengan kontrol P.

Diskusi

Dalam penelitian ini, efek pernapasan hidung selama latihan aerobik pada pemulihan penciuman cukup menjanjikan pada wanita penderita asma dengan CRS. Pengaruh latihan pernapasan hidung aerobik pada disfungsi penciuman, bagaimanapun, belum dipelajari dengan baik. Beberapa penelitian telah menunjukkan efek menguntungkan dari latihan pernapasan hidung dalam mengurangi episode malam hari, gejala asma, dan gejala rinitis alergi. Efek olahraga dalam pencegahan infeksi saluran pernapasan akut dan radang hidung telah ditunjukkan. Perubahan inflamasi dalam mukosa penciuman dapat menjadi penyebab defisit penciuman pada pasien dengan sinusitis kronis. Studi telah menemukan hubungan antara gangguan

penciuman dan penyakit neurodegeneratif. Bukti juga menunjukkan korelasi antara fungsi penciuman manusia dan pengukuran volumetrik hidung. Temuan menunjukkan bahwa olahraga meningkatkan patensi saluran napas hidung dengan melepaskan saraf simpatis dan juga dapat menurunkan ketebalan mukosa.

Oleh karena itu, latihan pernapasan hidung mungkin memiliki efek menguntungkan pada perbaikan penciuman dengan mengubah fungsi otak, peradangan, lipid darah, atau faktor konduktif atau sensorineural lainnya. Tampak bahwa dalam penelitian ini, dua belas minggu latihan aerobik treadmill teratur dengan intensitas 60% hingga 80% MHR meningkatkan sistem penciuman dengan menurunkan BMI. Meta-analisis menunjukkan bahwa BMI dan berat badan yang lebih tinggi dikaitkan dengan disfungsi penciuman. Studi baru T adalah yang pertama untuk menyelidiki efek latihan pernapasan hidung aerobik pada gangguan penciuman pada pasien asma dengan CRS. Studi ini juga menyelidiki perubahan obesitas dan fungsi pernafasan setelah latihan dan hubungan antara perubahan tersebut dan fungsi penciuman self-rated. Meskipun penggunaan kuesioner laporan diri oleh penelitian sebelumnya dapat menjadi nilai untuk penelitian ini, kepuasan pasien dengan peningkatan indra penciuman mereka memberi kami harapan dan umpan balik yang menunjukkan pelatihan latihan pernapasan hidung aerobik merupakan faktor yang efektif dalam meningkatkan penciuman.

Kesimpulan

Ini adalah studi baru yang menunjukkan bahwa pernapasan hidung selama aktivitas intensif pada pasien asma dengan CRS yang terutama bernapas melalui mulut dapat berguna dalam memodulasi kinerja penciuman.

Resum jurnal ke-2

Judul : Terapi fisik dada mengurangi pneumonia setelah cedera pernafasan

Abstrak

Membandingkan kedua kelompok menurut kejadian pneumonia, lama perawatan di ICU / rumah sakit, dan tingkat aktivitas hidup sehari-hari saat pulang. Untuk mencocokkan latar belakang subjek, kami melakukan analisis pencocokan skor kecenderungan, dan menggunakan analisis regresi Cox, kami mengevaluasi efek CPT pada kejadian pneumonia pertama. Insiden pneumonia pada kelompok CPT secara signifikan lebih rendah dan pasien ini memerlukan lebih sedikit hari sampai mereka dapat duduk di tepi tempat tidur dibandingkan dengan kelompok terapi fisik konvensional. Dalam model regresi Cox, rasio hazard untuk kejadian pertama pneumonia pada kelompok CPT .

Pendahuluan

Cedera pernafasan terjadi karena menghirup asap dan / atau gas beracun. Menghirup udara yang cukup panas untuk merusak bronkus dapat menyebabkan edema laringofaring, yang menghalangi jalan napas bagian atas dan membutuhkan intubasi segera. Edema akibat inflamasi neurogenik dapat mengakibatkan penyempitan pada luminer jalan nafas yang dapat menimbulkan masalah klinis seperti hiperemia mukosa saluran nafas, pembentukan gips obstruktif pada saluran nafas, dan bronkospasme. Fakta-fakta ini mendukung pentingnya pencegahan komplikasi pernafasan pada pasien dengan cedera pernafasan. Selain itu, pasien ini sering diintubasi untuk ventilasi mekanis akibat obstruksi jalan napas karena pembengkakan laring dan / atau faring. Lebih lanjut, jika disertai dengan cedera parenkim, oksigenasi paru mungkin tidak adekuat, dan kejadian pneumonia kimiawi dan / atau bakteri akan meningkat. Namun, hanya ada sedikit bukti kemanjuran terapi tersebut untuk pasien dalam fase akut perawatan luka bakar. Tujuan dari penelitian ini adalah untuk menjelaskan kemanjuran CPT pada penderita luka bakar fase akut dengan cedera pernafasan.

Metode

Studi retrospektif institusi tunggal pada pasien dengan cedera pernafasan yang dirawat di Rumah Sakit Organisasi Kesehatan Masyarakat Pusat Luka Bakar Jepang Chukyo, Aichi, Jepang, dari April 2004 sampai Maret 2014. Cedera pernafasan didiagnosis dengan menggunakan bronkoskopi fiberoptik dan dievaluasi berdasarkan kriteria Abbreviated Injury Scale (AIS) oleh dokter luka bakar. Kriteria inklusi untuk penelitian ini adalah 1) pasien yang membutuhkan manajemen intubasi karena cedera pernafasan; 2) pasien yang membutuhkan rawat inap lebih dari 5 hari; dan 3) pasien yang menjalani program rehabilitasi. Kriteria eksklusi adalah 1) pasien anak (usia <15 tahun). kompresi tulang rusuk ekspirasi, dan 3) instruksi tentang batuk. Drainase postural melibatkan perubahan posisi pasien untuk memastikan bahwa sisi atelektatis paru-paru naik, yang memungkinkan sekresi pernapasan bergerak di sepanjang bronkus utama melalui gravitasi, sehingga meningkatkan rasio ventilasi-perfusi, Kompresi tulang rusuk ekspirasi terdiri dari dua manuver berurutan: 1) menekan dinding dada pasien selama ekspirasi untuk menurunkan volume cadangan ekspirasi

akhir dan 2) melepaskan tulang rusuk pasien pada awal inspirasi untuk meningkatkan volume cadangan inspirasi akhir. Teknik ini mengurangi ventilasi ruang mati, meningkatkan volume tidal, dan ekspektasi sputum yang cepat. Setelah operasi cangkok kulit, dilakukan kompresi tulang rusuk ekspirasi.

Prosedur tujuan protokol

1. kompresi tulang rusuk ekspirasi
   - membuang dahak
   - pegurangan beban kerja pernapasan
   - pencegahan atelaktasis
   - tingkatkan ventilasi dengan kompresi manual

2. Drainase postural
   - hapus sekresi pernapasan denga gravitasi
3. Latihan batuk
   - keluarkan sekresi pernapsan dengan batuk, terdiri dari bantuan pernafasan, drainase postural dan senam batuk.

1. Teknik kompresi tulang rusuk expirasi manual
   - berikan tekanan secara manual ke arah gerakan fisiologis tulang rusuk selama fase expirasi.
   - hilangkan tekanan pada saat inspirasi
2. Postural drainase
   - Tentukan lokasi atelektasis dan sekresi dengan citra rontgen dada dan atau penilaian fisik.
   - ubah posisi tubuh agar atelektasis naik.
   - buang sekresi pernafasan dengan bantuan gravitasi
3. Latihan batuk
   - dorong pasien untuk batuk dahak dengan kontrol pernapasan, latihan pernapasan dalam,dan teknik ecpirasi paksa (ACBT)

Terapi fisik konvensional :
- mencegah kontraktur sendi
- mencegah kelemahan otot
- mencegah sindrom tidak digunakan
- mencegah trombosis vena dalam
- meningkatkan kemampuan aktivitas kehidupan sehari-hari

1. Latihan Rentang gerak (ROM)
   - Mulailah dalam dua hari setelah operasi dengan sedikit beban setelah berkonsultasi dengan ahli bedah.
   - kontrol nyeri dilakukan,jika diperlukan
2. Pelatihan resistensi\
   Kontrol nyeri dilakuakn,jika diperlukan
3. Mobilisasi dini
   - mulai dari posisi head up dan dilanjutkan keposisi duduk dipinggir ranjang, posisi berdiri, dan ambulasi.

Hasil

Selama masa penelitian, 132 pasien memenuhi kriteria inklusi. Kelompok CPT termasuk 85 pasien, dan kelompok kontrol termasuk 47 pasien. Selain itu, skor AIS untuk cedera pernafasan dan rasio P / F pada kelompok CPT secara signifikan lebih tinggi dibandingkan dengan kelompok kontrol. Kehadiran luka bakar dada lebih tinggi pada kelompok CPT dibandingkan pada kelompok kontrol, tetapi perbedaannya tidak signifikan.tidak menemukan perbedaan yang signifikan dalam usia atau jenis kelamin antara kedua kelompok. Hasil pasien tercantum dalam Tabel 5. Sebelum pencocokan, kejadian pneumonia lebih rendah, hari ventilasi mekanis lebih pendek, dan hari pertama pasien dapat duduk di tepi tempat tidur lebih awal pada kelompok CPT daripada di hari pertama. kelompok kontrol. Bahkan setelah analisis pencocokan skor kecenderungan, kelompok CPT dikaitkan dengan insiden pneumonia yang secara signifikan lebih rendah dan waktu lebih awal untuk duduk di tepi tempat tidur dibandingkan kelompok kontrol.

Pembahasan

Hasil mereka menunjukkan bahwa perawatan rehabilitasi luka bakar dapat mengurangi laju kontraktur akibat luka bakar dan lamanya tinggal di rumah sakit. Beberapa peneliti telah menunjukkan bahwa CPT dapat mengurangi kejadian pneumonia di ICU. menyimpulkan bahwa terapi fisik efektif dalam mengurangi durasi ventilasi mekanis dan perawatan di ICU dan rumah sakit. Selain itu, penelitian lain menunjukkan bahwa sedasi yang memadai dan mobilisasi dini mengurangi kejadian delirium dan mortalitas.

Sehubungan dengan hasil kami, pentingnya CPT untuk pasien dengan cedera inhalasi harus ditekankan untuk mencegah pernapasan dan komplikasi lainnya. Usia, jenis kelamin,% TBSA, skor APACHE II, skor AIS, rasio P / F, dan ada atau tidaknya luka bakar dada digunakan sebagai variabel, tetapi faktor lain, seperti tingkat sedasi, dapat menjadi faktor perancu yang potensial. Tingkat sedasi pada pasien mungkin tidak konsisten. Meskipun metode pencocokan skor kecenderungan mensyaratkan latar belakang pasien menjadi variabel, sulit untuk menambahkan skor sedasi sebagai variabel karena berubah setiap hari.Di masa depan, kami mungkin perlu merencanakan studi yang memperhitungkan tingkat sedasi. Selain itu, satu terapis fisik hanya dapat melakukan terapi fisik hingga 360 menit per hari. Kami berharap terapi fisik perawatan akut akan dikenal luas di Jepang dan sistem asuransinya akan direvisi. Akan aman bahkan setelah operasi cangkok selama perawatan maksimal dilakukan agar tidak mengganggu cangkok kulit saat melakukan CPT pada pasien dengan luka bakar dada. Hasil kami juga menunjukkan bahwa pengurangan insiden pneumonia mempersingkat durasi ventilasi mekanis, sehingga membutuhkan lebih sedikit hari sampai pasien dapat duduk di tepi tempat tidur dan berdiri. Beberapa laporan menunjukkan intervensi rehabilitasi awal untuk.

Resum jurnal ke-3

Judul : Manajemen fisioterapi untuk COVID-19 di rumah sakit akut: rekomendasi praktik klinis

Abstrak

Dokumen ini menguraikan rekomendasi untuk manajemen fisioterapi untuk COVID-19 di rumah sakit akut. Ini mencakup: rekomendasi untuk perencanaan dan persiapan tenaga kerja fisioterapi; alat skrining untuk menentukan kebutuhan fisioterapi; dan rekomendasi untuk pemilihan perawatan fisioterapi dan alat pelindung diri. Ini dimaksudkan untuk digunakan oleh fisioterapis dan pemangku kepentingan terkait lainnya dalam pengaturan perawatan akut yang merawat pasien dewasa dengan konfirmasi atau dugaan COVID-19

Pendahuluan

1,2 SARS-CoV-2 sangat menular. Ini berbeda dari virus pernapasan lainnya karena tampaknya penularan dari manusia ke manusia terjadi sekitar 2 hingga 10 hari sebelum individu menjadi bergejala. 2

fisioterapi kardiorespirasi berkumpul untuk mempersiapkan rekomendasi klinis dengan cepat untuk manajemen fisioterapi COVID-19. Perilaku dimodelkan setelah GRADE Adolopment Process16 dan Evidence to Decision framework17 untuk rekomendasi dan pengambilan keputusan. Panduan ini digunakan untuk menginformasikan rekomendasi konsensus yang dikembangkan sehubungan dengan pendapat ahli dari kelompok penulis. Secara apriori diputuskan untuk mengembangkan rekomendasi konsensus, mengingat sifat panduan yang sensitif waktu. Pada hari Jumat tanggal 20 Maret 2020 penulis utama mengedarkan draf rekomendasi kepada semua penulis. Semua rekomendasi dibahas dalam telekonferensi pada 22 Maret 2020. Empat belas orang berpartisipasi dalam proses pengembangan dan 66 rekomendasi dikembangkan. Manuver perekrutan Meskipun bukti saat ini tidak mendukung penggunaan rutin manuver perekrutan pada ARDS non-COVID-19, hal itu dapat dipertimbangkan pada pasien dengan COVID-19 berdasarkan kasus per kasus.

Posisi rawan Laporan anekdot dari pusat-pusat internasional yang menangani sejumlah besar pasien sakit kritis dengan ARDS terkait COVID-19 menunjukkan bahwa ventilasi rawan adalah strategi yang efektif pada pasien dengan ventilasi mekanis. Pada pasien dewasa dengan COVID-19 dan ARDS berat, ventilasi rawan selama 12 hingga 16 jam per hari direkomendasikan. 22,23 Hal ini membutuhkan sumber daya manusia yang memadai dan keahlian agar dapat dilakukan dengan aman, untuk mencegah komplikasi yang diketahui termasuk area tekanan dan komplikasi jalan napas.

Sampel dahakPada pasien berventilasi, sampel aspirasi trakea untuk diagnosis COVID-19 sudah mencukupi dan lavage bronchoalveolar biasanya tidak diperlukan. Trakeostomi Trakeostomi dapat dipertimbangkan pada pasien yang sesuai untuk memfasilitasi asuhan keperawatan dan mempercepat penyapihan ventilator, tetapi merupakan prosedur aerosol dan ini harus dipertimbangkan dalam pengambilan keputusan klinis. ARDS = sindrom gangguan pernapasan akut, COVID-19 = penyakit coronavirus 2019, ICU = unit perawatan intensif. Rekomendasi telah didukung oleh organisasi fisioterapi internasional Mengingat presentasi COVID-19 baru-baru ini, panduan klinis dapat berubah karena lebih banyak yang dipelajari tentang riwayat alami penyakit ini. Rekomendasi diekstrapolasi berdasarkan bukti terbaik untuk manajemen pasien sakit kritis saat ini dan hasil jangka panjang pada pasien penyakit kritis yang selamat. Tidak ada pasien yang termasuk dalam kelompok penulis.

Sementara rekomendasi berlaku untuk intervensi fisioterapi dalam pengaturan perawatan akut, tindak lanjut jangka panjang dari orang yang selamat diperlukan. rekomendasi untuk membantu tenaga fisioterapi untuk merencanakan dan menanggapi permintaan ini. Kotak 2 dan Tabel 1 memberikan rekomendasi untuk menentukan siapa yang harus dirawat oleh dokter fisioterapi ketika pasien memastikan atau mencurigai COVID-19.

Mobilisasi dan rehabilitasi rekomendasi untuk menerapkan kegiatan ini pada pasien dengan COVID-19. Pertimbangan alat pelindung diri, memberikan rekomendasi untuk ini. Pasien dengan dikonfirmasi atau dicurigai COVID-19 akan ditangani baik dengan droplet atau airborne. 12 Selain itu, mereka akan ditempatkan dalam isolasi. Rumah sakit sering kali dapat menampung pasien dengan tetesan atau penyebaran udara di dalam ruang isolasi khusus.Namun, ada sejumlah ruang tekanan negatif dan pod dan / atau ruangan di seluruh Australia dan Selandia Baru, 12 sehingga isolasi di dalam ruangan khusus mungkin tidak dapat dilakukan dengan COVID-19 karena banyaknya jumlah pasien yang masuk, Penting bagi fisioterapis untuk memahami berbagai jenis ruang isolasi yang ada di rumah sakit. Ruang Kelas S,

yang dapat digunakan untuk mengisolasi pasien yang mampu menularkan infeksi melalui tetesan atau rute kontak12 dan ruang Kelas N, yang berguna dalam mengisolasi pasien dengan infeksi yang dapat ditularkan melalui udara. 12 Preferensi adalah pasien dengan dikonfirmasi atau dicurigai COVID-19 untuk diisolasi di ruang Kelas N.

Di ICU terbuka atau area gabungan bangsal dengan satu atau lebih pasien dengan COVID-19, disarankan agar anggota staf di seluruh area diwajibkan untuk menggunakan tindakan pencegahan PPE yang ditularkan melalui udara. 12 Kotak 5 menjelaskan bagaimana perpindahan dari ruang isolasi khusus ke kohort terbuka dapat berkembang di dalam ICU. Rekomendasi ini dimaksudkan untuk digunakan hanya pada orang dewasa. Iterasi lebih lanjut dari rekomendasi ini akan dipublikasikan saat informasi baru muncul. Informasi yang diberikan dalam dokumen ini tidak dirancang untuk menggantikan kebijakan institusi lokal dan tidak boleh menggantikan alasan klinis untuk manajemen pasien individu. Penulis tidak bertanggung jawab atas keakuratan, informasi yang mungkin dianggap menyesatkan, atau kelengkapan informasi dalam dokumen ini. Kelompok penulis akan meninjau dan memperbarui panduan ini dalam 6 bulan, atau jika bukti penting baru muncul yang mengubah rekomendasi di sini. Pengembangan rekomendasi ini tidak mencakup masukan industri, pendanaan, atau kontribusi keuangan atau non keuangan. Tidak ada penulis yang menerima honor atau remunerasi untuk peran apa pun dalam proses pengembangan. QCRPN terlibat dalam desain pekerjaan dan pengembangan pernyataan