국내외 호흡 재활의 현황과 발전방향

강동성심병원
호흡기 내과
박용범

Pulmonary rehabilitation for chronic obstructive pulmonary disease (Review)

Authors' conclusions

Pulmonary rehabilitation relieves dyspnoea and fatigue, improves emotional function and enhances the sense of control that individuals have over their condition. These improvements are moderately large and clinically significant. Rehabilitation serves as an important component of the management of COPD and is beneficial in improving health-related quality of life and exercise capacity. It is our opinion that additional RCTs comparing pulmonary rehabilitation and conventional care in COPD are not warranted. Future research studies should focus on identifying which components of pulmonary rehabilitation are essential, its ideal length and location, the degree of supervision and intensity of training required and how long treatment effects persist. This endeavour is important in the light of the new subgroup analysis, which showed a difference in treatment effect on the CRQ between hospital-based and community-based programmes but no difference between exercise only and more complex pulmonary rehabilitation programmes.

Cochrane Database of Systematic Reviews 2015, Issue 2. Art. No.: CD003793.

국내 현황

Tuberculosis and Respiratory Diseases
결핵 및 호흡기질환, Vol. 52, No. 6, Jun, 2002
□원 저□

만성 폐질환 환자에서 재택 호흡재활치료방법 개발 연구

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ORIGINAL ARTICLE
Respiratory Diseases

JKMS

http://dx.doi.org/10.3346/jkms.2013.28.5.738 • *J Korean Med Sci 2013; 28: 738-743*

Effects of Home-Based Pulmonary Rehabilitation with a Metronome-Guided Walking Pace in Chronic Obstructive Pulmonary Disease

Sung-soon Lee,[1,*] Changhwan Kim,[2,*] Young-Soo Jin,[3] Yeon-Mok Oh,[4] Sang-Do Lee,[4] Yun Jun Yang,[5] and Yong Bum Park[2]

Despite documented efficacy and recommendations, pulmonary rehabilitation (PR) in chronic obstructive pulmonary disease (COPD) has been underutilized. Home-based PR was proposed as an alternative, but there were limited data. The adequate exercise intensity was also a crucial issue. The aim of this study was to investigate the effects of home-based

대한내과학회지: 제 87 권 제 6 호 2014 http://dx.doi.org/10.3904/kjm.2014.87.6.690

탄광부 진폐증 환자에서 맞춤형 호흡 재활 치료 프로그램의 임상적 효용성

서울의료원 [1]내과, [2]재활의학과, 근로복지공단 태백산재병원 [3]내과, [4]재활의학과, 근로복지공단 안산산재병원 [5]내과, [6]재활전문센터

이정민[1] · 박인기[1] · 김종규[2] · 전근재[3] · 김주령[4] · 김지홍[5] · 정 희[6] · 최병용[1]

International Journal of COPD

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Open Access Full Text Article

ORIGINAL RESEARCH

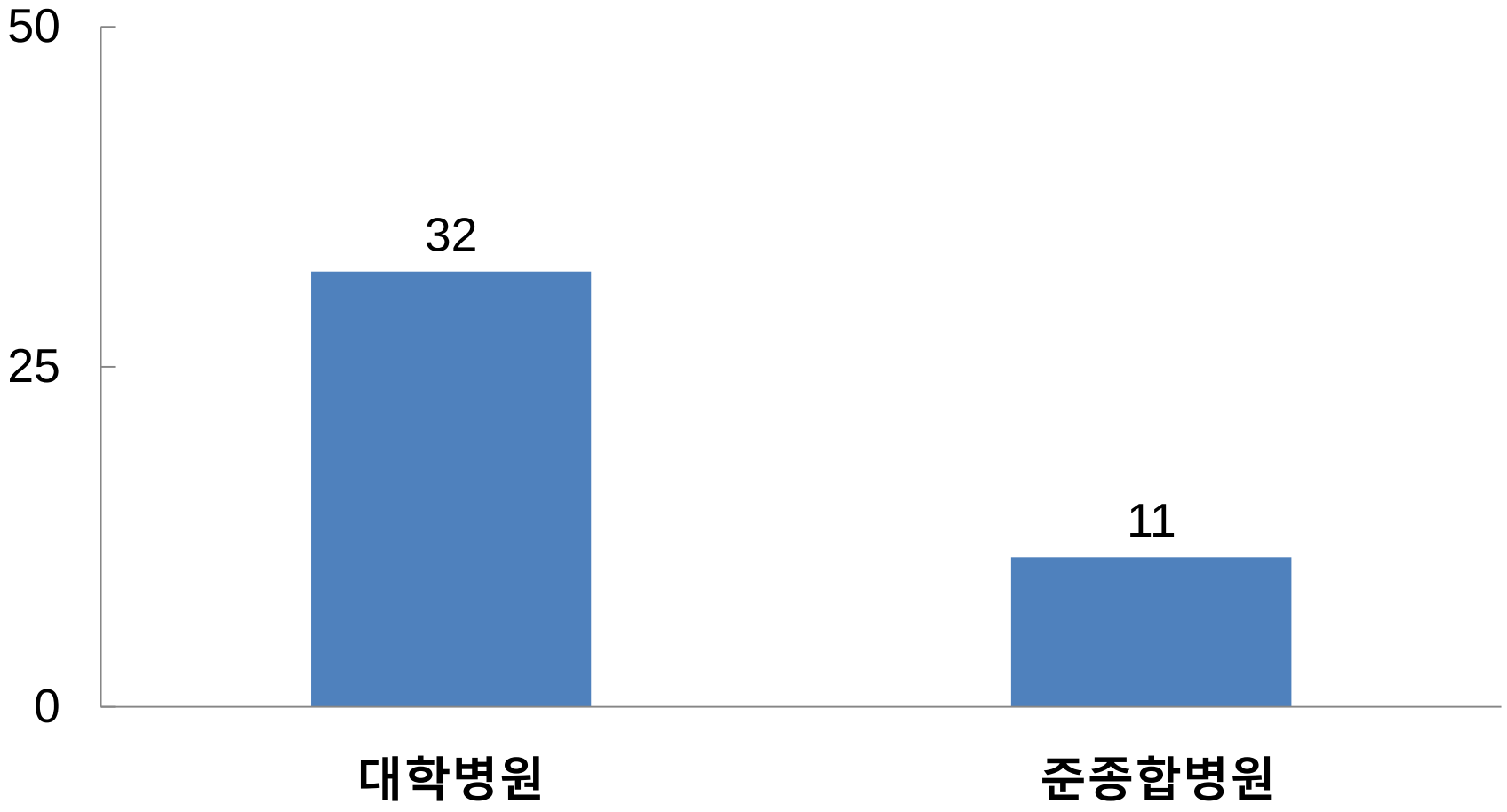
Analysis of diaphragmatic movement before and after pulmonary rehabilitation using fluoroscopy imaging in patients with COPD

This article was published in the following Dove Press journal:
International Journal of COPD
27 January 2015
Number of times this article has been viewed

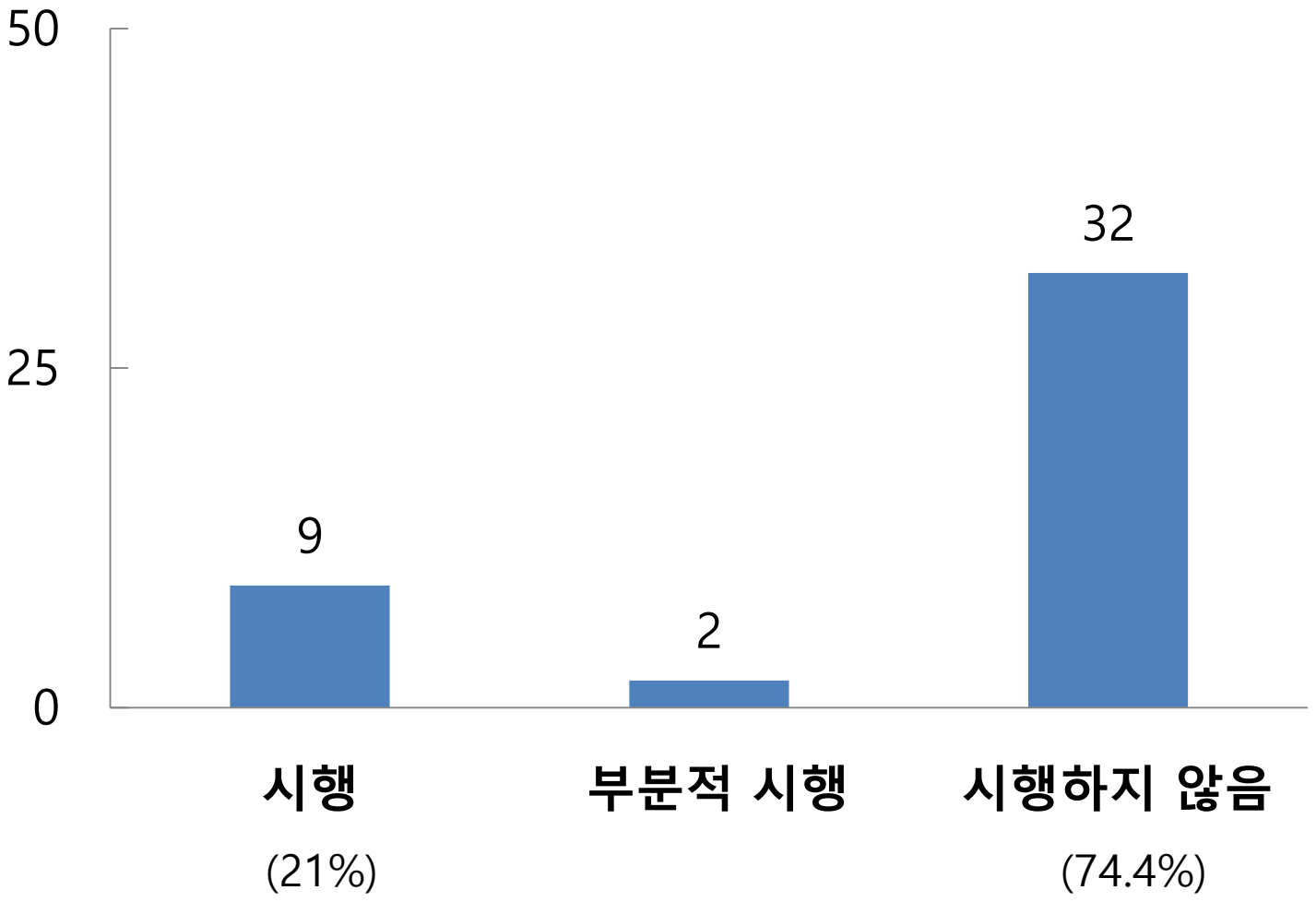
Eun Mi Chun[1]
Soo Jeong Han[2]
Hitesh N Modi[3]

Background: The diaphragm is the principal inspiratory muscle. The purpose of this study was to assess improvements in diaphragmatic movement before and after pulmonary rehabilitation in patients with chronic obstructive pulmonary disease (COPD), using a fluoroscopy-guided

2011년 6월
설문 응답 (43개 병원)



호흡재활 시행여부



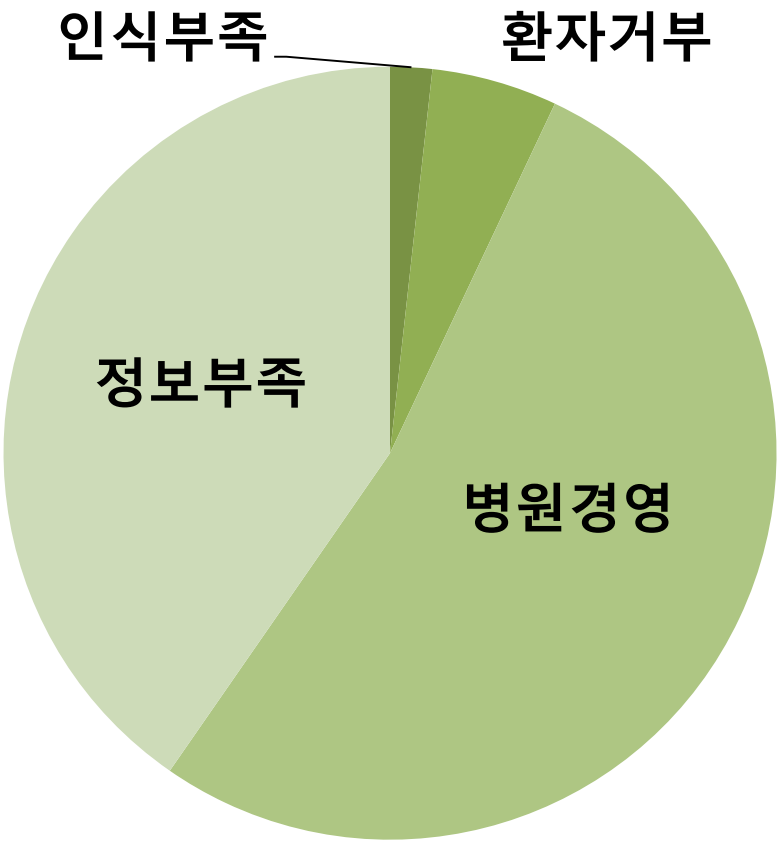
호흡 재활 프로그램 (9개 병원)

	외 래	입 원
호흡 재활 횟수	1회/week	5-7회/week
1회 호흡 재활 시간	30분	30분
호흡 재활 전체 기간	2주	1-2주

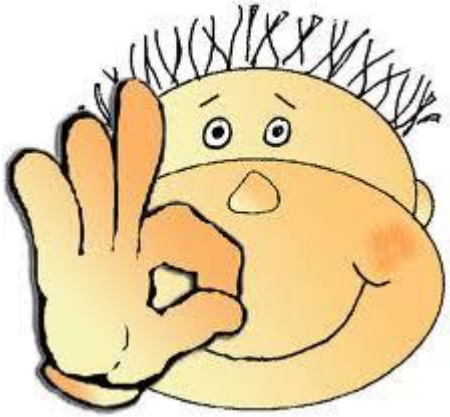
호흡 재활 프로그램 (9개 병원)

대상 환자	운동 종류	측정 지표	추적 관찰 지표
COPD (mc) Asthma ILD Bronchiectasis	Walking Cycling Strength training Breathing exercise Inspiratory muscle training	PFT EKG 6 min walk Quality of life questionnaire	6 min walk Exercise stress test

호흡재활을 시행하지 않는 이유

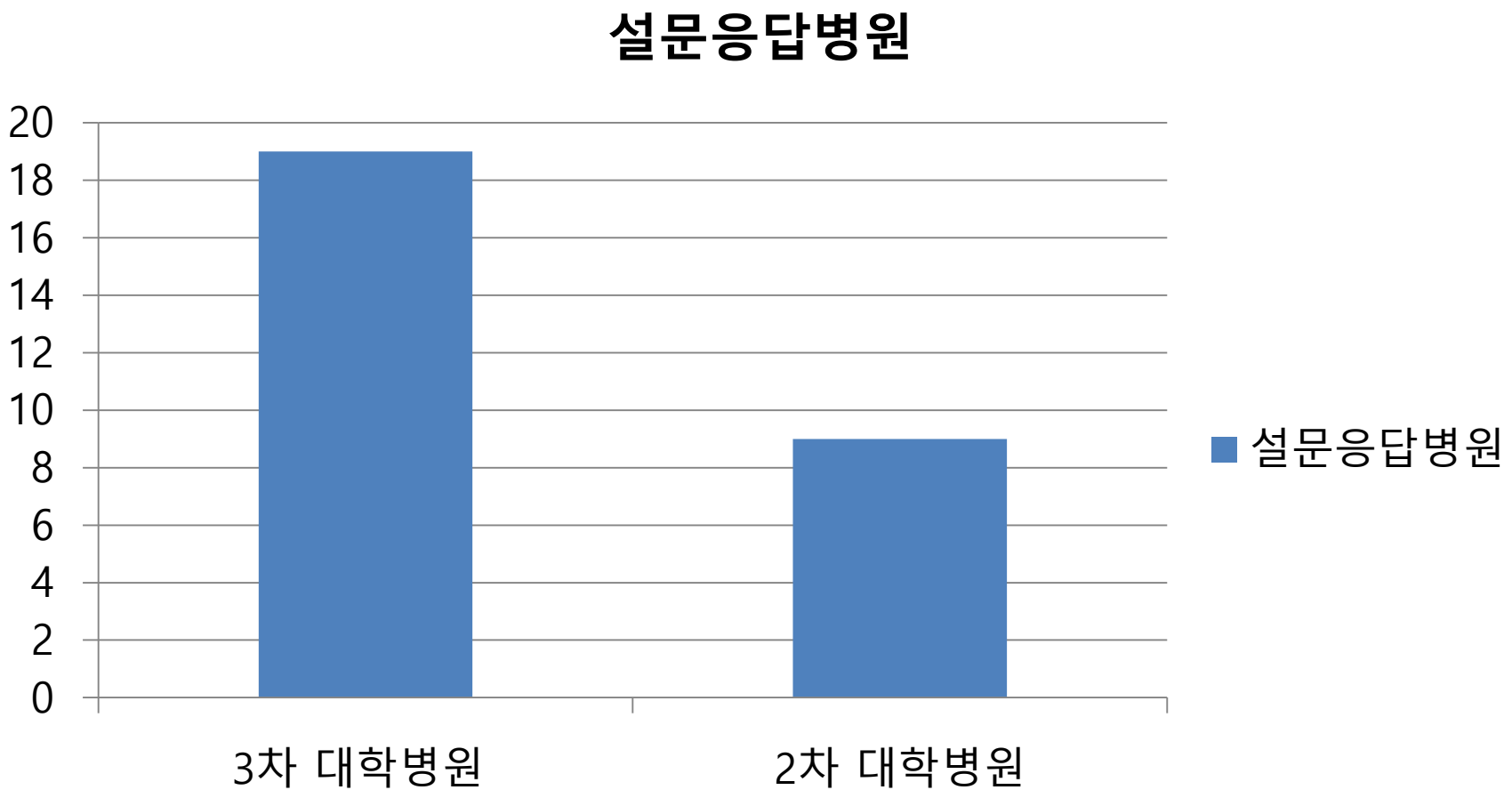


호흡재활이 보험급여가 된다면 호흡재활을 활성화 시킬 의향이 있으십니까?



전원 (43 개 병원) : OK

2013년 12월 26일-2017년 1월 15일 설문 응답 (28개 병원)



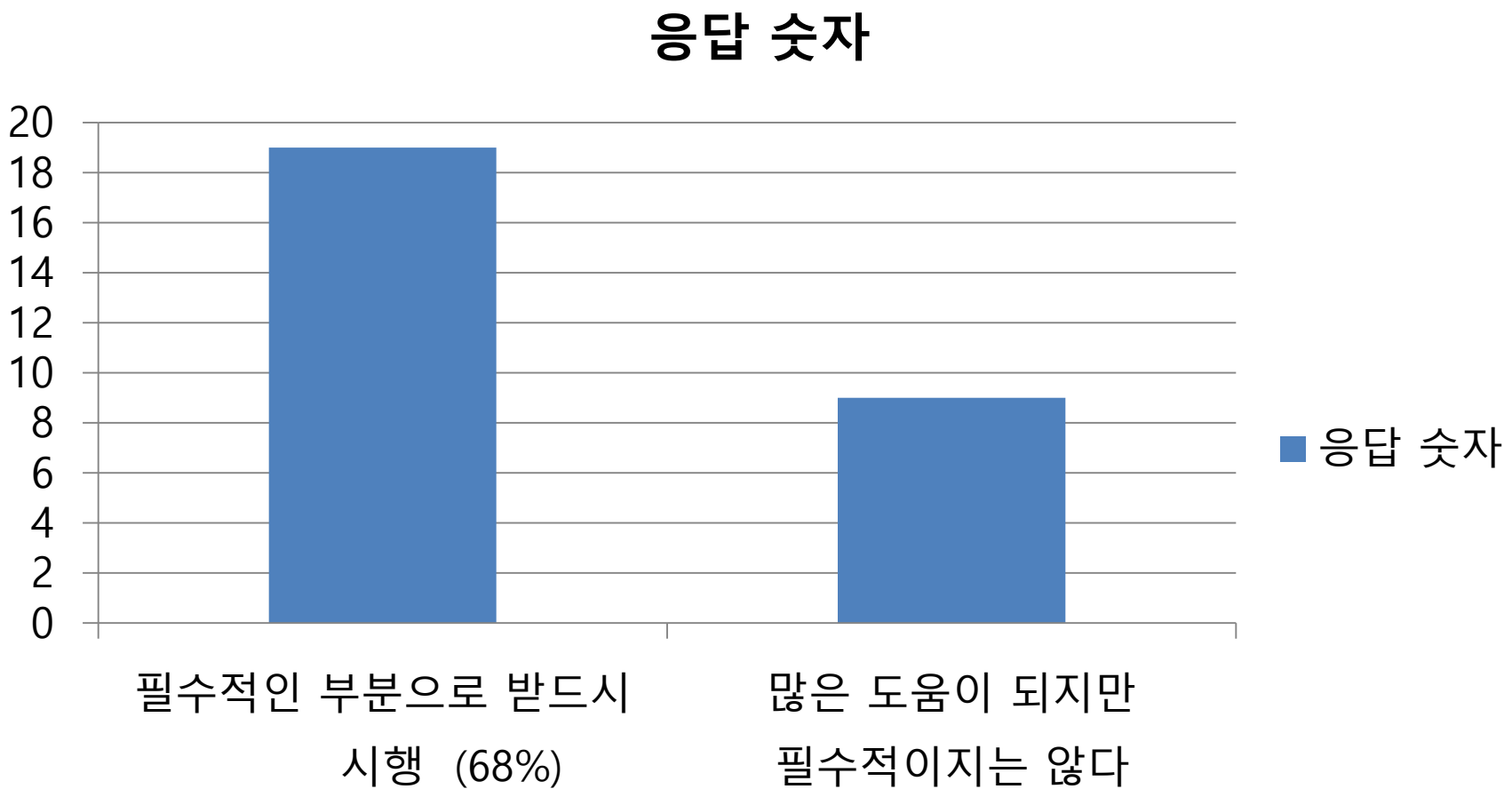
호흡재활

- 7개 병원 (+) : 25%
- 주로 입원환자와 외래환자를 대상
- 1 병원 : 재택호흡재활치료를 시행
- 5개 병원 : 프로토콜 (+)
- 3개 병원 : 재활팀 운영(+)
- 1 병원 : 12주 호흡재활프로그램 (+)

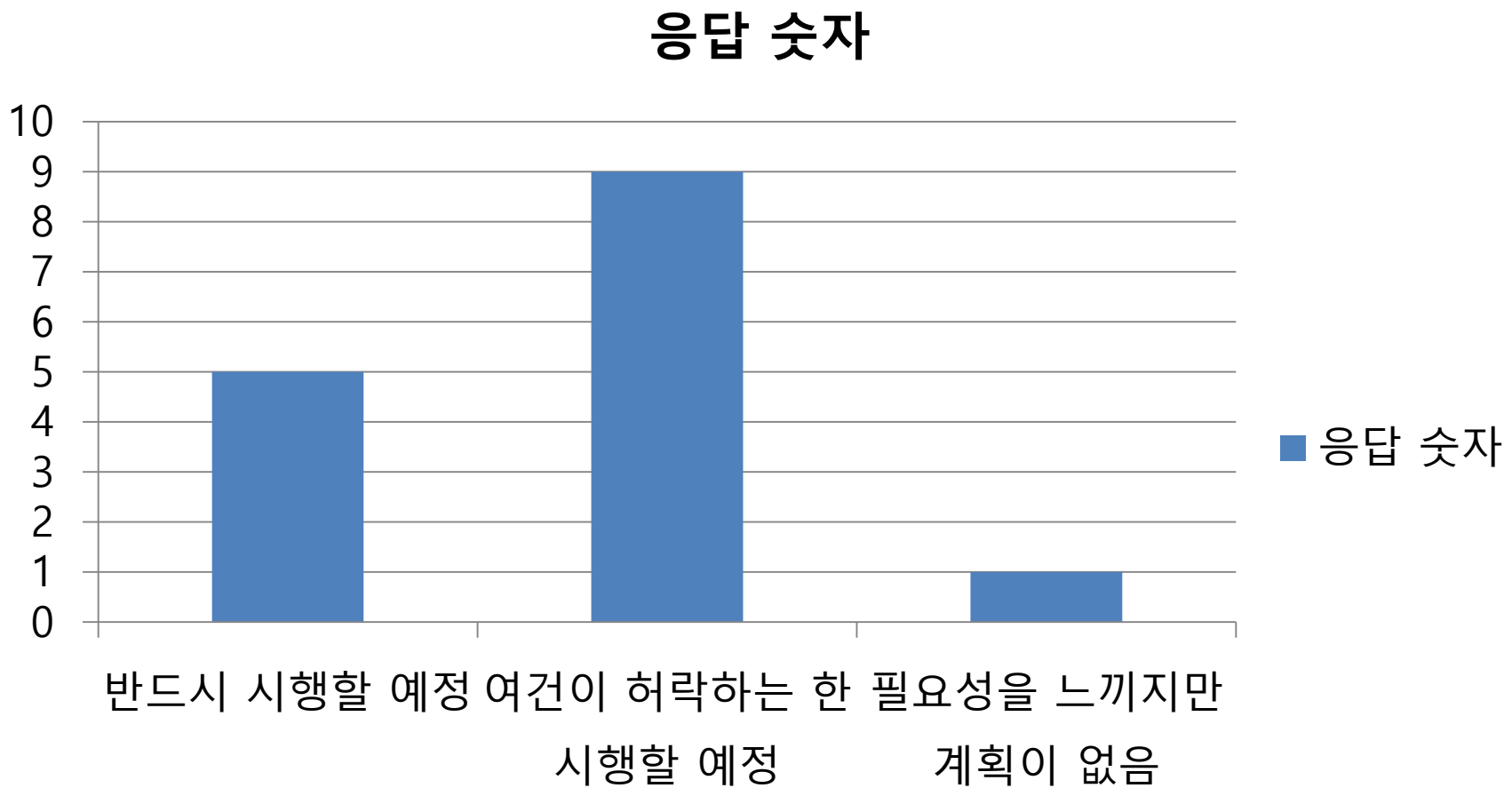
- 입원환자 : 주 3-5회, 한번에 10-60분정도, 1-2주
- 외래환자 : 주 1-3회, 한번에 10-60분정도, 2-8주의 다양

- 운동치료와 환자 교육이 주요 프로그램
- 운동치료 : 상하지 지구력, 근력운동과 호흡근 운동

호흡재활 필요성


응답 숫자
20
18
16
14
12
10
8
6
4
2
0
필수적인 부분으로 받드시 시행 (68%)
많은 도움이 되지만 필수적이지는 않다
응답 숫자

향후 호흡재활 시행


응답 숫자
10
9
8
7
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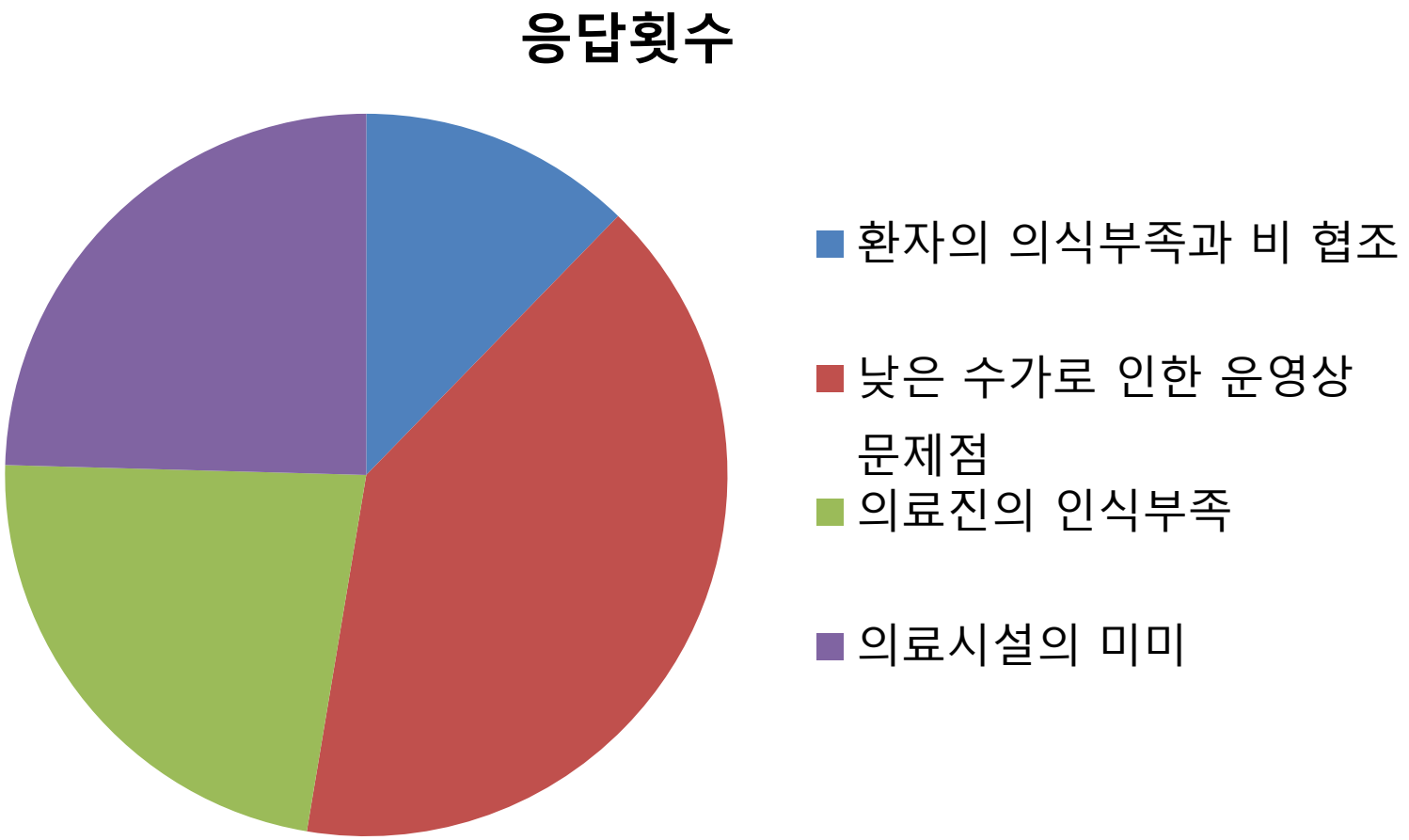
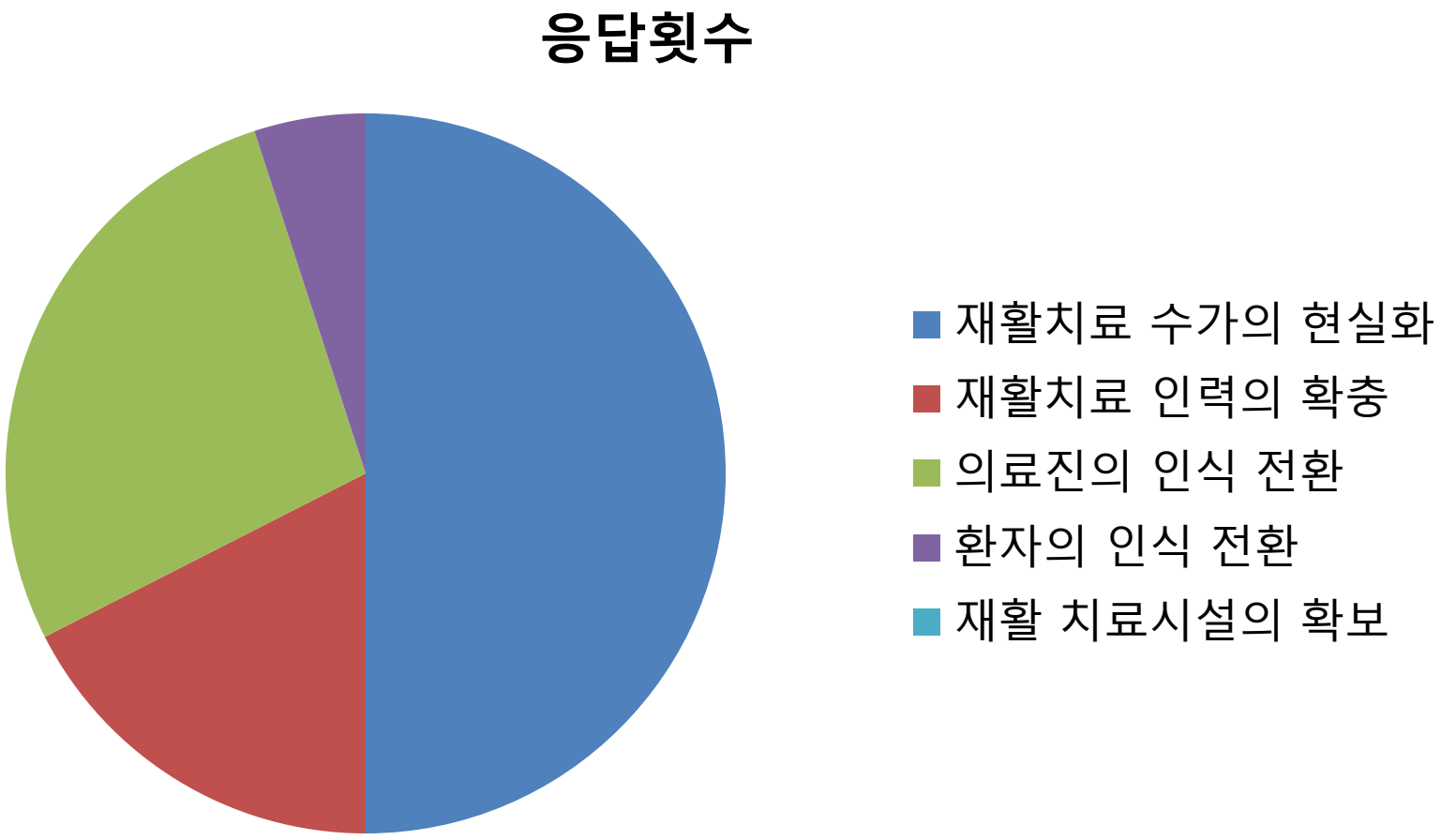
4
3
2
1
0
반드시 시행할 예정
여건이 허락하는 한 시행할 예정
필요성을 느끼지만 계획이 없음
응답 숫자

호흡재활을 시행하지 않는 이유



호흡재활 활성화 방안



외국 현황

Pulmonary rehabilitation in Canada: A report from the Canadian Thoracic Society COPD Clinical Assembly

Program characteristics (n=129)

Type of program	n (%)
Hospital-based outpatient	78 (60)
Health centre	31 (24)
Community based	10 (8)
Hospital-based inpatient	5 (4)
Telehealth	3 (2)
Home based	2 (2)
Completion rates, % of patients	
81–100	52 (41)
61–80	58 (46)
41–60	13 (10)
21–40	3 (2)
0–20	1 (1)
Funding sources*	
Hospital or institution	50 (39)
Regional Health Authority	48 (37)
Provincial ministry of health	34 (26)
Participant fee	15 (12)
Other (pharmaceutical company, private donation)	18 (14)

Can Respir J. 2015 May-Jun;22(3):147-52

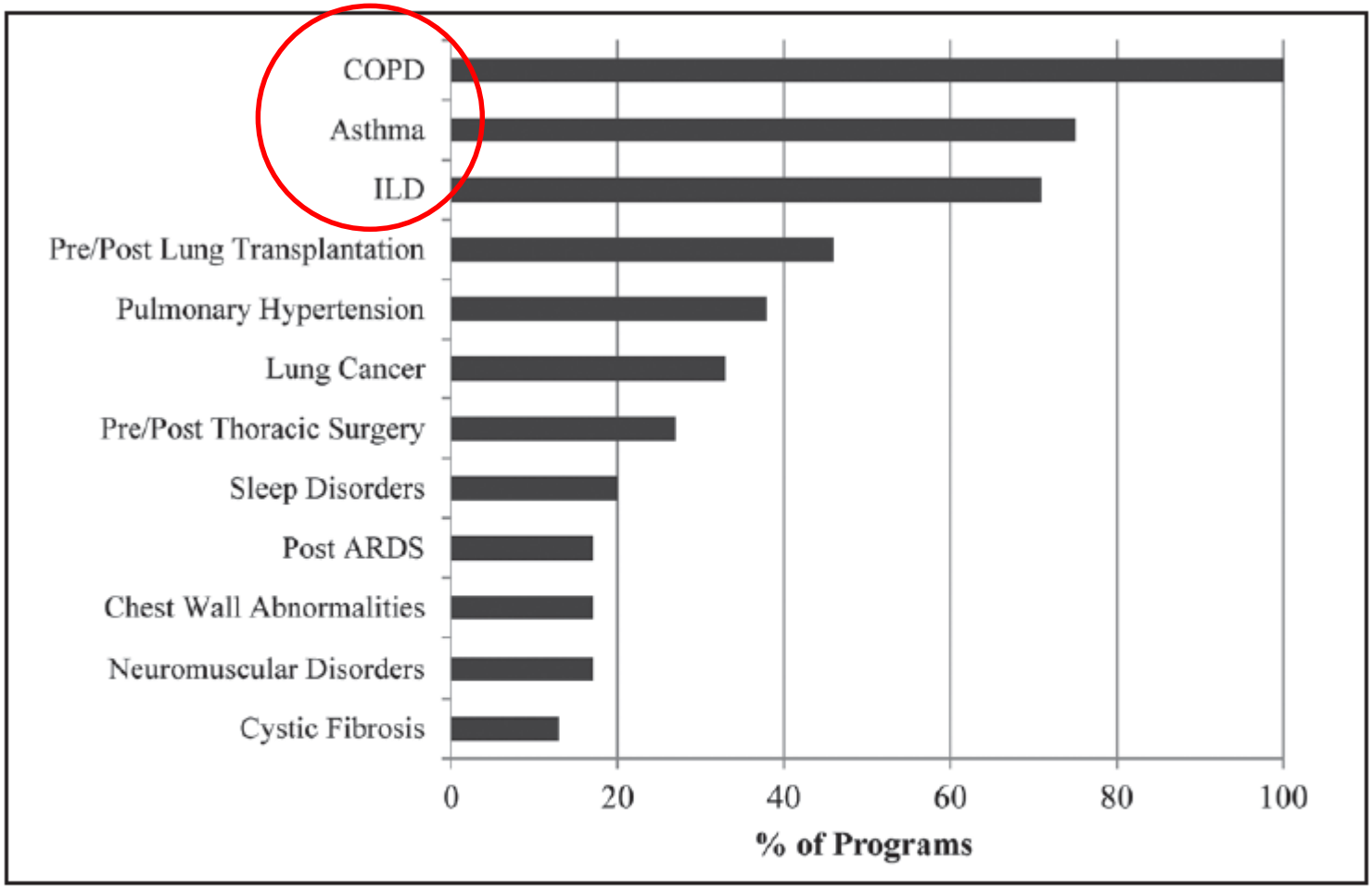


Figure 3) *Percentage of programs who report admitting patients with different respiratory-related diagnoses. ARDS Acute respiratory distress syndrome; COPD Chronic obstructive pulmonary disease; ILD Interstitial lung disease*

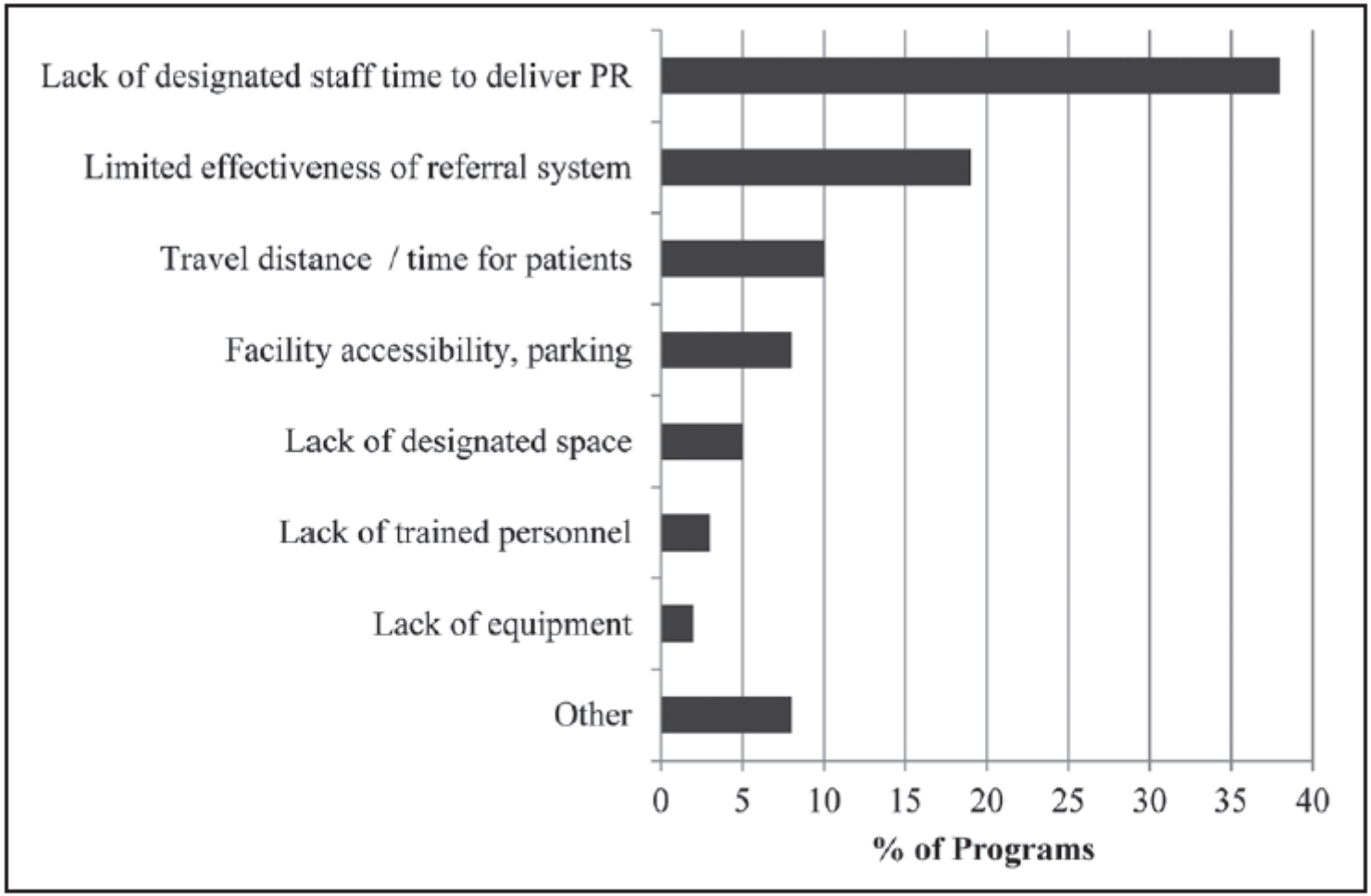


Figure 2) *Program-reported barriers to increasing access to pulmonary rehabilitation (PR)*

Pulmonary rehabilitation in Canada: A report from the Canadian Thoracic Society COPD Clinical Assembly

RESULTS: A total of 155 facilities in Canada offered PR, of which 129 returned surveys (83% response rate). PR programs were located in all provinces, but none in the three territories. Most (60%) programs were located in hospital settings, 24% were in public health units and 8% in recreation centres. The national capacity of programs was estimated to be 10,280 patients per year, resulting in 0.4% of all Canadians with chronic obstructive pulmonary disease (COPD) and 0.8% of Canadians with moderate to severe COPD having access to PR. COPD, interstitial lung disease, and asthma were the most common diagnoses of patients. The majority of programs had at least four health care professionals involved; 9% had only one health care professional involved.

Can Respir J. 2015 May-Jun;22(3):147-52

Pulmonary Rehabilitation Exercise Prescription in Chronic Obstructive Lung Disease

The exact number of PR providers in the United States is not known but is estimated at 1000 programs by the AACVPR. Given the lack of the exact number of US PR programs and the potential that cardiac rehabilitation providers may also be providing PR, the present survey was sent to the entire AACVPR membership (approximately 3000 individuals) via an e-mail message with invitation to complete via surveymonkey.com.

Participation and response were voluntary. Three hundred eighty-one responses were returned (12.7%). Low return rate could reflect the large number of AACVPR members providing exclusively cardiac rehabilitation.

Journal of Cardiopulmonary Rehabilitation and Prevention 2013;33:314-322

Table 2 • Pulmonary Rehabilitation Exercise Prescription Survey Questions and Responses, % (n)

Questions	Yes	No
Do you develop an exercise prescription for your PR patients? (n = 381, 100%)	97.1 (370)	2.9 (11)
If so, which components are included? Check all that apply (n = 339)		
Mode	95.3 (323)	
Frequency	95.6 (324)	
Duration	94.7 (321)	
Training intensity	84.7 (287)	
Progression	81.7 (277)	
Continuous exercise	41.0 (139)	
Interval exercise	42.5 (144)	
Resting intervals	34.8 (118)	
Training intensity at baseline and progression over time	46.3 (157)	
Supervision	49.9 (169)	
If intensity is measured, check which measure is used (n = 323)		
Borg 10-point Dyspnea Scale	30.3 (98)	
Rating of perceived exertion	29.1 (94)	
Target heart rate	7.7 (25)	
Metabolic equivalents	10.5 (34)	
Percentage of maximum target heart rate	2.8 (9)	
Percentage of maximum work rate	0.3 (1)	
Percentage of heart rate reserve	0	
Watts	1.5 (5)	
Incremental cardiopulmonary exercise test	1.5 (5)	
6-Minute Walk Test	15.8 (51)	
Constant work rate cardiopulmonary exercise test	0.3 (1)	

Do you use any protocol for resistance training? (n = 334)	40.4 (135)	59.6 (199)
Describe indicators or methodology used to determine progression of exercise. (n = 264)		
Do you use exercise testing to establish exercise prescription? (n = 315)	61.3 (193)	38.7 (122)
6-Minute Walk Test	91.4 (170)	
Endurance Shuttle Walk Test	0.5 (1)	
Incremental Shuttle Walk Test	0.5 (1)	
Constant work rate cardiopulmonary exercise test	0.5 (1)	
Incremental cardiopulmonary exercise test	7.0 (13)	
How do you determine exercise goals for patients? (n = 292)		
Duration	87.3 (255)	
Distance	35.3 (103)	
Metabolic equivalents (intensity)	45.9 (134)	
Is a formal exercise class that addresses physical activity and concepts of exercise prescription offered to patients? (n = 312)	70.5 (220)	29.5 (92)

Which disorders receive care in your PR program? (n = 306)	
COPD	99.7 (305)
Asthma	88.6 (271)
Interstitial lung disease (includes IPF, sarcoid, scleroderma, etc)	95.4 (292)
Lung cancer	75.5 (231)
Chest wall abnormalities (scoliosis, kyphosis, etc)	48.7 (149)
Thoracic surgery	54.6 (167)
Neuromuscular disorders (ALS, Parkinson disease, etc)	25.2 (77)
What best describes your PR program? (n = 303)	
Hospital-based	94.7 (287)
Free-standing	4.6 (14)
Academic affiliation	0.7 (2)

Differences in content and organisational aspects of pulmonary rehabilitation programmes

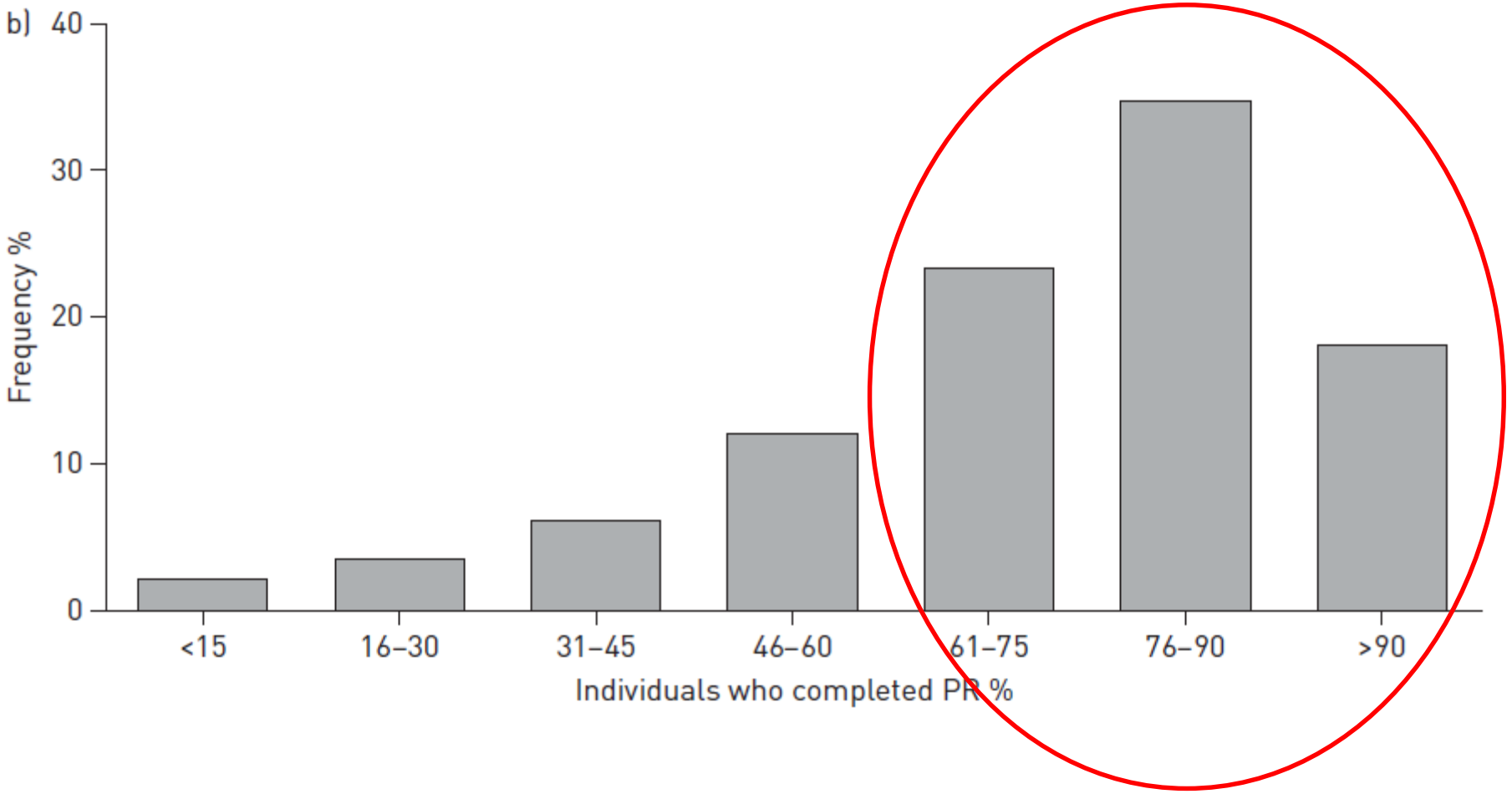
The survey : completed by representatives of 430 centres from 40 countries (주로 Europe and north america)

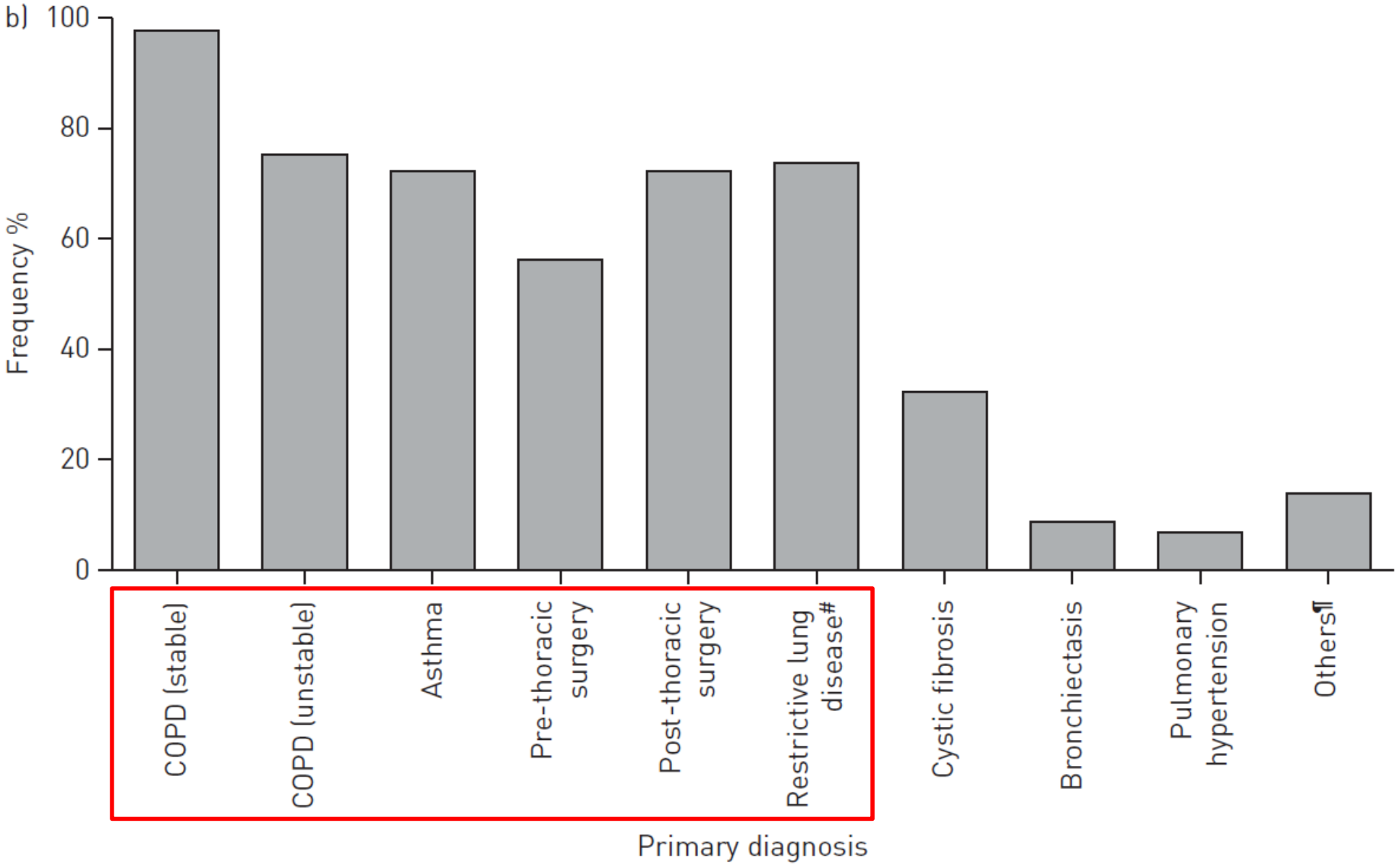
→ **large differences** among pulmonary rehabilitation programmes across continents for all aspects that were surveyed,
including
the setting,
the case mix of individuals with a chronic respiratory disease,
composition of the pulmonary rehabilitation team,
completion rates,
methods of referral and types of reimbursement.

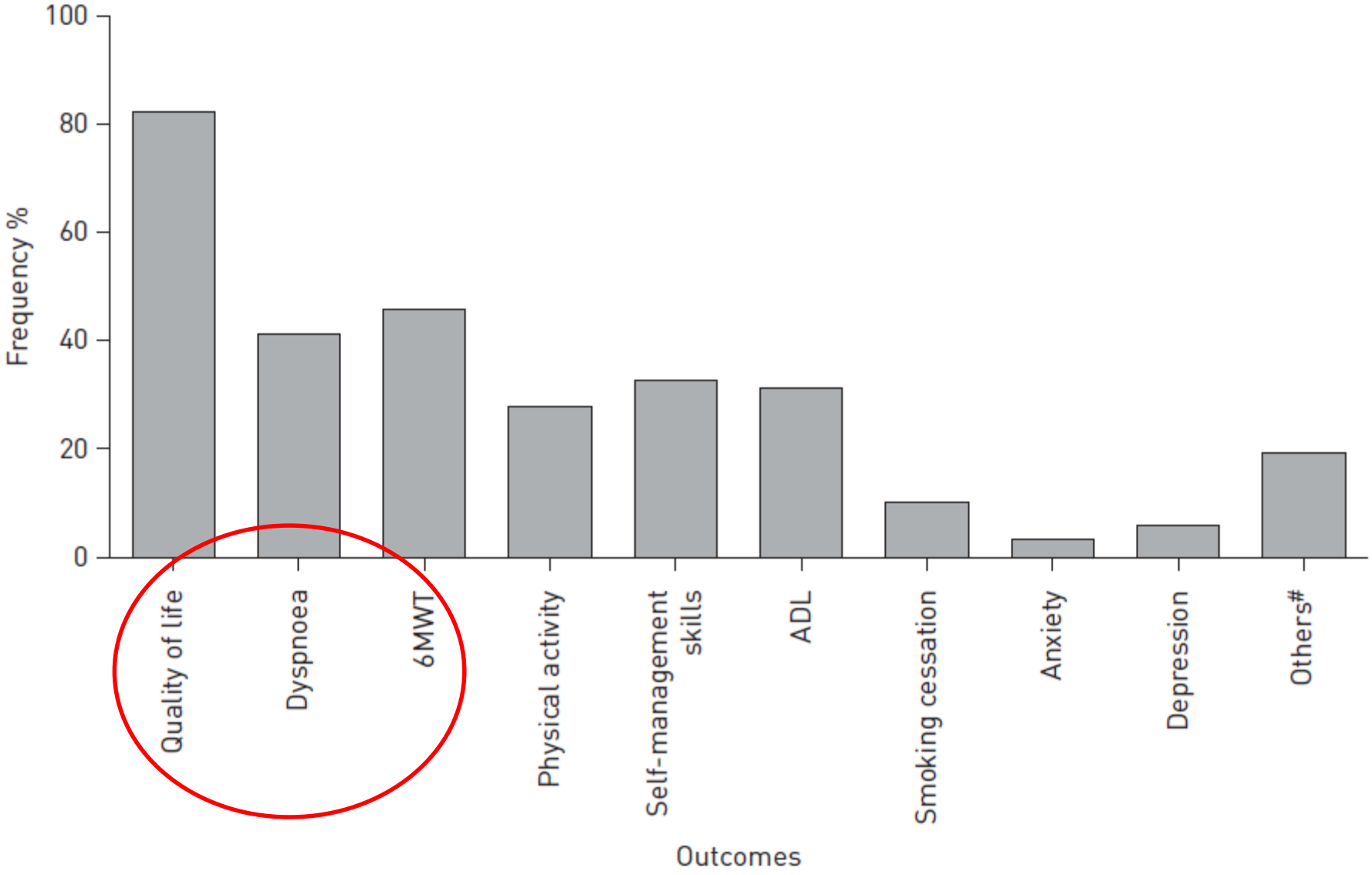
Eur Respir J 2014; 43: 1326–1337

TABLE 1 European *versus* North American pulmonary rehabilitation programmes

	Europe	North America
Subjects n	188	187
Setting		
Outpatient	48.9	71.7
Inpatient	16.0	3.7
Both	29.3	23.0
Other	5.8	1.6
Types of reimbursement[#]		
Own insurance	38.3	92.5
Government	62.8	38.5
Own money	10.6	43.3
Work insurance	3.7	19.3
Not funded	2.7	0.5
Other		0.5
Pulmonary rehabilitation team members[¶]		
Chest physician	87.8	62.0
Physiotherapist	95.2	17.1
Occupational therapist	36.2	17.1
Social worker	42.6	24.1
Psychologist	53.7	8.6
Dietician	76.1	93.5
Exercise physiologist	25.5	62.6
Internist	11.7	8.0
Cardiologist	43.0	20.0
General practitioner	18.1	13.4
Pharmacist	22.9	18.2
Nurse	68.1	64.2
Respiratory therapist	1.6	59.9
Number of team members	6 [4–8]	4 [3–6]


b)
40
30
20
10
0
Frequency %
<15
16–30
31–45
46–60
61–75
76–90
>90
Individuals who completed PR %


b)
100
80
60
40
20
0
Frequency %
COPD (stable)
COPD (unstable)
Asthma
Pre-thoracic surgery
Post-thoracic surgery
Restrictive lung disease#
Cystic fibrosis
Bronchiectasis
Pulmonary hypertension
Others¶
Primary diagnosis


100
80
60
40
20
0
Frequency %
Quality of life
Dyspnoea
6MWT
Physical activity
Self-management skills
ADL
Smoking cessation
Anxiety
Depression
Others#
Outcomes

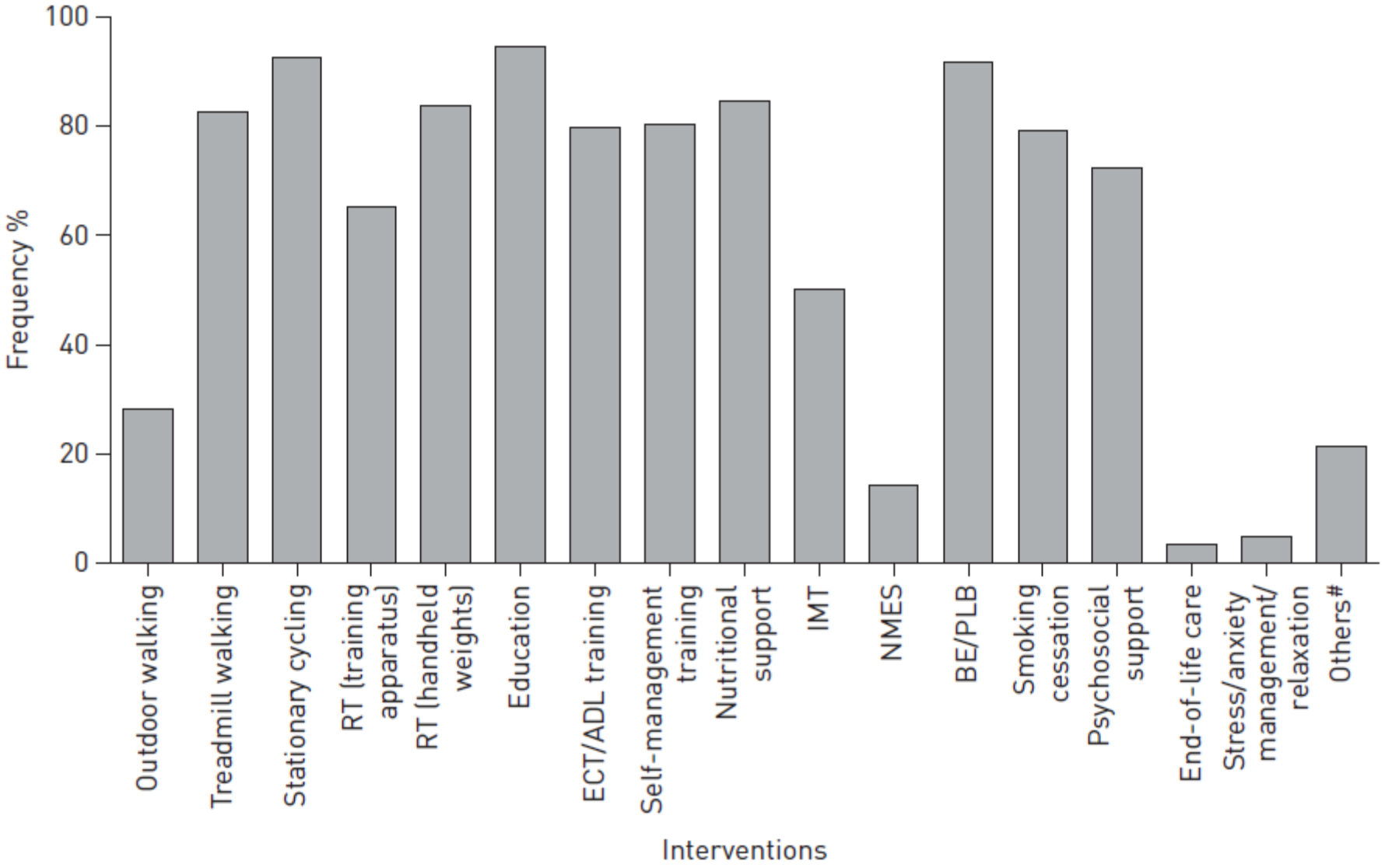


FIGURE 6 Frequency of the types of interventions in the pulmonary rehabilitation programme. RT: resistance training; ECT: energy conservation techniques; ADL: activities of daily life; IMT: inspiratory muscle training; NMES: neuromuscular electrical stimulation; BE: breathing exercise; PLB: pursed lips breathing; #: includes, but not limited to, other types of physical exercise training, goal setting, airway clearance techniques, water therapy, psychomotor therapy, enhanced art therapy, arm cranking and support group.

발전 방향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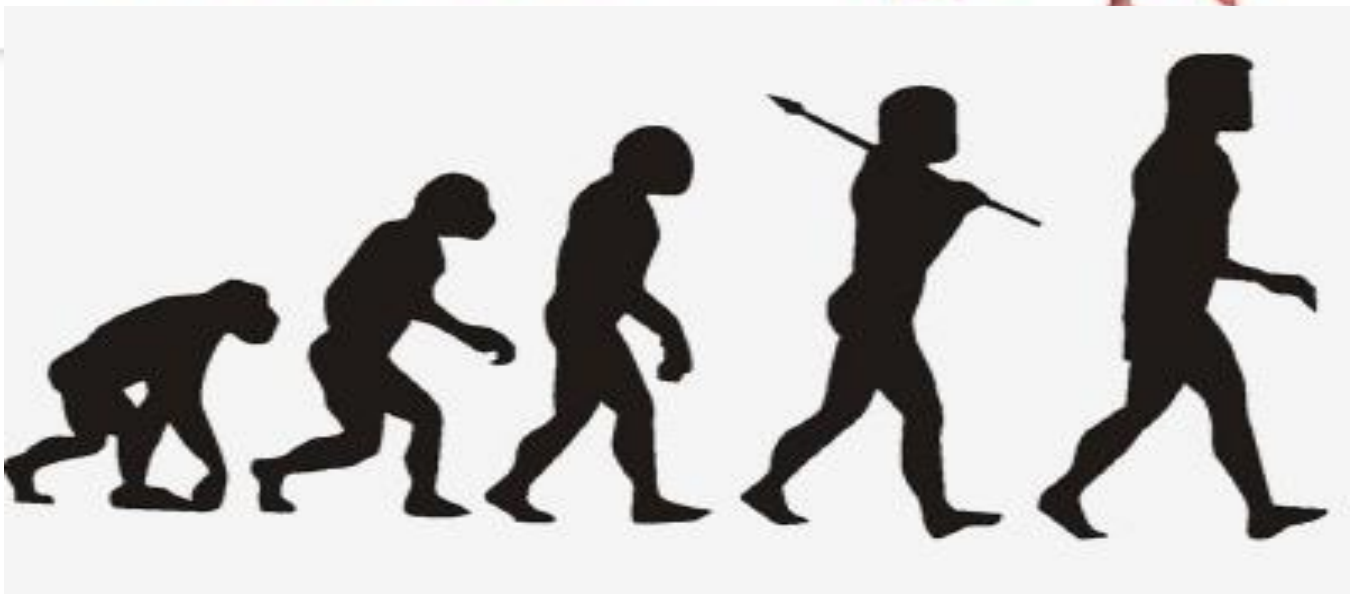

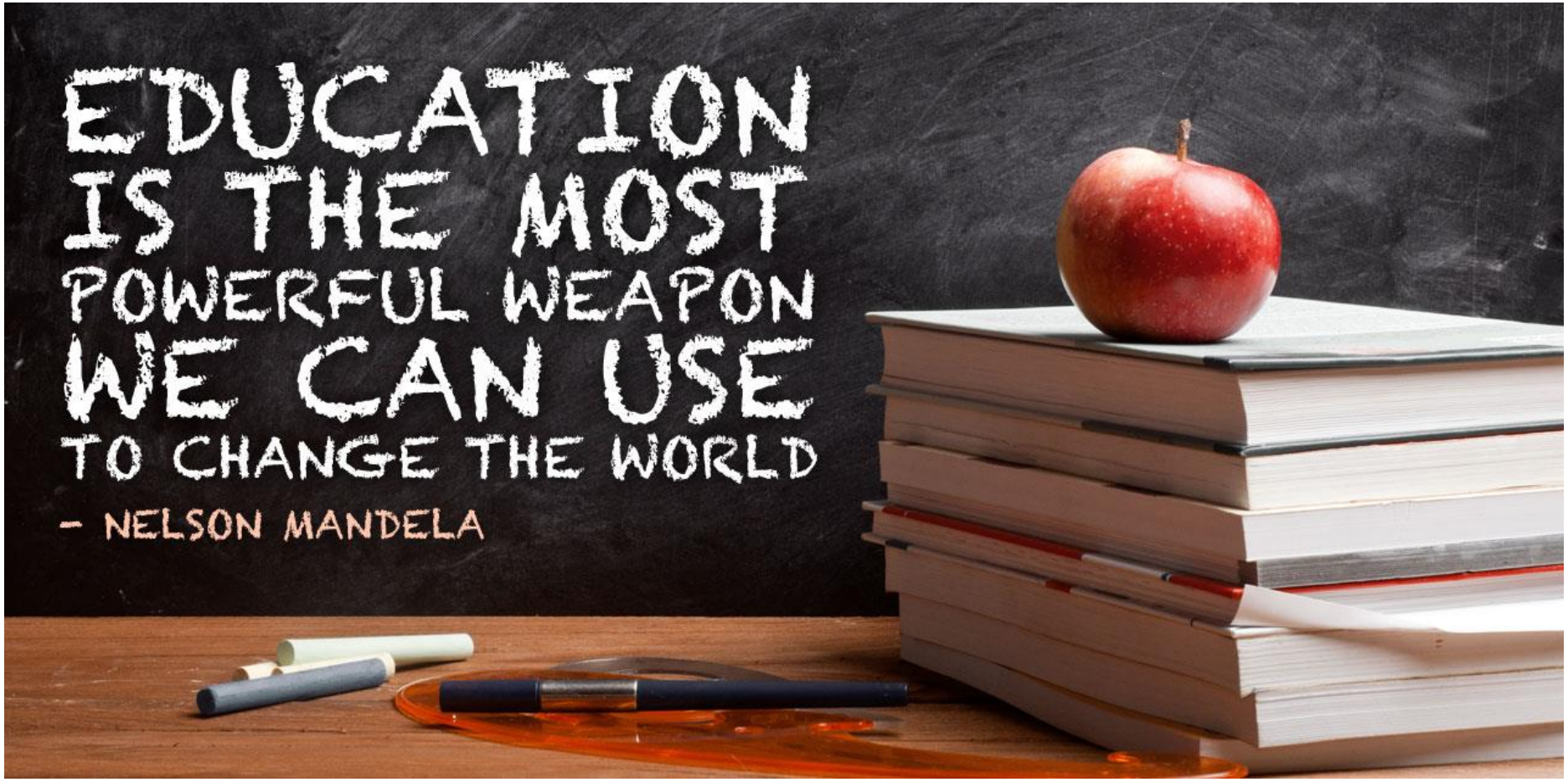
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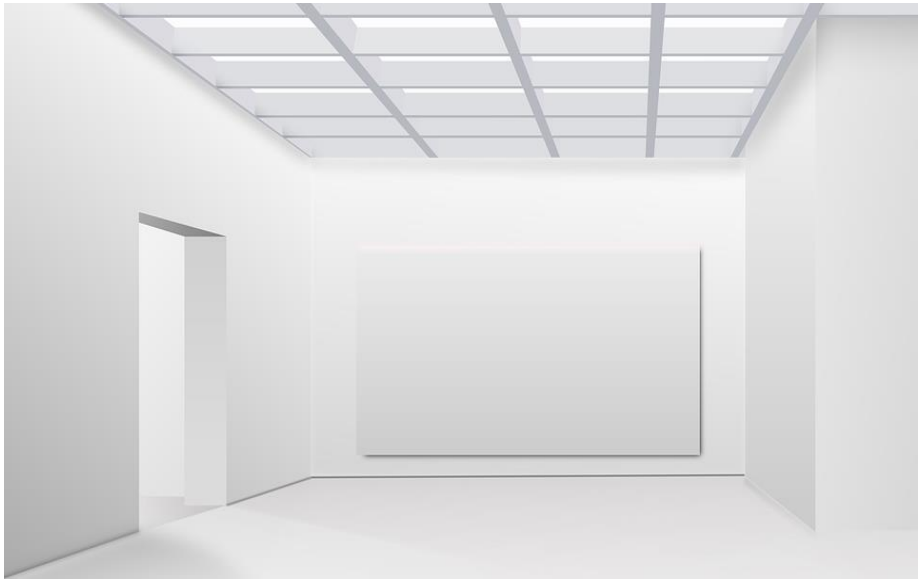
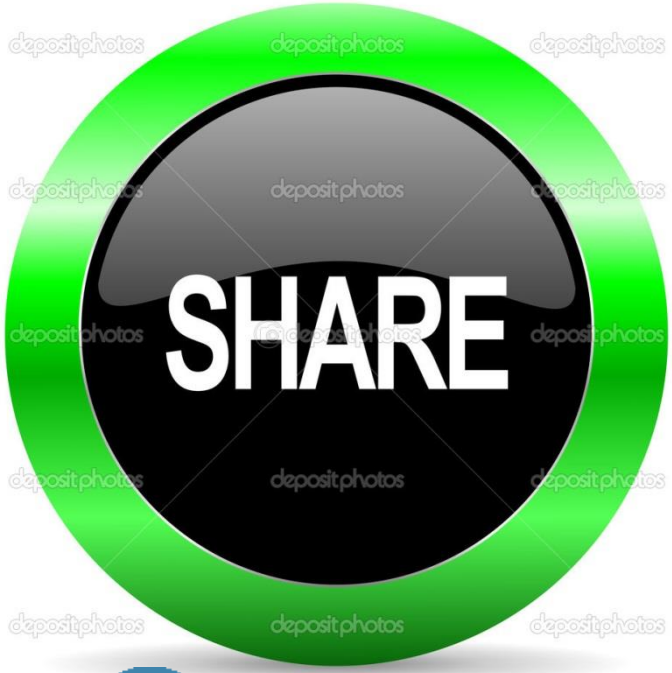
POWERFUL WEAPON
WE CAN USE
TO CHANGE THE WORLD
- NELSON MANDELA


DEVOPS

Awareness


Set up

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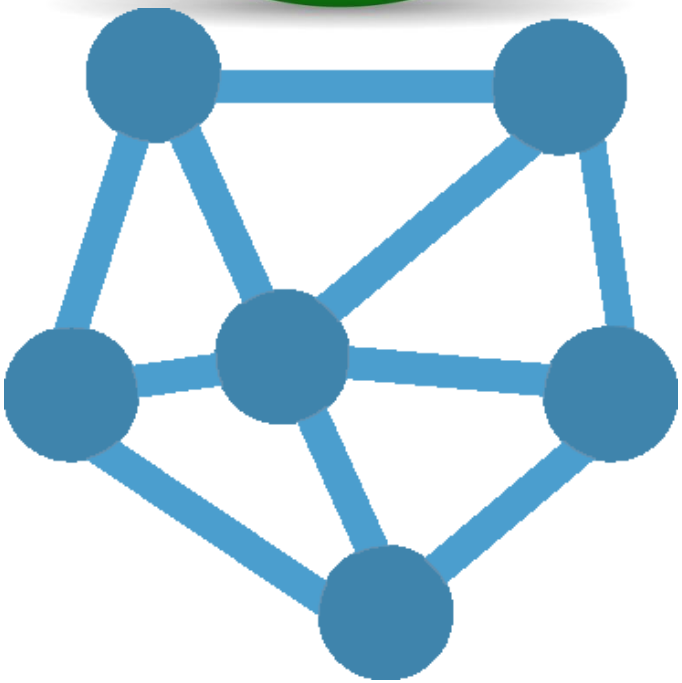


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