

Questionnaire

Incentive spirometer: aspects of the clinical practice of physical therapists from Minas Gerais working with patients with respiratory dysfunction

➤ Section A: questions regarding individual professional experience of the physiotherapists

- Age:

- Working place characteristics:

() Hospital or () Non-hospital institution

() Public or () Private

- Working hours per week:

() 20 hours

() 30 hours

() 40 hours

() Other

- Highest professional degree:

() Bachelor

() Postgraduate degree

() Masters

() Doctorate

- Time of professional experience working with patients with respiratory dysfunctions:

FOR ALL THE QUESTIONS BELOW (EXCEPT QUESTION 9), PLEASE CHOOSE ONLY ONE OF THE ALTERNATIVES. DO NOT LEAVE ANY QUESTION UNANSWERED.

- **Section B: questions that investigate the physical therapists' clinical concepts regarding the use of incentive spirometers.**

QUESTION 1

Which of the alternatives below best summarizes the aims of the incentive spirometry?

- a) Ventilation/perfusion ratio improvement; respiratory muscles strengthening; collapsed alveoli reopening.
- b) Ventilation/perfusion ratio improvement; collapsed alveoli reopening; pulmonary reexpansion.
- c) Collapsed alveoli reopening; pulmonary reexpansion; pulmonary edema reabsorption.
- d) Secretion elimination; collapsed alveoli reopening; respiratory muscles strengthening.
- e) Pulmonary reexpansion; pulmonary edema reabsorption; airway clearance.

Expected answer: B

QUESTION 2

In which of the situations below should the incentive spirometer be indicated?

- a) Pre and post-operative for thoracic and upper and lower abdominal surgeries.
- b) Patients in coma with pulmonary ventilation dysfunction; atelectasis already present; respiratory muscle weakness.
- c) Pre and post-operative for thoracic and upper abdominal surgeries; atelectasis already present.
- d) Atelectasis already present; respiratory muscle weakness; pre and post-operative for thoracic surgeries.

Expected answer: C

QUESTION 3

Which of the alternatives below presents only situations in which the use of incentive spirometer is contraindicated?

- a) Patients in coma; patients with tracheostomy; children less than 4 years old.
- b) Patients with tracheostomy; pre and postoperative for patients with chronic obstructive pulmonary disease; atelectasis already present.
- c) Children less than 4 years old; pulmonary reexpansion; pleural effusion.
- d) Post-traumatic brain injury; children less than 4 years old; patients in coma.
- e) Pleural effusion; post-traumatic brain injury; pre and postoperative for patients with chronic obstructive pulmonary disease.

Expected answer: D

➤ **Section C: questions regarding the instructions provided to patients for the use of the incentive spirometer.**

QUESTION 4

Regarding the instructions given by the physiotherapists for patients using volume-oriented incentive spirometers (e.g: Coach®, Voldyne® and Spiroball®), chose the most appropriate alternative:

- a) Slow maximum inspiration (keeping the flow feedback in the middle of the scale of the device) followed by a post inspiratory pause of 3 to 5 seconds and an expiration up to functional residual capacity.
- b) Slow inspiration until the volume marker (keeping the flow feedback in the middle of the scale of the device) followed by an expiration up to functional residual capacity.
- c) Inspiration until the volume marker followed by a post inspiratory pause of 3 to 5 seconds and an expiration up to functional residual capacity.
- d) Slow inspiration until the volume marker (keeping the flow feedback in the middle of the scale of the device), followed by a post inspiratory pause of 3 to 5 seconds and an expiration up to functional residual capacity.
- e) Inspiration until the volume marker followed by an expiration up to functional residual capacity.

Expected answer: D

QUESTION 5

How do you calculate the patient's targeted tidal volume for volume-oriented incentive spirometers (e.g.: Coach®, Voldyne® e Spiroball®)?

- a) I prescribe the same volume for all patients.
- b) I ask the patient to take a maximal inspiration.
- c) 5-8 ml/kg of patient's ideal weight.
- d) 5-8 ml/kg of patient's weight.
- e) 5-8 ml/kg of patient's ideal weight.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand the rationale behind the choice of a specific targeted volume for this resource.

QUESTION 6

Regarding the instructions given by the physiotherapists for patients using flow-oriented incentive spirometers (e.g.: Respirom® and Triflo II®), choose the most appropriate alternative:

- a) Slow deep inspiration with elevation of 1 sphere, followed by a post inspiratory pause of 3 to 5 seconds and an expiration up to functional residual capacity.
- b) Quick and strong inspiration with elevation of 2 spheres, followed by a post inspiratory pause of 3 to 5 seconds and an expiration up to functional residual capacity.
- c) Slow deep inspiration with elevation of all the spheres, followed by a maximum post inspiratory pause and an expiration up to functional residual capacity.
- d) Vigorous inspiration with elevation of as many spheres as possible, followed by a post inspiratory pause of 3 to 5 seconds and a forced expiration up to functional residual capacity.
- e) Slow deep inspiration with elevation of 1 sphere and an expiration up to functional residual capacity.

Expected answer: A

➤ **Section D: questions regarding the current scientific evidence on the use of incentive spirometers.**

QUESTION 7

Which is the best type of incentive spirometer according to the current scientific evidence?

- a) I am not up to date on the current scientific evidence on incentive spirometry.
- b) Volume-oriented incentive spirometer (e.g.: Coach®, Voldyne® and Spiroball®).
- c) Flow-oriented incentive spirometer (e.g.: Respirom® and Triflo II®).
- d) No differences between the two types of incentive spirometers have been reported by the current scientific evidence: both types present the same physiological effects.

Expected answer: B

QUESTION 8

Which of the alternatives below best describes the physiological effects of both types of incentive spirometer?

- a) Volume-oriented recruits less accessory muscles than flow-oriented incentive spirometers; flow-oriented promotes higher respiratory rates than volume-oriented incentive spirometers.
- b) Flow-oriented incentive spirometer promotes a more significant improvement of the lung expansion; flow-oriented generates higher respiratory rates than volume-oriented incentive spirometers.
- c) Volume-oriented spirometer generates a higher respiratory workload than flow-oriented devices; flow-oriented spirometer generates a longer inspiratory time than volume-oriented devices.
- d) Flow-oriented spirometer generates a longer inspiratory time than volume-oriented devices; volume-oriented recruits less accessory muscles than flow-oriented incentive spirometers.
- e) The physiological effects of both types of incentive spirometers are the same and the only difference between them is the feedback provided by the device.

Expected answer: A

QUESTION 9

How often do you access scientific evidence databases?

- a) Once a week.
- b) Once a month.
- c) Every 3 months.
- d) Every 6 months.
- e) Every a year.
- f) Only when I need to do it.
- g) I never do it.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand the frequency of scientific literature researches of our sample.

➤ **Section E: questions regarding the evidence-based practice.**

QUESTION 10

Which of the resources below do you use the most to support your clinical practice?

- a) Books.
- b) Scientific articles.
- c) I usually exchange experiences with my co-workers.
- d) Courses.
- e) Scientific events (e.g. conferences).

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand what kind of resources are being used by the physical therapists to keep themselves up to date.

QUESTION 11

Do you use scientific literature published in English? How often does it happen?

- a) Yes, always.
- b) Yes, always. However, I prefer to read publications in Portuguese when they are available.
- c) Sometimes.

- d) No, I do not read scientific literature published in English.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand how often the physical therapists usually search for scientific literature in English, once most of the papers are written in English, which is not the Brazilian mother tongue.

QUESTION 12

What type of incentive spirometer is available at your working place?

- a) Volume-oriented incentive spirometer (e.g.: Coach®, Voldyne® e Spiroball®).
- b) Flow-oriented incentive spirometer (ex: Respiron® e Triflo II®).
- c) Both types are available.
- d) There are no incentive spirometers available at my working place.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand the availability of this resource in the working places.

QUESTION 13

What type of incentive spirometer would you rather use in your clinical practice?

- a) Volume-oriented incentive spirometer (e.g.: Coach®, Voldyne® e Spiroball®).
- b) Flow-oriented incentive spirometer (ex: Respiron® e Triflo II®).
- c) I have no preference for a specific type.
- d) I do not use incentive spirometers in my clinical practice.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand if there was a preference of the physical therapists for a specific type of incentive spirometer.

QUESTION 14

Which of the criteria below best justifies your choice regarding the type of incentive spirometers used?

- a) Most affordable price.
- b) Scientific evidence.
- c) Patient's preference.
- d) Type of device available at my workplace.
- e) My clinical practice.
- f) I do not use incentive spirometers.

Expected answer: We did not consider any of these answers as right or wrong. We intended to understand the main criteria behind the choice for a type of incentive spirometer.