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Evaluation of Forced Expiratory Volume in One Second and Forced Vital Capacity from Age and Height for Pulmonary Function Test

Évaluation du Volume Expiratoire Forcé en une Seconde (VEMS) et de la Capacité Vitale Forcée en Fonction de l'Âge et de la Taille pour les Tests de la Fonction Pulmonaire

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ABSTRACT

BACKGROUND: Lung function tests (LFTs) are a collection of clinical examinations used to assess lung function and monitor potential declines in the lungs, respiratory muscles, and chest wall's mechanical performance. This cross-sectional study aimed to identify the relation of age and height to lung function.

MATERIAL AND METHODS: the study was conducted at Al-Hussein Medical City, 70 adult male subjects were enrolled in the study. All subjects were screened physically to ensure that they were normal and there were no respiratory disorders that could affect the lung function. Age and height were taken for these subjects, forced vital capacity (FVC), FEV1 (Forced expiratory volume in first second) as well as FEV1 /FVC ratio were measured.

RESULTS: The results of the study showed that the average values of FVC and FEV1 were 4.75 and 3.88 respectively. There was a significant negative correlation observed between age and FVC ($r = 0.48$), FEV1 ($r = 0.6$). Also there was a significant positive correlation noticed between Height and FVC ($r = 0.62$), FEV1 ($r = 0.69$). There was a very high correlation evidenced between FEV1 and FVC, the relation between FEV1 and FVC is practically height and age-independent.

CONCLUSION: Our study highlights a great interest in the study of the relation between age, height, and lung function. The study also creates simple and convenience equations that can be used for reference standards in clinical practice to give reasonable theoretical values for a large sector of the population. **WAJM 2023; 40(10); 1029-1034.**

Keywords: FEV1, FVC, FVC/FEV1, Spirometry

RÉSUMÉ

CONTEXTE: Les tests de fonction pulmonaire (TFP) regroupent une série d'examen cliniques utilisés pour évaluer la fonction pulmonaire et surveiller d'éventuelles réductions des performances mécaniques des poumons, des muscles respiratoires et de la paroi thoracique. Cette étude transversale visait à déterminer la relation entre l'âge et la taille et la fonction pulmonaire.

MATÉRIEL ET MÉTHODES: L'étude a été menée à la ville médicale Al-Hussein. Soixante-dix sujets masculins adultes ont été inscrits à l'étude. Tous les sujets ont été soumis à un examen physique pour s'assurer qu'ils étaient en bonne santé et ne présentaient pas de troubles respiratoires susceptibles d'affecter la fonction pulmonaire. L'âge et la taille de ces sujets ont été relevés, et la capacité vitale forcée (CVF), le VEMS (volume expiratoire maximal en une seconde) ainsi que le rapport VEMS/CVF ont été mesurés.

RÉSULTATS: Les résultats de l'étude ont montré que les valeurs moyennes de la CVF et du VEMS étaient respectivement de 4,75 et 3,88. Une corrélation négative significative a été observée entre l'âge et la CVF ($r = 0,48$) ainsi qu'entre l'âge et le VEMS ($r = 0,6$). De plus, une corrélation positive significative a été remarquée entre la taille et la CVF ($r = 0,62$) ainsi qu'entre la taille et le VEMS ($r = 0,69$). Une corrélation très élevée a été mise en évidence entre le VEMS et la CVF, la relation entre le VEMS et la CVF est pratiquement indépendante de la taille et de l'âge.

CONCLUSION: Notre étude met en évidence un intérêt particulier pour l'étude de la relation entre l'âge, la taille et la fonction pulmonaire. L'étude crée également des équations simples et pratiques qui peuvent être utilisées comme référence dans la pratique clinique pour fournir des valeurs théoriques raisonnables pour une grande partie de la population. **WAJM 2023; 40(10); 1029-1034.**

Mots-clés: VEMS, CVF, VEMS/CVF, Spirométrie

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