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A simple echocardiographic estimate of right ventricular-arterial coupling to assess severity and outcome in pulmonary hypertension on chronic lung disease

Khodr Tello¹, Hossein A. Ghofrani^{1,2,3}, Charlotte Heinze¹, Karsten Krueger⁴, Robert Naeije⁵, Christina Raubach¹, Werner Seeger ¹, Natascha Sommer¹, Henning Gall ^{1,6} and Manuel J. Richter^{1,6}

Affiliations: ¹Dept of Internal Medicine, Justus-Liebig-University Giessen, Universities of Giessen and Marburg Lung Center (UGMLC), Member of the German Center for Lung Research (DZL), Giessen, Germany. ²Dept of Pneumology, Kerckhoff Heart, Rheuma and Thoracic Center, Bad Nauheim, Germany. ³Dept of Medicine, Imperial College London, London, UK. ⁴Institute of Sports Science, Department of Exercise and Health, Leibniz University Hannover, Hannover, Germany. ⁵Erasme University Hospital, Brussels, Belgium. ⁶These authors have contributed equally to this work.

Correspondence: Manuel J. Richter, Dept of Internal Medicine, Justus-Liebig-University Giessen, Universities of Giessen and Marburg Lung Center (UGMLC), Member of the German Center for Lung Research (DZL), Klinikstrasse 33, 35392 Giessen, Germany. E-mail manuel.richter@innere.med.uni-giessen.de



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The ratio of tricuspid annular plane systolic excursion to systolic pulmonary artery pressure is a simple echocardiographic parameter that reflects haemodynamic severity and predicts survival in pulmonary hypertension due to lung diseases. <http://bit.ly/2KgLABR>

Cite this article as: Tello K, Ghofrani HA, Heinze C, *et al.* A simple echocardiographic estimate of right ventricular-arterial coupling to assess severity and outcome in pulmonary hypertension on chronic lung disease. *Eur Respir J* 2019; 54: 1802435 [<https://doi.org/10.1183/13993003.02435-2018>].

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To the Editor:

The adaptation of right ventricular (RV) systolic function to afterload is a major determinant of outcome in pulmonary hypertension [1]. The gold standard measurement of RV–pulmonary arterial (PA) coupling is the ratio of end-systolic to arterial elastances (E_{es}/E_a) which is optimal for RV flow output at minimal energy cost at values between 1.5 and 2 [2]. Progressive RV–PA uncoupling is associated with maintained RV dimensions down to E_{es}/E_a values of around 0.8 [3]. Thus, the evaluation of RV–PA coupling would theoretically allow monitoring of the transition from compensated to decompensated RV function in pulmonary hypertension. However, measuring RV–PA coupling at the bedside is technically demanding and invasive. Therefore, simpler imaging surrogates are being evaluated. One of those is the ratio of tricuspid annular plane systolic excursion (TAPSE) as a surrogate of contractility and systolic pulmonary artery pressure (PASP) as a surrogate of afterload, both measured using echocardiography (M-mode for TAPSE and Doppler assessment of the maximum velocity of tricuspid regurgitation for PASP) [4]. The TAPSE/PASP ratio has emerged as a potent predictor of outcome in heart failure [5] as well as in pulmonary arterial hypertension (PAH) [6].