Referenzliste | Liste des références

Der Artikel "Zweidimensionale transthorakale Echokardiografie in Ruhe für Diagnose, Screening und Behandlung von pulmonaler Hypertonie" ist eine überarbeitete und gekürzte Übersetzung der englischsprachigen Publikation Swiss Med Wkly. 2021;151:w20486.

L'article "Echocardiographie transthoracique bidimensionelle de repos pour le diagnostic, le dépistage et le traitement de l'hypertension pulmonaire" est une traduction révisée et abrégée de la publication en langue anglaise Swiss Med Wkly. 2021;151:w20486.

1. Galiè N, Humbert M, Vachiery JL, Gibbs S, Lang I, Torbicki A. 2015 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension: The Joint Task Force for the Diagnosis and Treatment of Pulmonary Hypertension of the European Society of Cardiology (ESC) and the European Respiratory Society (ERS): Endorsed by: Association for European Paediatric and Congenital Cardiology (AEPC), International Society for Heart and Lung Transplantation (ISHLT). Eur Heart J. 2016;37(1):67–119. doi:. http://dx.doi.org/10.1093/eurheartj/ehv317 PubMed

2. Fisher MR, Forfia PR, Chamera E, Housten-Harris T, Champion HC, Girgis RE. Accuracy of Doppler echocardiography in the hemodynamic assessment of pulmonary hypertension. Am J Respir Crit Care Med. 2009;179(7):615–21. doi:. http://dx.doi.org/10.1164/rccm.200811-1691OC PubMed

3. Rich JD, Shah SJ, Swamy RS, Kamp A, Rich S. Inaccuracy of Doppler echocardiographic estimates of pulmonary artery pressures in patients with pulmonary hypertension: implications for clinical practice. Chest. 2011;139(5):988–93. doi:. http://dx.doi.org/10.1378/chest.10-1269 PubMed

4. D'Alto M, Romeo E, Argiento P, D'Andrea A, Vanderpool R, Correra A. Accuracy and precision of echocardiography versus right heart catheterization for the assessment of pulmonary hypertension. Int J Cardiol. 2013;168(4):4058–62. doi:. http://dx.doi.org/10.1016/j.ijcard.2013.07.005 PubMed

5. Boucly A, Weatherald J, Savale L, Jaïs X, Cottin V, Prevot G. Risk assessment, prognosis and guideline implementation in pulmonary arterial hypertension. Eur Respir J. 2017;50(2):1700889. doi:. http://dx.doi.org/10.1183/13993003.00889-2017 PubMed

6. Hoeper MM, Kramer T, Pan Z, Eichstaedt CA, Spiesshoefer J, Benjamin N. Mortality in pulmonary arterial hypertension: prediction by the 2015 European pulmonary hypertension guidelines risk stratification model. Eur Respir J. 2017;50(2):1700740. doi:. http://dx.doi.org/10.1183/13993003.00740-2017 PubMed

7. Greiner S, Jud A, Aurich M, Hess A, Hilbel T, Hardt S. Reliability of noninvasive assessment of systolic pulmonary artery pressure by Doppler echocardiography compared to right heart catheterization: analysis in a large patient population. J Am

Heart Assoc. 2014;3(4):e001103. doi:. http://dx.doi.org/10.1161/JAHA.114.001103 PubMed

8. Lang RM, Badano LP, Mor-Avi V, Afilalo J, Armstrong A, Ernande L. Recommendations for cardiac chamber quantification by echocardiography in adults: an update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. Eur Heart J Cardiovasc Imaging. 2015;16(3):233–71. doi:. http://dx.doi.org/10.1093/ehjci/jev014 PubMed

9. Schneider M, Pistritto AM, Gerges C, Gerges M, Binder C, Lang I. Multi-view approach for the diagnosis of pulmonary hypertension using transthoracic echocardiography. Int J Cardiovasc Imaging. 2018;34(5):695–700. PubMed

10. Marra AM, Naeije R, Ferrara F, Vriz O, Stanziola AA, D'Alto M. Reference Ranges and Determinants of Tricuspid Regurgitation Velocity in Healthy Adults Assessed by Two-Dimensional Doppler-Echocardiography. Respiration. 2018;96(5):425–33. doi:. http://dx.doi.org/10.1159/000490191 PubMed

11. Amsallem M, Sternbach JM, Adigopula S, Kobayashi Y, Vu TA, Zamanian R. Addressing the Controversy of Estimating Pulmonary Arterial Pressure by Echocardiography. J Am Soc Echocardiogr. 2016;29(2):93–102. doi:. http://dx.doi.org/10.1016/j.echo.2015.11.001 PubMed

12. Frost A, Badesch D, Gibbs JSR, Gopalan D, Khanna D, Manes A. Diagnosis of pulmonary hypertension. Eur Respir J. 2019;53(1):1801904. doi:. http://dx.doi.org/10.1183/13993003.01904-2018 PubMed

13. Maeder MT, Schoch OD, Kleiner R, Joerg L, Weilenmann D. Pulmonary hypertension associated with left-sided heart disease. Swiss Med Wkly. 2017;147:w14395. PubMed

14. Opotowsky AR, Ojeda J, Rogers F, Prasanna V, Clair M, Moko L. A simple echocardiographic prediction rule for hemodynamics in pulmonary hypertension. Circ Cardiovasc Imaging. 2012;5(6):765–75. doi:. http://dx.doi.org/10.1161/CIRCIMAGING.112.976654 PubMed

15. D'Alto M, Romeo E, Argiento P, Pavelescu A, Mélot C, D'Andrea A. Echocardiographic prediction of pre- versus postcapillary pulmonary hypertension. J Am Soc Echocardiogr. 2015;28(1):108–15. doi:. http://dx.doi.org/10.1016/j.echo.2014.09.004 PubMed

16. Berthelot E, Montani D, Algalarrondo V, Dreyfuss C, Rifai R, Benmalek A. A Clinical and Echocardiographic Score to Identify Pulmonary Hypertension Due to HFpEF. J Card Fail. 2017;23(1):29–35. doi:. http://dx.doi.org/10.1016/j.cardfail.2016.10.002 PubMed

17. Naeije R, Gerges M, Vachiery JL, Caravita S, Gerges C, Lang IM. Hemodynamic Phenotyping of Pulmonary Hypertension in Left Heart Failure. Circ

Heart Fail. 2017;10(9):10. doi:. http://dx.doi.org/10.1161/CIRCHEARTFAILURE.117.004082 PubMed

18. Rosenkranz S, Gibbs JS, Wachter R, De Marco T, Vonk-Noordegraaf A, Vachiéry JL. Left ventricular heart failure and pulmonary hypertension. Eur Heart J. 2016;37(12):942–54. doi:. http://dx.doi.org/10.1093/eurheartj/ehv512 PubMed

19. Vonk Noordegraaf A, Westerhof BE, Westerhof N. The Relationship Between the Right Ventricle and its Load in Pulmonary Hypertension. J Am Coll Cardiol. 2017;69(2):236–43. doi:. http://dx.doi.org/10.1016/j.jacc.2016.10.047 PubMed

20. Vonk-Noordegraaf A, Haddad F, Chin KM, Forfia PR, Kawut SM, Lumens J. Right heart adaptation to pulmonary arterial hypertension: physiology and pathobiology. J Am Coll Cardiol. 2013;62(25, Suppl):D22–33. doi:. http://dx.doi.org/10.1016/j.jacc.2013.10.027 PubMed

21. Vonk Noordegraaf A, Chin KM, Haddad F, Hassoun PM, Hemnes AR, Hopkins SR. Pathophysiology of the right ventricle and of the pulmonary circulation in pulmonary hypertension: an update. Eur Respir J. 2019;53(1):1801900. doi:. http://dx.doi.org/10.1183/13993003.01900-2018 PubMed

22. Bossone E, Duong-Wagner TH, Paciocco G, Oral H, Ricciardi M, Bach DS. Echocardiographic features of primary pulmonary hypertension. J Am Soc Echocardiogr. 1999;12(8):655–62. doi:. http://dx.doi.org/10.1053/je.1999.v12.a99069 PubMed

23. van Wolferen SA, Marcus JT, Boonstra A, Marques KM, Bronzwaer JG, Spreeuwenberg MD. Prognostic value of right ventricular mass, volume, and function in idiopathic pulmonary arterial hypertension. Eur Heart J. 2007;28(10):1250–7. doi:. http://dx.doi.org/10.1093/eurheartj/ehl477 PubMed

24. Grünig E, Biskupek J, D'Andrea A, Ehlken N, Egenlauf B, Weidenhammer J. Reference ranges for and determinants of right ventricular area in healthy adults by two-dimensional echocardiography. Respiration. 2015;89(4):284–93. doi:. http://dx.doi.org/10.1159/000371472 PubMed

25. Fischer L, Benjamin N, Blank N, Egenlauf B, Fischer C, Harutyunova S. Right heart size and function significantly correlate in patients with pulmonary arterial hypertension - a cross-sectional study. Respir Res. 2018;19(1):216. doi:. http://dx.doi.org/10.1186/s12931-018-0913-x PubMed

26. Marra AM, Halank M, Benjamin N, Bossone E, Cittadini A, Eichstaedt CA. Right ventricular size and function under riociguat in pulmonary arterial hypertension and chronic thromboembolic pulmonary hypertension (the RIVER study). Respir Res. 2018;19(1):258. doi:. http://dx.doi.org/10.1186/s12931-018-0957-y PubMed

27. Ghio S, Recusani F, Klersy C, Sebastiani R, Laudisa ML, Campana C. Prognostic usefulness of the tricuspid annular plane systolic excursion in patients with

congestive heart failure secondary to idiopathic or ischemic dilated cardiomyopathy. Am J Cardiol. 2000;85(7):837–42. doi:. http://dx.doi.org/10.1016/S0002-9149(99)00877-2 PubMed

28. Forfia PR, Fisher MR, Mathai SC, Housten-Harris T, Hemnes AR, Borlaug BA. Tricuspid annular displacement predicts survival in pulmonary hypertension. Am J Respir Crit Care Med. 2006;174(9):1034–41. doi:. http://dx.doi.org/10.1164/rccm.200604-547OC PubMed

29. Goda A, Ryo K, Delgado-Montero A, Tayal B, Handa R, Simon MA. The Prognostic Utility of a Simplified Biventricular Echocardiographic Index of Cardiac Remodeling in Patients with Pulmonary Hypertension. J Am Soc Echocardiogr. 2016;29(6):554–60. doi:. http://dx.doi.org/10.1016/j.echo.2016.02.013 PubMed

30. Goda A, Ryo K, Delgado-Montero A, Tayal B, Handa R, Simon MA. The Prognostic Utility of a Simplified Biventricular Echocardiographic Index of Cardiac Remodeling in Patients with Pulmonary Hypertension. J Am Soc Echocardiogr. 2016;29(6):554–60. doi:. http://dx.doi.org/10.1016/j.echo.2016.02.013 PubMed

31. Benza RL, Miller DP, Gomberg-Maitland M, Frantz RP, Foreman AJ, Coffey CS. Predicting survival in pulmonary arterial hypertension: insights from the Registry to Evaluate Early and Long-Term Pulmonary Arterial Hypertension Disease Management (REVEAL). Circulation. 2010;122(2):164–72. doi:. http://dx.doi.org/10.1161/CIRCULATIONAHA.109.898122 PubMed

32. Forfia PR, Vachiéry JL. Echocardiography in pulmonary arterial hypertension. Am J Cardiol. 2012;110(6, Suppl):S16–S24. doi:. http://dx.doi.org/10.1016/j.amjcard.2012.06.012 PubMed

33. van de Veerdonk MC, Kind T, Marcus JT, Mauritz GJ, Heymans MW, Bogaard HJ. Progressive right ventricular dysfunction in patients with pulmonary arterial hypertension responding to therapy. J Am Coll Cardiol. 2011;58(24):2511–9. doi:. http://dx.doi.org/10.1016/j.jacc.2011.06.068 PubMed

34. Hoette S, Creuzé N, Günther S, Montani D, Savale L, Jaïs XRV. Fractional Area Change and TAPSE as Predictors of Severe Right Ventricular Dysfunction in Pulmonary Hypertension: A CMR Study. Lung. 2018;196(2):157–64. doi:. http://dx.doi.org/10.1007/s00408-018-0089-7 PubMed

35. Mauritz GJ, Kind T, Marcus JT, Bogaard HJ, van de Veerdonk M, Postmus PE. Progressive changes in right ventricular geometric shortening and long-term survival in pulmonary arterial hypertension. Chest. 2012;141(4):935–43. doi:. http://dx.doi.org/10.1378/chest.10-3277 PubMed

36. Kind T, Mauritz GJ, Marcus JT, van de Veerdonk M, Westerhof N, Vonk-Noordegraaf A. Right ventricular ejection fraction is better reflected by transverse rather than longitudinal wall motion in pulmonary hypertension. J Cardiovasc Magn Reson. 2010;12(1):35. doi:. http://dx.doi.org/10.1186/1532-429X-12-35 PubMed

37. Anavekar NS, Gerson D, Skali H, Kwong RY, Yucel EK, Solomon SD. Two-dimensional assessment of right ventricular function: an echocardiographic-MRI correlative study. Echocardiography. 2007;24(5):452–6. doi:. http://dx.doi.org/10.1111/j.1540-8175.2007.00424.x PubMed
38. Leong DP, Grover S, Molaee P, Chakrabarty A, Shirazi M, Cheng YH. Nonvolumetric echocardiographic indices of right ventricular systolic function: validation with cardiovascular magnetic resonance and relationship with functional capacity. Echocardiography. 2012;29(4):455–63. doi:. http://dx.doi.org/10.1111/j.1540-8175.2011.01594.x PubMed

39. Focardi M, Cameli M, Carbone SF, Massoni A, De Vito R, Lisi M. Traditional and innovative echocardiographic parameters for the analysis of right ventricular performance in comparison with cardiac magnetic resonance. Eur Heart J Cardiovasc Imaging. 2015;16(1):47–52. doi:. http://dx.doi.org/10.1093/ehjci/jeu156 PubMed

40. Galiè N, Hinderliter AL, Torbicki A, Fourme T, Simonneau G, Pulido T. Effects of the oral endothelin-receptor antagonist bosentan on echocardiographic and doppler measures in patients with pulmonary arterial hypertension. J Am Coll Cardiol. 2003;41(8):1380–6. doi:. http://dx.doi.org/10.1016/S0735-1097(03)00121-9 PubMed

41. Ghio S, Klersy C, Magrini G, D'Armini AM, Scelsi L, Raineri C. Prognostic relevance of the echocardiographic assessment of right ventricular function in patients with idiopathic pulmonary arterial hypertension. Int J Cardiol. 2010;140(3):272–8. doi:. http://dx.doi.org/10.1016/j.ijcard.2008.11.051 PubMed

42. Grapsa J, Pereira Nunes MC, Tan TC, Cabrita IZ, Coulter T, Smith BC. Echocardiographic and Hemodynamic Predictors of Survival in Precapillary Pulmonary Hypertension: Seven-Year Follow-Up. Circ Cardiovasc Imaging. 2015;8(6):e002107. doi:. http://dx.doi.org/10.1161/CIRCIMAGING.114.002107 PubMed

43. Brown SB, Raina A, Katz D, Szerlip M, Wiegers SE, Forfia PR. Longitudinal shortening accounts for the majority of right ventricular contraction and improves after pulmonary vasodilator therapy in normal subjects and patients with pulmonary arterial hypertension. Chest. 2011;140(1):27–33. doi:. http://dx.doi.org/10.1378/chest.10-1136 PubMed

44. Kaul S, Tei C, Hopkins JM, Shah PM. Assessment of right ventricular function using two-dimensional echocardiography. Am Heart J. 1984;107(3):526–31. doi:. http://dx.doi.org/10.1016/0002-8703(84)90095-4 PubMed

45. Tei C, Dujardin KS, Hodge DO, Bailey KR, McGoon MD, Tajik AJ. Doppler echocardiographic index for assessment of global right ventricular function. J Am Soc Echocardiogr. 1996;9(6):838–47. doi:. http://dx.doi.org/10.1016/S0894-7317(96)90476-9 PubMed

46. Yeo TC, Dujardin KS, Tei C, Mahoney DW, McGoon MD, Seward JB. Value of a Doppler-derived index combining systolic and diastolic time intervals in predicting

outcome in primary pulmonary hypertension. Am J Cardiol. 1998;81(9):1157–61. doi:. http://dx.doi.org/10.1016/S0002-9149(98)00140-4 PubMed

47. Voigt JU, Cvijic M. 2- and 3-Dimensional Myocardial Strain in Cardiac Health and Disease. JACC Cardiovasc Imaging. 2019;12(9):1849–63. doi:. http://dx.doi.org/10.1016/j.jcmg.2019.01.044 PubMed

48. Fine NM, Chen L, Bastiansen PM, Frantz RP, Pellikka PA, Oh JK. Outcome prediction by quantitative right ventricular function assessment in 575 subjects evaluated for pulmonary hypertension. Circ Cardiovasc Imaging. 2013;6(5):711–21. doi:. http://dx.doi.org/10.1161/CIRCIMAGING.113.000640 PubMed

49. Park JH, Park MM, Farha S, Sharp J, Lundgrin E, Comhair S. Impaired Global Right Ventricular Longitudinal Strain Predicts Long-Term Adverse Outcomes in Patients with Pulmonary Arterial Hypertension. J Cardiovasc Ultrasound. 2015;23(2):91–9. doi:. http://dx.doi.org/10.4250/jcu.2015.23.2.91 PubMed

50. Vizzardi E, Bonadei I, Sciatti E, Pezzali N, Farina D, D'Aloia A. Quantitative analysis of right ventricular (RV) function with echocardiography in chronic heart failure with no or mild RV dysfunction: comparison with cardiac magnetic resonance imaging. J Ultrasound Med. 2015;34(2):247–55. doi:. http://dx.doi.org/10.7863/ultra.34.2.247 PubMed

51. Park JH, Negishi K, Kwon DH, Popovic ZB, Grimm RA, Marwick TH. Validation of global longitudinal strain and strain rate as reliable markers of right ventricular dysfunction: comparison with cardiac magnetic resonance and outcome. J Cardiovasc Ultrasound. 2014;22(3):113–20. doi:. http://dx.doi.org/10.4250/jcu.2014.22.3.113 PubMed

52. Shukla M, Park JH, Thomas JD, Delgado V, Bax JJ, Kane GC. Prognostic Value of Right Ventricular Strain Using Speckle-Tracking Echocardiography in Pulmonary Hypertension: A Systematic Review and Meta-analysis. Can J Cardiol. 2018;34(8):1069–78. doi:. http://dx.doi.org/10.1016/j.cjca.2018.04.016 PubMed

53. Hulshof HG, Eijsvogels TMH, Kleinnibbelink G, van Dijk AP, George KP, Oxborough DL. Prognostic value of right ventricular longitudinal strain in patients with pulmonary hypertension: a systematic review and meta-analysis. Eur Heart J Cardiovasc Imaging. 2019;20(4):475–84. doi:. http://dx.doi.org/10.1093/ehjci/jey120 PubMed

54. Badagliacca R, Poscia R, Pezzuto B, Nocioni M, Mezzapesa M, Francone M. Right ventricular remodeling in idiopathic pulmonary arterial hypertension: adaptive versus maladaptive morphology. J Heart Lung Transplant. 2015;34(3):395–403. doi:. http://dx.doi.org/10.1016/j.healun.2014.11.002 PubMed

55. Badagliacca R, Papa S, Valli G, Pezzuto B, Poscia R, Reali M. Right ventricular dyssynchrony and exercise capacity in idiopathic pulmonary arterial hypertension. Eur

Respir J. 2017;49(6):1601419. doi:. http://dx.doi.org/10.1183/13993003.01419-2016 PubMed

56. Raymond RJ, Hinderliter AL, Willis PW, Ralph D, Caldwell EJ, Williams W. Echocardiographic predictors of adverse outcomes in primary pulmonary hypertension. J Am Coll Cardiol. 2002;39(7):1214–9. doi:. http://dx.doi.org/10.1016/S0735-1097(02)01744-8 PubMed

57. Bustamante-Labarta M, Perrone S, De La Fuente RL, Stutzbach P, De La Hoz RP, Torino A. Right atrial size and tricuspid regurgitation severity predict mortality or transplantation in primary pulmonary hypertension. J Am Soc Echocardiogr. 2002;15(10):1160–4. doi:. http://dx.doi.org/10.1067/mje.2002.123962 PubMed

58. Austin C, Alassas K, Burger C, Safford R, Pagan R, Duello K. Echocardiographic assessment of estimated right atrial pressure and size predicts mortality in pulmonary arterial hypertension. Chest. 2015;147(1):198–208. doi:. http://dx.doi.org/10.1378/chest.13-3035 PubMed

59. Stepnowska E, Lewicka E, Dąbrowska-Kugacka A, Daniłowicz-Szymanowicz L, Zagożdżon P, Kamiński R. Predictors of poor outcome in patients with pulmonary arterial hypertension: A single center study. PLoS One. 2018;13(4):e0193245. doi:. http://dx.doi.org/10.1371/journal.pone.0193245 PubMed

60. Chen L, Larsen CM, Le RJ, Connolly HM, Pislaru SV, Murphy JG. The prognostic significance of tricuspid valve regurgitation in pulmonary arterial hypertension. Clin Respir J. 2018;12(4):1572–80. doi:. http://dx.doi.org/10.1111/crj.12713 PubMed

61. Fenstad ER, Le RJ, Sinak LJ, Maradit-Kremers H, Ammash NM, Ayalew AM. Pericardial effusions in pulmonary arterial hypertension: characteristics, prognosis, and role of drainage. Chest. 2013;144(5):1530–8. doi:. http://dx.doi.org/10.1378/chest.12-3033 PubMed

62. Batal O, Dardari Z, Costabile C, Gorcsan J, Arena VC, Mathier MA. Prognostic Value of Pericardial Effusion on Serial Echocardiograms in Pulmonary Arterial Hypertension. Echocardiography. 2015;32(10):1471–6. doi:. http://dx.doi.org/10.1111/echo.12909 PubMed

63. Stewart RH, Rohn DA, Allen SJ, Laine GA. Basic determinants of epicardial transudation. Am J Physiol. 1997;273(3 Pt 2):H1408–14. PubMed

64. Naeije R, Badagliacca R. The overloaded right heart and ventricular interdependence. Cardiovasc Res. 2017;113(12):1474–85. doi:. http://dx.doi.org/10.1093/cvr/cvx160 PubMed

65. Friedberg MK. Imaging right-left ventricular interactions. JACC Cardiovasc Imaging. 2018;11(5):755–71. doi:. http://dx.doi.org/10.1016/j.jcmg.2018.01.028 PubMed

66. Lima JA, Guzman PA, Yin FC, Brawley RK, Humphrey L, Traill TA. Septal geometry in the unloaded living human heart. Circulation. 1986;74(3):463–8. doi:. http://dx.doi.org/10.1161/01.CIR.74.3.463 PubMed

67. Dellegrottaglie S, Sanz J, Poon M, Viles-Gonzalez JF, Sulica R, Goyenechea M. Pulmonary hypertension: accuracy of detection with left ventricular septal-to-free wall curvature ratio measured at cardiac MR. Radiology. 2007;243(1):63–9. doi:. http://dx.doi.org/10.1148/radiol.2431060067 PubMed

68. Roeleveld RJ, Marcus JT, Faes TJ, Gan TJ, Boonstra A, Postmus PE. Interventricular septal configuration at mr imaging and pulmonary arterial pressure in pulmonary hypertension. Radiology. 2005;234(3):710–7. doi:. http://dx.doi.org/10.1148/radiol.2343040151 PubMed

69. Marcus JT, Gan CT, Zwanenburg JJ, Boonstra A, Allaart CP, Götte MJ. Interventricular mechanical asynchrony in pulmonary arterial hypertension: left-to-right delay in peak shortening is related to right ventricular overload and left ventricular underfilling. J Am Coll Cardiol. 2008;51(7):750–7. doi:. http://dx.doi.org/10.1016/j.jacc.2007.10.041 PubMed

70. Palau-Caballero G, Walmsley J, Van Empel V, Lumens J, Delhaas T. Why septal motion is a marker of right ventricular failure in pulmonary arterial hypertension: mechanistic analysis using a computer model. Am J Physiol Heart Circ Physiol. 2017;312(4):H691–700. doi:. http://dx.doi.org/10.1152/ajpheart.00596.2016 PubMed

71. Tello K, Seeger W, Naeije R, Vanderpool R, Ghofrani H, Richter M. Right heart failure in pulmonary hypertension: Diagnosis and new perspectives on vascular and direct right ventricular treatment. Br J Pharmacol. 2021;178(1):90–107. doi:. http://dx.doi.org/10.1111/bph.14866 PubMed

72. Tello K, Dalmer A, Axmann J, Vanderpool R, Ghofrani HA, Naeije R. Reserve of right ventricular-arterial coupling in the setting of chronic overload. Circ Heart Fail. 2019;12(1):e005512. doi:. http://dx.doi.org/10.1161/CIRCHEARTFAILURE.118.005512 PubMed

73. Vanderpool RR, Pinsky MR, Naeije R, Deible C, Kosaraju V, Bunner C. RV-pulmonary arterial coupling predicts outcome in patients referred for pulmonary hypertension. Heart. 2015;101(1):37–43. doi:. http://dx.doi.org/10.1136/heartjnl-2014-306142 PubMed

74. Tello K, Wan J, Dalmer A, Vanderpool R, Ghofrani HA, Naeije R. Validation of the Tricuspid Annular Plane Systolic Excursion/Systolic Pulmonary Artery Pressure Ratio for the Assessment of Right Ventricular-Arterial Coupling in Severe Pulmonary Hypertension. Circ Cardiovasc Imaging. 2019;12(9):e009047. doi:. http://dx.doi.org/10.1161/CIRCIMAGING.119.009047 PubMed

75. Guazzi M. Use of TAPSE/PASP ratio in pulmonary arterial hypertension: An easy shortcut in a congested road. Int J Cardiol. 2018;266:242–4. doi:. http://dx.doi.org/10.1016/j.ijcard.2018.04.053 PubMed