

Recommendations for competitive sports <sup>(1,2)</sup> and scuba diving participation in <u>asymptomatic</u> patients with valvular heart disease					
Lesion	Evaluation	Criteria for eligibility	Rhythmia	Competitive sports	Diving
<b>Mitral Valve Stenosis (MVS) : according to valve opening area.</b>					
Mild Mitral Valve Stenosis	ECG, Echocardiography. In selected cases : Holter, Exercise testing.	Mitral valve area > 1,5 cm <sup>2</sup> Resting PSAP (Pulmonary Systolic Arterial Pressure) < 35 mmHg <sup>(2)</sup>   If anticoagulant treatment : Stable INR between 2 and 3.	Sinus rhythm	All sports	Yes
			Atrial Fibrillation	Low-moderate dynamic and low-moderate static sports <sup>(1)</sup> except those with risk of body collision	PSC
Moderate Mitral Valve Stenosis	ECG, Echocardiography, Holter, Exercise testing.	Mitral valve area 1,0 to 1,5 cm <sup>2</sup> Resting PSAP ≤ 50 mmHg <sup>(2)</sup>		Low dynamic and low- static sports <sup>(1)</sup>	<b>NO</b> PSC if stress-echo test
Severe Mitral Valve Stenosis	In selected cases : stress-echocardiography testing.	Mitral valve area < 1,0 cm <sup>2</sup> Resting PSAP > 50 mmHg <sup>(2)</sup>		Low dynamic and low- static sports <sup>(1)</sup>	<b>NO</b>
<b>Mitral Valve Regurgitation (MVR) : according to regurgitant jet area or to Proximal Isovelocity Surface Area (PISA).</b>					
Mild Mitral Valve Regurgitation	ECG, Echocardiography. In selected cases : Holter, Exercise testing.	Jet area < 20 mm <sup>2</sup> or PISA < 3 mm <sup>(1)</sup> LV size < 60 mm <sup>(2)</sup> LVEF ≥ 60 % Resting PSAP < 35 mmHg <sup>(2)</sup>	Sinus rhythm	All sports	Yes
			Atrial Fibrillation	All sports except those with risk of body collision	PSC
Moderate Mitral Valve Regurgitation	ECG, Echocardiography. In selected cases : Holter, Exercise testing, cardiac catheterization.	Jet area between 20 and 40 mm <sup>2</sup> or PISA between 3 and 6 mm <sup>(1)</sup> LV size < 60 mm <sup>(2)</sup> , LVEF ≥ 60 % or LVEF < 50 %		Low-moderate dynamic and low-moderate static sports <sup>(1)</sup>	No or PSC if exercise test
Severe Mitral Valve Regurgitation		Jet area > 40 mm <sup>2</sup> or PISA > 6 mm <sup>(1)</sup>		No competitive sport	<b>NO</b>
<b>Aortic Valve Stenosis (AVS) : according to Aortic Valve opening Area (AVA) and mean aortic valve pressure gradient.</b>					
Mild Aortic Valve Stenosis	ECG, Echocardiography, <b>Exercise testing</b>	AVA > 1,5 cm <sup>2</sup> Mean gradient ≤ 20 mm Hg <sup>(1)</sup>		Low-moderate dynamic and low-moderate static sports.	Yes
Moderate Aortic Valve Stenosis	ECG, Echocardiography.	AVA between 1 and 1,5 cm <sup>2</sup> M. gradient between 21 - 49 mmHg <sup>(1)</sup>		Low dynamic and low static sports.	No or PSC if exercise test
Severe Aortic Valve Stenosis	In selected cases : Exercise testing,	AVA < 1 cm <sup>2</sup> Mean gradient ≥ 50 mm Hg <sup>(1)</sup>		No competitive sport	<b>NO</b>
<b>Aortic Valve Regurgitation (AVR) and ascending aorta diseases.</b>					
Mild to moderate Aortic Valve Regurgitation	ECG, Echocardiography.	Normal LV size LVEF ≥ 60 % Normal left atrial size		All sports	Yes
			Ventricular arrhythmia	No competitive sport <sup>(1)</sup>	<b>NO</b>
Moderate Aortic Valve Regurgitation	In selected cases : Holter, Exercise testing, Invasive tests.	LV size < 60 to 65 mm <sup>(2)</sup> with LVEF > 50 % Normal left atrial size	No significant ventricular arrhythmia	Low dynamic and low static sports. <sup>(1)</sup>	No or PSC if exercise test
Moderate to severe Aortic Valve Regurgitation		LV dilatation or LVEF < 50 % or left atrial dilatation or ascending aorta > 50 mm		No competitive sport	<b>NO</b>
Dilatation of the ascending aorta	Echography, in selected cases CTscan or MRI	Ascending aorta < 50 mm ≤ 40 mm if bicuspid aortic valve		All sports	Yes
Marfan's syndrome with or without AVR <sup>(2)</sup>	Echography every 6 months	Ascending aorta ≤ 40 mm No moderate to severe MVR No family history of dissection or SD		Low-moderate dynamic and low static sports. <sup>(2)</sup>	PSC
<b>Tricuspid Valve Regurgitation (TVR) : Diving is forbidden for all diseases with pulmonary hypertension.</b>					
Organic Tricuspid Valve Regurgitation	ECG, Echocardiography, exercise testing.	Right atrial pressure < 20 mm Hg Normal RV systolic pressure		All sports	Yes
<b>After valve surgery or valvuloplasty (post-operative delay of at least 6 to 12 months).</b>					
Valve repair or bioprosthetic valve without anticoagulant treatment	ECG, Echocardiography.	Mild valve regurgitation or normal prosthetic valve function Normal LV function	Sinus rhythm	Low-moderate dynamic and low-moderate static sports	Yes
Valve repair or bioprosthetic valve or low thrombotic risk mechanical aortic valve with anticoagulant treatment	ECG, Echocardiography.	Mild valve regurgitation or normal prosthetic valve function Normal LV function Stable INR between 2 and 3.	Sinus rhythm	Low-moderate dynamic and low-moderate static sports except those with risk of body collision.	Yes
			Atrial Fibrillation		PSC
Mechanical prosthetic valve needing INR > 3	ECG, Echocardiography.	Normal prosthetic valve function Normal LV function		Low-moderate dynamic and low-moderate static sports except those with risk of body collision.	<b>NO</b> or PSC if INR particular caution

**Diving :** **Yes** = Scuba diving participation can be allowed if all eligibility criteria are met.  
**NO** = Contraindication is definite for diving.  
**PSC** = Personalised Specific Conditions must be assessed on an individual basis.

(1) Mellwig KP, van Buuren F, Gohlke-Baerwolf C, Bjornstad HH. Recommendations for the management of individuals with acquired valvular heart diseases who are involved in leisure-time physical activities or competitive sports. Eur J Cardiovasc Prev Rehabil 2008;15: 95-103.

(2) Bonow RO, Cheitlin MD, Crawford MH, Douglas PS. Task force 3 : Valvular Heart Disease. 36<sup>th</sup> Bethesda conference, Eligibility recommendations for competitive athletes with cardiovascular abnormalities. J Am Coll Cardiol, 2005, vol 45 (8) : 1334-1339.