

# 2020 ESC Guideline on Sports Cardiology and Exercise in Patients with Cardiovascular Diseases

*ESC Leitlinien 2020 für Sportkardiologie und körperliche Bewegung bei Patienten mit Herz-Kreislauf-Erkrankungen*

**This ESC (European Society of Cardiology) Guideline was co-authored by Martin Halle, President of the European Association of Preventive Cardiology (EAPC) and me, Chairman of the Section for Sports Cardiology of the EAPC and is appearing during a pandemic of physical inactivity which has been going on for decades and continues to spread with no sign of even slowing down.**

The knowledge that a lack of physical exercise capacity is the strongest modifiable predictor for not only cardiovascular but also all-cause morbidity and mortality, which can be reduced by physical activity and sports, has led to a trend away from restrictive recommendations or even banning sports, toward responsible but still rather liberal individual training recommendations. Physical activity including sports is an essential component in the prevention and rehabilitation of nearly all chronic diseases. N.B.: NO sports is NOT an option.

It is also new that the patient's autonomy in the specific decision is given more weight. After thorough and individual estimation of risk by the doctor, together with the patient, a decision is reached concerning the type, scope and intensity of sports and noted in the patient's file ("shared decision making"). Based on the numerous positive effects of training and the low probability of sudden cardiac death in sports, collateral damages which arise when sports are forbidden can be avoided. As for healthy adults of all ages, patients with cardiovascular diseases (CVD) should engage in sports 3-7 days per week, but at least 150-300 minutes at moderate or 75-150 minutes at high intensity. Strength training should additionally be performed at least three times per week.

## The Following Aspects are Emphasized

### Sudden Cardiac Death (SCD)

While the cause in athletes <35 years is usually a congenital heart disease or myocarditis, athletes >35 years usually present with acquired CVD, especially coronary heart disease CHD). Pre-participation screening in leisure or competitive sports is aimed at the recognition of diseases in connection with SCD and, in addition to the resting ECG, includes an exercise ECG (if possible spiroergometry) and, depending on the type of sports, training scope and intensity, possibly

also an echocardiography. With corresponding age and risk factors, it may be useful to determine the calcium score of the coronary arteries using coronary CT. As long as the findings indicate a low risk of a exercise-induced event, leisure and even competitive sports can be approved for the athlete/patient. High-performance sports are not recommended for persons with CHD and high risk of an exercise-induced event, or in the presence of myocardial ischemia (also due to coronary anomaly). After an acute coronary syndrome, or in chronic CHD, rehabilitation and regular examinations are recommended.

### Chronic Heart Failure

Training programs for patients with heart failure improve exercise tolerance and quality of life, but they should only be initiated after medication therapy has been optimized. A maximum ergometry (where possible ergospirometry) is prerequisite to the assessment of cardiopulmonary exercise capacity, hemodynamic function and the inducibility of arrhythmias in exercise. The results of the ergometry are also the foundation for exercise prescription.

### Valvular Heart Disease

Asymptomatic patients with mild valvular heart disease can generally participate in competitive sports. Asymptomatic patients with moderate valve disease, good myocardial and hemodynamic function and no sign of myocardial ischemia or complex arrhythmias during maximum ergometry can also participate in competitive sports after a shared decision making.

### Aortopathy

Persons with an aortic root diameter <40 mm have the lowest risk of dissection. Risk stratification by ergometry and imaging (computer tomography / cardiac magnetic resonance tomography) are recommended prior to starting training. Exercise training in general reduces the risk of cardiovascular events and mortality. Regular controls are mandatory.

### Cardiomyopathies, Myocarditis and Pericarditis

Patients with hypertrophic cardiomyopathy should be given an individual recommendation for sports participation. Patients with acute myocarditis or pericarditis may not participate in sports. After myocarditis is healed (usually 3-6 months >

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Table 1

The most important points at a glance.

<b>Rationale</b>	Exercise and sports are associated with lower cardiovascular and all-cause morbidity and mortality
	Goal: life-long physical activity
	Restrictive sports recommendations or even bans must be evidence-based and justified, since “collateral damage” due to physical inactivity is real
	Goal: away from fear-induced, restrictive, toward responsible, minimally-restraining recommendations
<b>“Shared decision making”</b>	Taking individual situation and needs of the athlete/patient into consideration
	Evidence-based and individual risk estimation
	Shared decision by doctor and patient, recorded in patient’s file
<b>Sudden Cardiac Death: prevention</b>	Pre-participation examination
	Family and individual history, physical examination, resting ECG, maximal or symptom-limited ergometry (ideal: ergo-spirometry); depending on type of sport and intensity, also echocardiography; depending on age etc. coronary CT
<b>Chronic Heart Failure</b>	Optimize medication
	Maximal (spiro)ergometry
	Structured training program
<b>Valvular Heart Disease</b>	Asymptomatic mild valvular disease: approved for all sports
<b>Aortopathy</b>	Aortic root diameter < 40 mm = lowest risk of dissection
	Risk stratification by ergometry and imaging (CT/MRT) prior to start of training
<b>Cardiomyopathy</b>	Individual, but rather liberal decision
<b>Arrhythmogenic Cardiomyopathy</b>	Positive genotype, independent of phenotype: no high performance sports
<b>Pericarditis, Myocarditis</b>	Sports only after healing, usually 3-6 months (possibly earlier in pericarditis)
	Approval depending on clinic and test results (also echo, MRT)
<b>Supraventricular Tachycardia</b>	Preexcitation must be ruled out
	Consider catheter ablation
<b>Recurrent, Symptomatic Atrial Fibrillation</b>	Catheter ablation if medication control is inadequate or in case of intolerance
<b>Atrial Flutter</b>	Anticoagulation: no contact sports
<b>Ventricular Tachycardias</b>	Consider ablation
<b>Pacemaker</b>	Treat the underlying disease
<b>Defibrillator</b>	Encourage sports participation, no collision sports
	Indication depends on underlying disease, NOT in order to make sports possible
<b>Congenital Heart Disease</b>	Encourage sports, no collision sports, consider the risk to the participant (e.g. climbing, diving, etc.)
	Encourage sports participation
	Selection of sport, training scope and intensity depending on: Ventricular function, pulmonary arterial pressure, aortic diameter, arrhythmias, oxygen saturation

after the diagnosis is made) or pericarditis (depending on the course sooner than in myocarditis), thorough diagnostics are made, including maximal ergometry (if possible ergospirometry) in order to evaluate the risk of exercise-induced arrhythmias.

In case of proven arrhythmogenic cardiomyopathy, high-performance sport is contraindicated, since this has been proven to lead to accelerated course of disease and early death.

### Arrhythmias and Channelopathies

In athletes with supraventricular tachycardia (SVT), preexcitation should be ruled out and, where possible, a curative catheter ablation considered. In professional high-performance athletes with asymptomatic preexcitation, an electrophysiological examination and, after risk assessment, ablation should be recommended where appropriate.

In patients/athletes with recurrent symptomatic atrial fibrillation, who do not wish to take or do not tolerate such medication, catheter ablation is recommended. During anticoagulation, contact sports are to be avoided. In atrial flutter, ablation should also be considered. Patients/athletes with ventricular arrhythmias must be examined for underlying structural or familial arrhythmogenic diseases. In channelopathies like long QT or Brugada Syndrome, a cardiogeneticist and/or electrophysiologist should be consulted.

Patients with pacemakers should be encouraged to participate in sports, taking the underlying disease into consideration (cave: collision sports). This applies also to patients/athletes with implantable cardioverters-defibrillators, in whom however, the consequences of possible shocks and/or syncope during the sports activity - not only for themselves but also for others - must be taken into account (e.g. diving, climbing).

### Congenital Heart Diseases

Patients with congenital heart diseases should be encouraged to participate in sports to an appropriate extent. Essential to the decision are: ventricular function, pulmonary arterial pressure, aortic diameter, arrhythmias and oxygen saturation. An ergospirometry is mandatory.

In conclusion, the new Guideline provides assistance for decision making in sports participation for patients and athletes in a wide spectrum of cardiovascular diseases. The goal is to make sports possible for patients and athletes in a responsible, individual and risk-adapted manner, so that they are not exposed to unjustified risk, but also do not miss out on the health benefits offered by sports. Thus far, the possibility of shared decision-making has been underused. By accepting the patient’s individual wishes and carefully weighing benefits and risks, shared decision making enables us to become responsible partners to patients and athletes, so that they can engage in sports with the intensity and at the level which is important to them. ■

### References

(1) PELLICCIA A, SHARMA S, GATI S, BÄCK M, BÖRJESSON M, CASELLI S, COLLET JP, CORRADO D, DREZNER JA, HALLE M, HANSEN D, HEIDBUCHEL H, MYERS J, NIEBAUER J, PAPADAKIS M, PIEPOLI MF, PRESCOTT E, ROOS-HESSSELINK JW, GRAHAM STUART A, TAYLOR RS, THOMPSON PD, TIBERI M, VANHEES L, WILHELM M; ESC SCIENTIFIC DOCUMENT GROUP. 2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease. Eur Heart J. 2020; ehaa605. doi:10.1093/eurheartj/ehaa605