

Exercise in hypertrophic cardiomyopathy

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One of my patients aged 68 told me in the consultation a couple of weeks ago: "I used to cycle everyday. But it wasn't like practising a sport, it was my only way to get to work".

Physical exercise is part of the normal activities for people. The amount of exercise considered as "normal", however, changes from generation to generation. And when we compared the amount of physical activity between people living in very different environments - rural Africa compared to a Western big capital like London - we can also see big differences in the concept of normality.

It is well documented that the developed world is suffering in a big way from physical inactivity. Physical inactivity is one of the major risk factor contributors for developing amongst others ischemic (narrowing of the arteries) heart disease. It is in this context that we understand physical activity is positive regardless of the underlying medical condition.



Exercise and heart performance

During exercise we consume more oxygen, so we increase our breathing rate. As well as this, our muscles demand more blood supply and our heart responds, increasing the heart rate as well the power of contraction. Our blood pressure will increase gradually with the exercise to maintain the body demands.

Heart performance depends on age. We calculate our heart rate when the heart is achieving its maximum performance with the following formula - 220 minus our age in years. For example, a man age 30 will be performing at 100 per cent of his predicted heart rate when he reaches a heart rate of 190 beats per minute. However a man aged 70 will be doing the same when his heart rate reaches 150 beat per minute. A highly trained heart optimises these mechanisms and in every beat is able to pump more blood so the resting heart rate tends then to be lower. Exercise is also one of the natural sources of well being and needs to be regularly practised

Hypertrophic cardiomyopathy (HCM)

Hypertrophic cardiomyopathy is a heart condition where the muscle of the heart is primarily affected. It is clearly characterised by abnormally thickened muscle. However, HCM has many and very different presentations. We call this heterogeneity. The distribution and the magnitude of the thickening of the inner layer of the heart are also very variable between patients.

About 30 per cent of the patients with HCM will also have obstruction to blood flow at rest - we call this the obstructive form. An additional 10 per cent will have obstruction only when performing vigorous exercise. Most patients with HCM do not have symptoms. However there are patients who experience symptoms, particularly when exercising. These include chest pain, dizziness, shortness of breath or palpitations. The patients' initial consultations, as well as the regular follow ups, advice

is tailored to the symptoms, exercise capacity, exercise performance (exercise testing) as well as morphological characteristics which are revealed on the echocardiogram or scan. With the test results, your doctor will know the pumping and relaxing function of your heart, the degree of hypertrophy and also to perform risk assessment.

Risk of sudden cardiac death

HCM is an important cause of sudden cardiac death in young people. While some HCM sudden deaths occur following moderate to severe exertion, the increase in the relative risk of sudden death incurred by regular participation in vigorous exercise is unknown.



Even if there is an association between practice of some competitive sports and the occurrence of sudden cardiac death in patients suffering from HCM, there is certainly no data proving that the abstention from vigorous exercise prevents death.

Not all trained athletes with HCM die suddenly during their competitive phase of life. Only some HCM-related sudden deaths are associated with intense physical activity, and precision in stratifying risk for athletes with HCM is particularly difficult given the extreme environmental conditions to which they are often exposed (associated with alterations in blood volume hydration and with electrolytes).

Nevertheless, the consensus of the medical community prudently supports avoiding exposure to most competitive sports for young athletes with HCM to reduce the risk of sudden death, and therefore withdrawal from the athletic arena can be regarded as a treatment in this disease.

However, stringent lifestyle or employment modifications for other HCM patients (who do not take part in organised athletics) do not seem justified or practical, although intense physical activity involving burst exertion (for example sprinting) or systematic isometric exercise (such as heavy lifting) should be discouraged.

Consensus international guidelines recommend that athletes with unequivocal HCM should be advised not to take part in most competitive events, irrespective of symptoms or the presence of left ventricular outflow tract obstruction.

There is no evidence that suggests that those affected genetically but without disease expression (that is carriers) should be subjected to the same restrictions as patients with unequivocal disease.

With this information every country has made its recommendations. Thus there are different recommendations and legal aspects for the practice of a sport as well as the recommended screening before competitive exercise in the USA, UK and other European countries.

Non-competitive exercise and hypertrophic cardiomyopathy

Advice on non-competitive exercise is difficult because of the legal implications as well as the lack of a completely definitive answer. If anything should be taken into account it is the collated experience of centres with large numbers of patients and very long follow-up.

Any person with HCM undertaking physical activity needs to be aware of the following warnings,

- onset of symptoms relate to exercise such as chest pain.
- dizziness
- severe shortness of breath
- sudden burst of palpitations
- lack of recovery in a reasonable time
- worsening of the pre-existing symptoms with exercise

If they experience any of those they should stop and seek medical attention or discuss the matter with their doctor at the next visit. Providing they do not experience any of the above, non-competitive regular exercise activity can be generally practiced by most patients. When it is time to choose the activity, thought needs to be given to the type of sport itself. Sports that demand fast and sudden exercise are not ideal. We always insist that the patient need to "listen to their own bodies" and adapt their life to it. Competitive exercise is about not listening to the pain, often not listening to the warnings and training harder than others.