





## NEW YORK HEART ASSOCIATION (NYHA) FUNCTIONAL CLASSIFICATION<sup>81</sup>

Class	Patient Symptoms
<b>Class I (Mild)</b>	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea (shortness of breath).
<b>Class II (Mild)</b>	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnea.
<b>Class III (Moderate)</b>	Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnea.
<b>Class IV (Severe)</b>	Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased.

The New York Heart Association (NYHA) Functional Classification system has become the standard for measuring symptoms that affect functioning related to heart failure.<sup>81</sup>

### CoQ10 Protects Against Heart Damage

**Coronary artery disease** typically refers to the consequences of atherosclerosis of the coronary arteries, which are the arteries that supply blood and nutrients to the heart muscle itself. Early disease may appear as painful and ominous **angina** (chest pain), while more advanced disease produces **ischemia** (lack of blood flow), and eventually **infarction** (death of heart muscle) in a classical heart attack.<sup>26</sup> Numerous studies have shown that in the event of a heart attack, ample levels of CoQ10 may mitigate the amount of damage:

- During open-heart surgery, when the heart is briefly stopped and ischemia is a major risk, CoQ10 protected heart muscle pumping and cardiac output.<sup>27</sup>
- In functioning hearts from old rats, pretreatment with CoQ10 improved recovery of heart function following stress.<sup>28</sup>
- In human atrial heart muscle tissue, CoQ10 treatment abolished the decreased ability to recover from ischemia seen in older hearts, producing a recovery pattern similar to that in younger hearts; this effect was shown to be related to improved mitochondrial energy efficiency in the treated tissue.<sup>28,29</sup>
- In humans undergoing elective heart surgery, patients treated with CoQ10 had lower levels of markers of heart damage, improved pumping action, and shorter hospital stays, compared with untreated controls.<sup>28</sup>

## SYMPTOMS OF CONGESTIVE HEART FAILURE

When blood flow through the heart becomes congested, blood backs up throughout the body. The result is an accumulation of fluid that is squeezed out of the capillaries,<sup>82</sup> the tiniest of blood vessels found in all tissues.

The most evident symptoms of congestive heart failure reflect this process: As the lungs become heavy and fluid-filled, patients experience shortness of breath during normal, non-strenuous activities, and have trouble breathing when lying down; as fluid builds up in the abdomen and extremities, patients experience weight gain, with swelling of the feet, legs, ankles, or stomach.<sup>1</sup>



















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