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RISK FACTORS

Low overall risk of cardiac arrest during marathons

Published in the *New England Journal of Medicine*, the RACER study assessed the incidence, clinical profile, and outcomes of cardiac arrest in 10.9 million participants of marathons and half-marathons held between 2000 and 2010 in the USA. Findings from this large registry study indicate that risk of cardiac arrest during long-distance running races is low, but that men have a higher risk than women.

Only cardiac arrests that occurred during the race or in the recovery area within 1 h of finishing the race were included in the analysis. The investigators identified 40 cardiac arrests during marathons and 19 cardiac arrests during half-marathons held within the 10-year period.

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The incidence of cardiac arrest was 1.01 per 100,000 (95% CI 0.72–1.38) during marathons and 0.27 per 100,000 (95% CI 0.17–0.43) during half-marathons. The incidence of cardiac arrest resulting in death was 0.63 per 100,000 (95% CI 0.41–0.93) for marathons and 0.25 per 100,000 (95% CI 0.14–0.39) for half-marathons.

Male long-distance runners had a higher incidence of cardiac arrest (0.90 per 100,000, 95% CI 0.67–1.18) than female long-distance runners (0.16 per 100,000, 95% CI 0.07–0.31). Notably, the risk of cardiac arrest in male marathon runners was substantially higher during 2005–2010 (2.03 per 100,000, 95% CI 1.33–2.98) than during 2000–2004 (0.71 per 100,000, 95% CI 0.31–1.40). The RACER investigators suggest that this rising risk among men "may indicate that long-distance racing has recently been attracting more high-risk men with occult cardiac disease who seek the health benefits of routine physical exercise."

Clinical data were available for 31 of the 59 runners who experienced cardiac arrest. Notably, most of the runners who died (15 of 23) had confirmed or possible hypertrophic cardiomyopathy and most of the runners who experienced cardiac arrest, but survived (5 of 8), had ischemic heart disease. Initiation of cardiopulmonary resuscitation by bystanders was one of the strongest predictors of survival in runners who experienced cardiac arrest.

On the basis of their findings, the RACER investigators conclude that "the risk associated with long-distance running events is equivalent to or lower than the risk associated with other vigorous physical activity."

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