

## **Athletic activity aggravates frequency of ventricular arrhythmias in ARVC patients.**

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**Introduction:** Case reports have indicated that high level of physical activity increase risk of ventricular arrhythmias (VA) in patients with arrhythmogenic right ventricular cardiomyopathy (ARVC). However, a systematic study of frequency of VA in athletes with ARVC has not previously been performed.

**Methods:** In total, 112 consecutive ARVC probands and mutation-positive family members from the Nordic ARVC registry were studied (age  $42 \pm 17$  years, 58% male). Participants with history of estimated activity level  $> 750$  metabolic equivalents (METs)-min/week or  $> 4$  hours of vigorous activity a week were defined as athletes. Exercise induced VAs were defined as ventricular tachycardias and aborted cardiac arrests during exercise.

**Results:** The definition of athlete's status was fulfilled in 37(33%), while 75 (67%) were non-athletes. Athletes were younger at time of diagnosis than non-athletes ( $36 \pm 13$  vs.  $45 \pm 18$  years,  $p < 0.01$ ). Exercise induced VA occurred in 40 patients (36%) and was more frequent in athletes (27/37, 73%) compared to non-athletes (13/75, 17%) ( $p < 0.001$ ). The number of probands was higher among athletes (27/37, 76%) than among non-athletes (37/75, 49%,  $p = 0.02$ ). Among probands ( $n = 65$ ), all athletes (100%) had exercise induced VA compared to only 31% of non athletes ( $p < 0.001$ ).

**Conclusion:** These findings confirm that exercise induced VAs are frequent in patients with ARVC and even more frequent in ARVC patients with athletic activity compared to ARVC non-athletes. Furthermore, athletes were younger and more frequently probands, indicating that athletic activity may aggravate the onset of life threatening symptoms in ARVC.