HCM 572±176, normal 745±138 p=0.01; exercise HCM 648±191, normal 845±160 p=0.02). There was a significant correlation between PFR and PCr/ATP at both rest (rs=0.78, p=0.001) and exercise (rs=0.54, p=0.039). There was significantly reduced BOLD SIΔ response in HCM (10±11% vs normal, 18±14% and athletes 17±10%, p<0.0001) as well as MPRI (normal: 1.8±0.6; athletes: 2.0±0.9, HCM 1.3±0.6, p=0.001). There was a weak but significant correlation between BOLD SIΔ and MPRI (R=0.27, p<0.0001) and between BOLD SIΔ and end diastolic wall thickness (R=0.24, p<0.001). MPRI (β 0.2, p<0.001) and wall thickness (β −0.2, <0.001) are independent predictors of BOLD SIΔ. For β myosin heavy chain mutation cohort (n=12), there was a significant relationship between change in PCr/ATP and either BOLD SIΔ (R=0.48, p=0.05).

Conclusion During exercise, the pre-existing energetic deficit in HCM is further exacerbated, independent of hypertrophy. Additionally, oxygenation is blunted during stress. This may lead to acute derangement of energy dependent ion homeostasis during acute stress, resulting in ventricular arrhythmias. We offer a possible explanation for the high incidence of exercise related death in HCM and suggest that treatments that optimise energetics may be protective.

082 RIGHT VENTRICULAR HYPERTROPHY AND THE ATHLETE'S HEART: UTILITY OF THE ECG AS A SCREENING TOOL

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Introduction Right ventricular hypertrophy (RVH) is a manifestation of various congenital and acquired cardiopulmonary disorders which may lead to premature morbidity and mortality. Physiological RVH is also reported among healthy athletes. European (ESC) guidelines define ECG markers of RVH in young athletes as "uncommon and training-unrelated," warranting further investigation to exclude "pathological RV dilatation or hypertrophy." Conversely, recent American guidelines state that evidence is lacking to support such a strategy. There have been no studies to correlate ECG markers of RVH with imaging data in young athletes.

Methods 214 asymptomatic, elite athletes underwent ECG and transthoracic echocardiography. Sensitivity and specificity, as well as positive and negative predictive values (PPV and NPV) of published ECG criteria for RVH were assessed against echo findings (see Abstract 082 table 1). RV free wall thickness (RVWT) was measured in the subcostal plane as per ESC recommendations. RV end-diastolic area (RVEDA) was also calculated in each case.

Abstract 082 Table 1

	Prevalence (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
R:S(V1) >1	3.7	0.0	95.1	0.0	96.6
R:S(V5/V6) <1	1.4	0.0	98.6	0.0	96.7
R(V1) >7 mm	8.9	14.3	91.9	5.3	97.1
R(V1) + S(V5/V6) >10.5 mm	14.5	28.6	86.0	6.5	97.3
R′(V1) >10 mm	0.5	0.0	99.5	0.0	96.7
qR(V1)	0.0	0.0	100.0	0.0	96.7
Right axis deviation (>110°)	1.9	0.0	98.1	0.0	96.7
Right atrial enlargement (P-wave >2.5 mm)	0.9	0.0	99.0	0.0	96.7

Results Mean age was 21.4 years, 76.7% male. Mean RVWT was 3.8 mm (range 2–6 mm). Only 7/214 (3.3%) of athletes, all male, demonstrated RVH on echo (RVWT ≥6 mm). Inter- and intra-observer variability for RVWT measurements were 10% and 14% respectively. All ECG criteria for RVH had low sensitivity and PPV for echocardiographic RVH, although specificity and NPV were high. The Sokolow-Lyon voltage criterion for RVH (R(V1) + S(V5/6) >10.5 mm), which is specifically mentioned in the ESC guidelines, was seen in 14% of athletes. Mean RVEDA did not differ between athletes with RVH on ECG and those without (both groups 27.3 cm^2, p=1.0).

Conclusions Published ECG criteria have an unacceptably low correlation with echo evidence of RVH, which is rare in athletes. Adherence to current ESC guidelines would result in a large number of additional investigations, with the potential for undue distress, disruption to training, and inappropriate resource utilisation. Our data support American guidance that RVH voltage criteria violations should not prompt further investigation, which may have significant implications for the burden of testing required after ECG screening of British athletes.

083 ANNULO-APICAL ANGLES AND TAPSE TO RAPIDLY ASSESS RIGHT VENTRICULAR SYSTOLIC FUNCTION: A CARDIAC MAGNETIC RESONANCE STUDY

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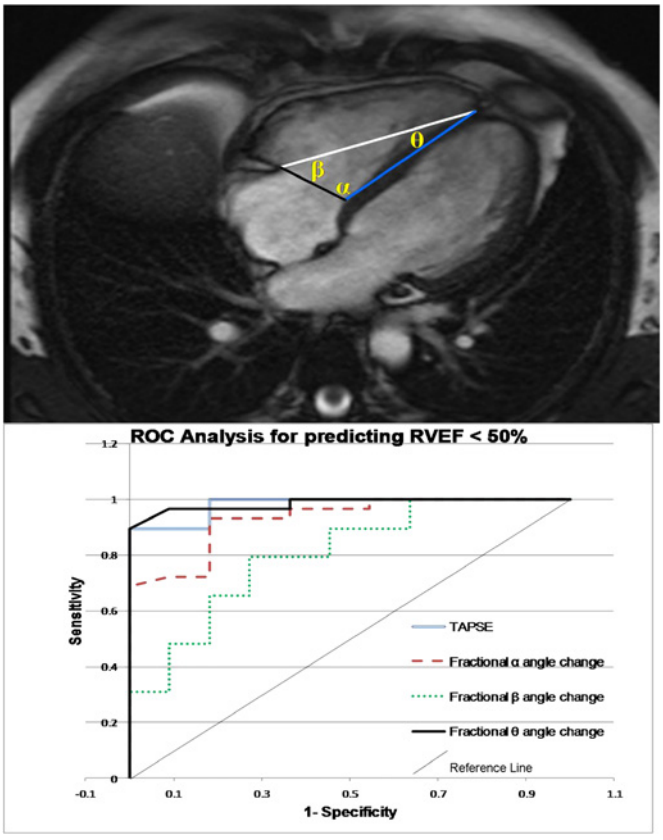
Background Volumetric assessment of the right ventricle (RV) by Cardiac Magnetic Resonance (CMR), albeit time-consuming, provides accurate and reproducible measurement of RV ejection fraction (RVEF). Tricuspid annulus peak systolic excursion (TAPSE)



Abstract 083 Figure 1 Top: AAAs in ED on a 4 chamber view. Bottom: ROC curve analysis.