in African athletes than in other ethnicities (20.7% vs. 12.2%, p<0.01), in athletes of mixed or endurance disciplines than in athletes of skill or power disciplines (9.9% vs. 17.8%, p<0.001). In multivariate logistic regression analysis, African ethnicity (OR=2.16, 95% CI=1.34–3.46, p=0.001) and mixed or endurance disciplines (OR=1.79, 95% CI=1.26–2.54, p=0.001) were independently associated with abnormal LV remodeling.

Baseline characteristics by sports type

Variables	Skill (n=412)	Power (n=282)	Mixed (n=327)	Endurance (n=164)	p
Age (years)	22±3	23±2	22±2	22±2	<0.001
Male sex (n, %)	226 (54.9)	160 (56.7)	193 (59.0)	109 (66.5)	0.017
Body mass index (kg/m²)	22.9±3.2	22.4±4.0	23.2±2.2	23.0±2.2	0.009
Body surface area (m²)	1.8±0.2	1.8±0.3	1.9±0.2	1.9±0.2	<0.001
Muscle mass (kg)	31.5±7.2	33.9±8.4	35.9±8.2	35.4±8.4	<0.001
Heart rate (bpm)	64.2±11.1	61.1±10.5	59.3±9.0	59.3±9.6	<0.001
Abnormal remodeling	29 (7.0%)	40 (14.2%)	57 (17.4%)	30 (18.4%)	<0.001

Predictors of abnormal LV remodeling
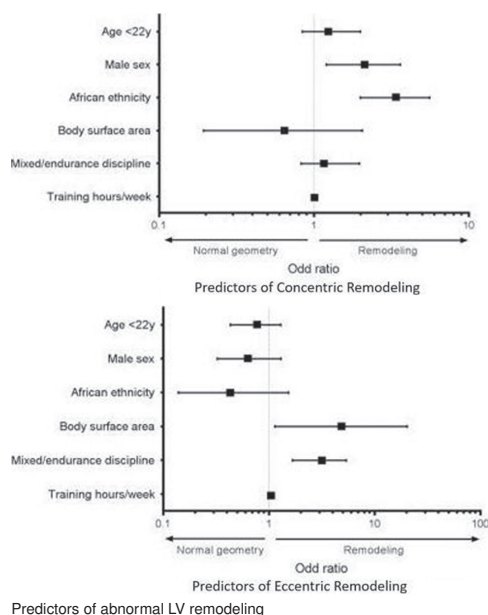
Conclusions: Structural cardiac abnormalities were noted in 1.6% of university athletes. Abnormal LV geometry was not uncommon (13.2%), and concentric remodeling was the most common pattern of LV geometric change in young trained university athletes. African ethnicity and mixed or endurance disciplines were independent predictors of abnormal LV geometry.

P1535 | BEDSIDE
Global longitudinal strain does not help differentiate between athlete's heart and pathology in athletes with low LVEF

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Background: Ostensibly healthy endurance athletes frequently have low-normal or mildly abnormal measures of LV function raising diagnostic uncertainty between athlete's heart and dilated cardiomyopathy. It has been proposed that global longitudinal strain (GLS) may be a better indicator of intrinsic myocardial function.
Methods: Echocardiography was performed as part of screening evaluation in 148 elite (national or international level) athletes. LV function was assessed using LV ejection fraction (LVEF) and GLS (calculated by 2D speckle tracking, GE Echopac V22.0). An LVEF <55% and a GLS <18.9% was considered to be in a range of diagnostic ambiguity.
Results: The mean age of the athletes was 24±6 years, 78% were male and 86% were pure endurance athletes. None of the athletes were found to have cardiac pathology on further evaluation. Low-EF (LVEF <55%) was observed in 40 (27%), and GLS <18.9 in 71 (50%) of healthy athletes. There was a modest correlation between LVEF and GLS (r=0.328, p<0.0001). GLS <18.9% was observed in 63% of the low-EF athletes versus 42% of the normal EF athletes (p<0.05). Conversely, GLS was normal in 37% of athletes with low-EF and abnormal in 58% of normal EF athletes, suggesting that GLS is not a useful measure for clarifying intrinsic contractile function in healthy athletes (as demonstrated in Figure 1). Furthermore, there was no significant difference in the prevalence of profoundly abnormal GLS (GLS <16%) in low-EF versus normal EF athletes (5 (12%) v 5 (5%), p=0.096).
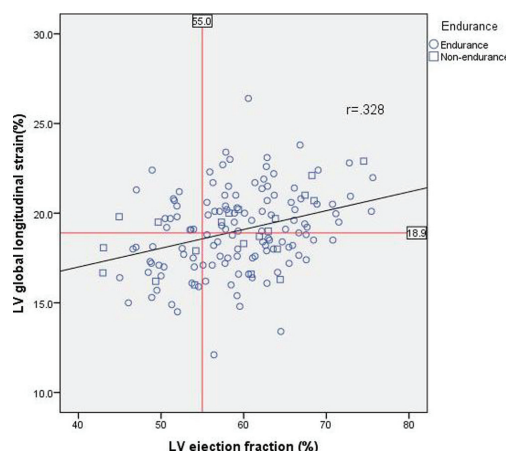**Conclusion:** In healthy athletes LVEF and GLS are frequently reduced with mod-

Figure 1

est agreement between these measures. GLS does not help differentiate between athlete's heart and pathology amongst those with low-EF.

P1536 | BEDSIDE
Comparison of electrocardiographic criteria for detection of left ventricular hypertrophy in a young, multi-ethnic male Asian population during pre-participation screening

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Background/Introduction: Electrocardiographic (ECG) criteria for left ventricular hypertrophy (LVH) were primarily derived from Western populations. Previous studies have shown that ECG criteria for LVH derived in these populations have limited sensitivity in Asian populations.
Purpose: We aimed to assess the accuracy of ECG criteria for LVH for the detection of echocardiographic LVH in a large multi-ethnic Asian population.
Methods: All Singaporean men undergo pre-conscription medical screening prior to enlistment for compulsory military service. 144,346 consecutive males during the study period of 1st November 2009–31st December 2014 underwent medical screening, where demographic, anthropometric and ECG variables were collected systematically. Individuals were referred for further echocardiographic evaluation if they fulfilled referral criteria following a protocol based on that published by Corrado et al. Echocardiographic parameters were measured in accordance to American Society of Echocardiography/European Association of Cardiovascular Imaging guidelines.
Results: 8805 subjects had both complete ECG and echo data. The prevalence of echocardiographic LVH was approximately 1.0% (n=88) of the study cohort. The standard Cornell voltage criteria (SV3+RaVL >28mm) had the lowest sensitivity (24.4%) but highest specificity (91.2%) for diagnosing LVH. The Sokolow-Lyon criteria (SV1+RV5/6 ≥35mm) had a higher sensitivity (46.6%) but lower specificity (71.3%) for diagnosing LVH. By receiver-operating characteristics analyses, the optimal cut offs derived from our cohorts were 28mm for the Cornell voltage criteria and 34mm for the Sokolow-Lyon criteria, providing sensitivity/ specificity of 24.4%/91.2% and 51.1%/68.4% respectively for the detection of echocardiographic LVH.
Conclusion(s): In a young, multi-ethnic male Asian population, the Cornell voltage criteria performed best for the diagnosis of echocardiographic LVH.

P1537 | BENCH
Gender differences in cardiovascular exercise adaptation in a rat model

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Introduction: Physical activity increases the microcirculation of muscles. As a result of regular sport, segmental remodeling can be observed in the wall of the arteries.
Purposes: Our hypothesis is that "athlete's heart" is associated with the complex remodeling of the arteries manifested as "athlete's artery". Our aim was to study the morphological remodeling, reactivity and gender differences of exercise adaptation in muscular arteries in a rat model.
Methods: In our experiment, we studied the biomechanical features of gracilis arteries, which supply the adductor muscle, on 12 male and 12 female Wistar rats