drink (20% w/v) for 12 weeks. Randomly selected rats were either trained on a treadmill at moderate intensity (60-70% maximal aerobic speed) for 6 weeks (0° incline, 1h/day, 5 days/week) or kept sedentary. Rats were weighed and their drink and food consumption were measured weekly. Fasting glycemia and systolic pressure were monitored. Glucose tolerance was evaluated using an oral glucose tolerance test; insulinemia was measured concomitantly. Endothelial function was studied on isolated aorta rings. After only 6 weeks of fructose supplementation rats had a higher energy intake (p<0.001) but were not overweight. These rats also presented an elevated glycemia (+14.3%, p<0.001) and a reduced glucose tolerance (p<0.01). Systolic blood pressure (+23.4%, p<0.001) and heart volume (p<0.05) were increased. After 12 weeks of fructose supplementation, sedentary rats were overweighted and presented an insulin resistance. In fructose supplemented rats, exercise helped to reduce overweight, fasting glycemia (p<0.01), heart volume (~13.1%, p<0.01) and insulin resistance (p<0.001). Surprisingly, exercise enhanced endothelial dysfunction in both diabetic and control rats (p<0.01) but no effect of the fructose supplementation was observed. Thus, indicating that exercise reduced only age related endothelial dysfunction. In this new model of Wistar rats with induced DT2, moderate exercise improved some DT2 markers like fasting glycemia and insulin resistance.

0275

Key role of eNOS in exercise-induced cardioprotection is dependent from coronary endothelium

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To date, it is clearly accepted that the activation of endothelial isoform of NOS (eNOS) by exercise training constitutes a key trigger of exercise-induced cardio-protection against ischemia-reperfusion (IR). However, this enzyme is expressed both in coronary endothelial cells and cardiomyocytes, but the contribution of the one or the other to such cardioprotection has never been challenged. The aim of this study was then to investigate the role of cardiomyocytes vs. endothelial eNOS in exercise cardioprotection. To this end, rats were assigned to sedentary (Sed) or chronic aerobic exercised (Ex) group. Effects of exercise on vulnerability to IR or anoxia-reoxygenation (AR) were respectively evaluated at whole heart or cardiomyocytes and coronary artery levels. On a first set of rats, isolated cardiomyocytes were submitted to AR in presence or not of L-NAME, an eNOS inhibitor. Exercise reduced cells death and improved cells contractility after AR, but no effect of L-NAME was observed. Interestingly, exercise had no effect neither on eNOS phosphorylation on its activation site (Ser1177) nor on S-nitrosylation at cardiomyocytes level, whereas at whole heart level exercise increased both of them, suggesting that exercise impacted endothelial cells rather than cardiomyocytes. Then, to evaluate the contribution of endothelial cells on exercise-induced cardiac protection, on a Langendorff apparatus we treated hearts with Triton X-100 before IR to abolish coronary endothelial cells activity. Inactivation of endothelial cells totally suppressed cardioprotective effects of exercise. Finally, coronary arteries were isolated from hearts submitted to IR and endothelial function was assessed on a wire-myograph. We observed that alteration of endothelium-depen- dent coronary relaxation induced by IR was reduced in Ex group. In conclusion, these results show that coronary endothelial cells rather than cardiomyocytes play a key role in eNOS-dependent cardioprotection in Ex rat hearts.

0195

Muscular effects of electrical myostimulation in heart failure patients. CREMS-HF substudy (SFC)

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Background: Exercise training (ET) is a valuable method to improve exercise tolerance in chronic heart failure (CHF) patients. Some studies reported a similar improvement by quadrupedal electrical myostimulation (EMS), but the effect of combination of the two methods remains unknown.

Aim of the study: to evaluate if EMS have any additive effect on benefits of ET in CHF patients.

Methods: 91 patients were included (mean age: 58 ± 9 yo; NYHA II/III: 52/48 %, LVEF: 29.7 ± 7 %) in a multicentric French study. The patients were randomized into two groups: ET (41 pts) and ET + EMS (50 pts). All patients underwent 20 ET sessions. In addition, in the ET+EMS group, patients underwent 20 low frequency (10Hz) quadrupedal EMS session (20s on/20s off, 1 hour/session).

All the patients performed a cardiopulmonary exercise test and a 6’walk test at baseline and at the end of the program. Muscular circumference, strength and biological assays (CPK, LDH, Aldolase, Myoglobin) were determined before and after the program.

Results: Data analysis revealed a significant improvement of exercise capacity (15 %) for all patients without significant differences between the two groups.

Muscular data are displayed in the table, but differences do not reach the statistical significance.

Conclusion: EMS and voluntary muscular contraction have different effects on structural and functional muscular adaptations (Table next page).
Abstract 0195-Table

<table>
<thead>
<tr>
<th></th>
<th>ET</th>
<th>ET+EMS</th>
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<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>End of program</td>
</tr>
<tr>
<td>Musc Circumf (cm)</td>
<td>43.0±4</td>
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<tr>
<td>Musc Strength (kg)</td>
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<td>30.5±14</td>
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<tr>
<td>CPK (UI/l)</td>
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<tr>
<td>LDH (UI/l)</td>
<td>239.1±100</td>
<td>257.9±1089</td>
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<tr>
<td>Aldolase (UI/l)</td>
<td>4.7±2</td>
<td>4.8±3</td>
</tr>
<tr>
<td>Myoglobin (µg/l)</td>
<td>52.0±36</td>
<td>84.5±169</td>
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</table>

0354

Kinetics of regional myocardial strains at the onset of dynamic exercise

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In cardiac diseases or healthy aging, the oxygen uptake kinetics are limited by muscle O2 delivery, which directly depends on the response of the cardiorespiratory system at the onset of exercise. However, data regarding cardiac adaptation during the transition from rest to exercise are limited to heart rate, stroke volume and cardiac output. Today, new advances in echocardiography based on speckle tracking enables an evaluation of regional left ventricular (LV) strains. In this context, we aimed to evaluate the kinetics of regional LV strains at the onset of dynamic exercise. 25 young adult males (23 ± 4 years) were recruited. Each subject performed five similar 4-min constant-load exercises on a dedicated ergometer in a semi-supine position. The five tests were used to record 2D cine loops from different echocardiographic views every 15 sec during the first minute, and then every 30 sec. Stroke volume (SV) was assessed using a Pedof and longitudinal strain (LS) and circumferential strain (CS) at the base and the apex using speckle tracking. The major findings of the study indicated that, at the onset of exercise, the adaptations of SV and LV strains were very fast since they achieved their maximal response between 30 and 60 sec. Increase in LS and CS strains was higher at the apex compared to the base (−30 ± 5% vs −19 ± 3% for LS and −32 ± 6% vs −21 ± 4% for CS) underlining the key role of the apex at the onset of dynamic exercise. In conclusion, the present study presents original data regarding the transient response of LV strains at the onset of exercise in healthy subjects. Using such methodology, further studies will be needed to characterize these dynamic adaptations during the transition from rest to exercise in patients under various diseases such as heart failure, diabetes or obesity.

0010

Adherence to antiplatelet after acute coronary syndrome

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Background: Current guidelines recommend the use of Dual antiplatelet therapy (DAT) aspirin and a thienopyridine, such as clopidogrel or prasugrel or ticagrelor, for 12 months after an acute coronary syndrome (ACS). Limited information is available on medication adherence especially on prasugrel and ticagrelor.

Aims: Comparison of the patient adherence to these 3 recommended treatments. A secondary objective was to identify risk factors of non-adherence to each treatment.

Methods: We conducted a retrospective observational study on patients admitted for ACS in two cardiology care units of the west of France (a) (b) between 1/10/2012 and 01/10/2013. Patients were grouped according to the DAT in 3 groups: clopidogrel, prasugrel and ticagrelor. Medication adherence was assessed by telephone interview, with a validated scale, after at least 6 months of treatment. The treatments’ side-effects were also appraised.

Results: From a total of 1077 patients with a ACS, 335 surviving patients with usable response were included. The median follow-up was 9 months. 119 patients in clopidogrel group, 123 patients in prasugrel group and 93 patients in ticagrelor group were included. A non-adherence was noted in 19% of the cohort group. A significant difference in non-adherence was noted between clopidogrel (13 %), prasugrel (18 %) and ticagrelor (27 %) (p = 0.05). Younger age (< 50 years old) (OR 10, 65; p < 0.001) and minor hemorrhage (OR 2.495; p = 0.009) were independent risk factors of non-adherence for each treatment. In Clopidogrel group, the predictors of non-adherence were hypercholesterolemia (OR 3.02; p = 0.001), and major digestive hemorrhage (OR 33; p = 0.009). In Prasugrel group, patients with high blood pressure (OR 6.77; p = 0.007); or with a high number of medications were statistically associated with non-adherence (OR 3.41; p = 0.04). In Ticagrelor group, minor hemorrhage (epistaxis, gingivorrhagia...) were also associated with non-adherence (OR 5.17; p = 0.05).

Conclusion: After ACS, non-adherence to antiplatelet treatments was observed in about 1 out of 5 patients with significant difference between the different drugs in this non randomized study. Younger ages, higher number of total medications, and side effects such as minor hemorrhage were associated with non-adherence.

0301

Effects of low and high polyphenols content lettuces consumption on high fat diet induced metabolic syndrome and endothelial dysfunction

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Consumption of vegetables has been recommended to reduce the risk of cardiovascular disease. The protection against disease is partly due to bioactive molecules including polyphenols. In order to evaluate the effects of such polyphenols, we supplemented High Fat diet rats with low and high polyphenolic content lettuces. 32 Wistar rats were divided in 4 groups, a control group (Ctrl), a high fat and sucrose diet group (HFS, 60% fat+10% sucrose) and 2 groups that after 6 weeks of HFS diet were supplemented 8 weeks with both HFS diet and either a low or high polyphenol content lettuces (HFS-LP; Blond Oak Leaf, 30g/day vs. HFS-HP; Red Oak Leaf, 30g/day). After 14 weeks of HP diet including 8 weeks of supplementation, we performed a glucose tolerance test and an evaluation of arterial blood pressure (BP) by tail cuff method. Then, aortic endothelial function and eNOS dependent vasodilatation were evaluated ex vivo on isolated rings. Firstly, we observed a higher body weight in HFS group (502±21g) compared to Ctrl group (471±14g) without any effect of both suplementations. Regarding glycemic control, HFS group presented increased fasting blood glucose (1.37g/l vs. 1.20g/l) as well as an impairment of glucose tolerance. Interestingly, both groups with lettuce intake displayed healthy fasting blood glucose values (1.14g/l and 1.15g/l) and an improvement of glucose tolerance. Moreover, both lettuces treatments