whole regulatory system which probably phylogenic more ancient than nervous or humoral system. Apparently acupunture induce genetically fixed mechanisms of compensation, adaptation and repair for realisation of its therapeutic effect and it is necessary to preserve these mechanisms during surgery. The results indicate that EC-index of acupoint may have clinical implications for diagnosis and control of acupunture treatment.

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P20-06

HEART RATE VARIABILITY IN SEDENTARY AND ACTIVE ELDERLY : RELATIONSHIP WITH DAILY PHYSICAL ACTIVITY
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Objectives : To evaluate the influence of life-style on heart rate variability (HRV) in very old aldults with regards to their daily physical activity. Methods : Subjects were divided into two groups according to their sport score evaluated by the Modified Baecke Questionnaire for Older Adults. Sedentary subjects (SED) were then compared to active elderly involved in sport activities (ACT). Five minutes lying heart rate recordings followed by 3 minutes active stand-up recordings were used to determine HRV indexes as the standard deviation of all normal intervals (SDNN), the root-mean-square differences of successive normal R-R intervals (RMSSD), and the high and low frequency power (HF and LF). Postural adaptation was estimated by the ratio of the 30th on the 15th beat following standing-up (30/15 index). Physical activity was evaluated during one week by triaxial accelerometry device (RT3, Stayhealthy), and then analyzed according to intensity and duration of activity periods. Results : ACT showed significant lower resting HR (61.2 ± 1.7 vs 69.1 ± 1.3 bpm; $p<0.05$) and higher HRV indexes : SDNN (35.3 ± 3.1 vs 24.8 ± 1.5; $p<0.05$), RMSSD (32.3 ± 4.9 vs 19.9 ± 1.7; $p<0.05$), LF (379.0 ± 66.9 vs 171.2 ± 29.9 Hz/msec²) and HF (568.9 ± 197.7 vs 142.5 ± 24.4 Hz/msec²) than SED, whereas LF/HF were similar between both groups. 30/15 index was higher in ACT. Daily physical activity energy expenditure was higher in ACT than in SED (583.7 ± 54.1 vs 426.1 ± 52.5 Kcal/day; $p<0.05$). ACT spent longer time per week in activity of intensity > 3 METs (3 times basal rest metabolism) ((8.9 ± 1.0 vs 4.1 ± 0.8 hrs; $p<0.05$), but total activity time was higher for SED than ACT (71.3 ± 5.1 hrs vs 62.5 ± 4.0; $p<0.05$). Conclusions : These results indicate that sport better than all-day activities may counteract the decline in HRV in very old subjects. This may be linked to longer time spent in higher intensity activities, and not to total activity time.

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P20-07

STRETCH DEPENDENT VESICAL MOTOR REACTIONS ON IONS: INFLUENCE OF K, Li, Rb AND Cs
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Motor activity of urinary bladder of various species depends on topographic regions: In guinea pig detrusor appeared spontaneous fast phasic (SPC; 1-5/min) and in trigone - periodic slow tonic contractions (STC; 0.1-0.5/min) [1-2]. New results [method: 1a, 2] inform about non-uniform effects of Li^+, Rb^+, Cs^+ compared to K^+. Not only SPC, but also KCl-excitatory effects (more than normal 5.6 mM = 1x = also for Li, Rb, Cs) increased after stretch (3 to 50 mN; n=53). Addition of LiCl (>1x) had some inhibitory effects on amplitudes (A) of SPC and STC; the basal tone was unchanged. Frequency (F) of STC decreased stronger at 3 than at 50 mN (for 1x 42.4 and 84.5% resp.). After (equimolar) replacement of KCl by LiCl (0.25 up to 1x) the effect was similar, but a relaxation appeared. Addition of RbCl (1-2x) stimulated SPC, but at >4x only F and basal tone increased. The effect of RbCl was essentially weaker (of KCl stronger) in stretched prepar. (for 1x: 182.7 and 114.3% resp.). Replacement of KCl and RbCl (0.25 up to 1x) induced a progressive increase of A, but not of F and basal tone. Effects of KCl and RbCl (3x): A of trigone decreased; F increased 2-3-times stronger after stretch by RbCl (for 1x: 227.1 and 469.2% resp.). CaCl (>4-9x) had an augmentory effect on F. Contrary to this, electrostimulation was also changed by K, Li, Rb, Cs. It is concluded that the non-uniform effects of K as well as Li, Rb, Cs (also of Ca as well as Ba and Sr; see contrib. Neu et al.) cannot be explained by simple ionic mechanisms, but probably by differences in atomic structures, i.e. their interaction with water and (chromo-, lipo-, glyco-) proteids. Lit: [1] Michailov et al: Eur J Physiol, S 419, R98, 1991 [a], Gyn-Geb Rdsch S 33, 333-334, 1993 [b]. J Biosci 24, S142, 1999 [c]. Proc IUPS Vancouver 16, 117, 1896 [d1], Glasgow (18) 216, 1993 [d2], St. Petersburg (19) P036.03, 1997 [d3]. [2] Neu et al: Biophys Mol Biol S 65, 170, 1996.

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P20-08

MECHANISM OF INDUCED RHYTHMIC ACTIVITY IN RAT AORTIC SMOOTH MUSCLE CELLS (SMCS)
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Many types of blood vessels exhibit rhythmic activity that can be either spontaneous (vasomotion in small arteries) or induced by vasoactive agents (large arteries). The precise mechanism of oscillatory contraction, which may differ in different vascular beds, is not clear. Therefore, the mechanism of rhythmic activity induced by phenylephrine (PE) and KCl in rat thoracic aorta has been investigated using tension measurements in endothelium-denuded rings and the whole-cell patch clamp recording in single SMCs. Two types of rhythmic activity were observed. 15-20 mM KCl induced sustained contraction with superimposed oscillatory contractions (OCs). OCs had the mean amplitude of 176±16 mg (mean±S.E.M.), duration of 5.2±0.2 s and frequency of 0.08±0.01 Hz (n=23). 20-40 nM PE induced a tonic contraction with superimposed rhythmic contractions of 99±7 s (n=34) in duration, termed oscillatory waves (OWs). OWs had the amplitude of 377±22 mg and frequency of 0.36±0.02 OWs/min (n=34). Both OCs and OWs, but not PE-induced sustained contraction, where inhibited by 0.2-1 μM diltiazem, 1-3 μM ryanodine and 5-10 μM cyclopiazonic acid. OWs were transformed into OCs in the presence of caffeine (0.5-1 mM). The duration and amplitude of OWs increased progressively with increasing doses of TEA (1-5 mM), but not in the presence of selective inhibitors of BKCa channels iberiotoxin (IBTx, 50-100 nM) or paxilline (1-2 μM). Whole-cell K^+ currents recorded in SMCs perfused with 200 nM Ca^{2+} revealed that the major K^+ current activated between -40 and 0 mV is a TEA-sensitive (IC50 = 3.1±0.6 mM, n=5) and paxilline- and IBTx- insensitive voltage-gated (Kv) current. We propose that both OWs (representing a summation of OCs) and OCs are triggered by Ca^{2+} entry via L-type Ca^{2+} channels, followed by Ca^{2+}-induced Ca^{2+} release from ryanodine-sensitive Ca^{2+} stores. Activation of Kv channels provides a negative feedback mechanism, hyperpolarising the SMC membrane and closing L-type Ca^{2+} channels.

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