...n these ERP tools we tried to specify performance ...its that we observed when attention was divided between ...e visual and the auditory modality ('DA' condition) compared to a (unimodal) focused attention ('FA') condition. After auditory stimuli the choice RTs were about 70 ms longer in DA than in FA, whereas the difference was only 14 ms after visual stimuli. The ERP analysis showed that this modality-specific delay was mainly reflected in the latency and amplitude of the P-CR, whereas the P-SR remained relatively constant. This lead us to the conclusion that in DA mainly the RS process after auditory stimuli is impaired.

MRBMs AND LEVELS OF MOTOR SKILFULNESS

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The MRBMs (Movement-Related Brain Macropotentials), using the SMPT (Skilled Motor Perceptual Task), consent to evaluate motor coordination and timing of skilled actions. Gun shooting, one of the disciplines of Modern Pentathlon, requires cerebral processing very similar to that occurring during the SMPT. The aim of our study was to characterize, from an electrophysiological point of view, the different levels of performances of two groups of athletes. So, we recorded the MRBMs in two groups of Pentathlon athletes aged from 19 to 33 years: Group 1 consisted of 8 subjects with Olympic level performance and Group 2 of 9 subjects who were in training to reach the same level. Active electrodes were placed at F_{pz}, F_z, C_z, LPC (Left Precentral area), RPC (Right Precentral area), P3, P4, all referred to linked mastoids. EOG and EMG were also recorded. The bandpass was 0.02–30 Hz, 0.2 Hz–3 kHz, 0.5–30 Hz for EEG, EMG and EOG, respectively. We evaluated the amplitude of the Bereitschaftspotential (BP), the amplitude and the latency of the Skilled Performance Positivity (SPP). Data were statistically evaluated by means of the Student's t-test. Group 1 showed a smaller amplitude of BP, at C_z and a longer latency of SPP at all the explored sites, comparing with those of Group 2. The smaller amplitude of BP of the Olympic athletes may reflect their ability to easily achieve an automatic level of performance. The shorter latency of SPP of Group 2 may indicate that their stages of information processing, included the 'resetting', are fast as they need, as soon as possible, to verify the results of their performance.

IS THE CIRCADIAN VARIABILITY OF BAROREFLEX DEPENDENT ON SLEEP?

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A non-invasive method was developed to study a circadian variation of baroreflex heart rate sensitivity (BRS). 10 healthy volunteers were examined every 4 h during 24 h period. They slept at night but they were awake during investigation. A significant decrease of blood pressure and heart rate at night was found in all subjects (Wilcoxon, $P < 0.05$) but an increase in BRS was observed only in 4 subjects. In these 4 subjects, the cardiac interval was highly correlated with BRS ($r > 0.65$, $P < 0.05$) which also showed higher mean values at night as compared to the other 6 subjects (38 vs. 11 ms/mmHg, $P < 0.05$). It is concluded that circadian variation in blood pressure and heart rate is sleep-independent and that an increase on BRS at night observed in some subjects was likely to be related to increased parasympathetic nervous activity.

SLOW CORTICAL POTENTIALS IN CLASSICAL CONDITIONING

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The repeated occurrence of events with high probabilistic association elicits a distinct brain reponse, the contingent negative variation (CNV), which may be used as a tool in the description of the associative process during conditioning. It was assumed that the early component of the CNV (initial CNV, iCNV) might represent the amount of anticipatory arousal with respect to the US that is elicited by the CS and would, thus, be especially sensitive to changes in meaning of the CS over time. The late component of the CNV (terminal CNV, tCNV) should indicate preparation for the CR.

Experimental evidence from a differential conditioning study in humans that used slides with varying emotional content as CS, electric shock as US, and autonomic and motor responses as UR/CR, indicated a clear lateralization of the tCNV on the side of the CR. A significant differentiation between the CS^+ and CS^- could be observed. The quality of conditioning was reflected in the height of the tCNV. The iCNV showed only weak stimulus effects. However, no differential acquisition or extinction of happy, angry or neutral slide CSs was observed in this study.

The data from this experiment suggest that the CNV may be regarded as a valid measure of the associative strength during acquisition. Further experiments on the functional role of the CNV components during differential conditioning (especially regarding the role of awareness) are presently being conducted.

COGNITIVE CONTROL OF THE INTERVAL BETWEEN TWO SACCADES

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