

CHANGES IN BODY COORDINATION IN CHILDREN FROM AZORES ISLANDS. A 3 YEARS LONGITUDINAL STUDY

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The purpose of this study was: (1) to analyse longitudinally the changes in body coordination (BC) in children during 3 years (6 to a 9 years old); and to analyse the stability of BC. Sample size comprises 142 girls (6,37±0,31 years old at the first evaluation and 8,42±0,35 at the third), and 143 boys (6,44±0,29 years old at the first evaluation and 8,34±0,39 at the third). BC was evaluated according to the body coordination test battery (KörperkoordinationsTest für Kinder) developed by Kiphard and Schilling (1974). The battery comprises four tests: backward balance (BB), jumping sideways (JS), hopping on one leg (HL), and shifting platforms (SP), from the 4 tests it is obtain a motor quotient (MQ) that permit the classification of children BC. A mixed ANOVA was used to analyze the changes along the 3 years and the differences between boys and girls. Intra-class correlation coefficient was used to analyze the stability in the all items test battery. In both boys and girls and in all items of test battery there were significant increases during the 3 years. In MQ the results show a linear increase in girls and no significant changes in boys. The BC level was higher in boys than in girls at all 3 evaluations, although in both boys and girls the level was low. It was found moderate (0.50) to strong (0.80) stability in both boys and girls. In summary: (1) boys had a higher BC level than girls; there were a linear increase in MQ in girls. BC shows moderate to strong stability.

Kiphard, E. J.; Schilling, F. (1974). *Körper-koordinations-test für kinder* ktk. Weidheim: Beltz Test.**INVESTIGATION OF FORCE CONTROL IN ADOLESCENT SOCCER PLAYERS**

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Objectives: The aim of our study is to examine the feature of the force control ability and the awareness of the force exertion of young soccer players. Kicking and stopping the ball precisely requires a high level of force control of the motor system, which coordinates the movement of the lower limb. According to my hypothesis, the football players should present high level of accuracy and consistency in each measured parameters and they are able to express their performance in values. To investigate the perception-action circle and proof the hypothesis I used an isometric test. This test provides insight into the development and function of a part of the motor system which can play important role in the performance during the games.

Methods: The subjects were 13 soccer players (male), age: 14.1 ±0.55 y., weight: 55.2 ±11.55 kg, height: 169.0 ±11.14 cm. They attend training six days of the week and participate in the championship of the regional soccer association. After completing written consent, according the Ethical Committee of the University of Pécs, the participants exerted isometric force with the knee extensor muscles on a force measure device to learn how to execute the target force. The target force was given at 100 N. The duration of the familiarisation process was 30 sec., the actual magnitude of the force exertion was displayed, the participants sat in upright position, and knee angle was set at 90°. After 5 minutes resting period they attempted to reproduce the target force without visual feedback from the magnitude of the exertion, and they repeated it in the same condition two times thereafter. They were also asked to estimate their actual achievement after each exertion. The magnitude of the execution was recorded using electronic force measure equipment at 33.3 Hz. The participants were asked to give voice sign when they felt to reach the target force level to stop the experiment. From the raw data the constant error (CE) and the estimation error (EE) were computed. To test the hypothesis the Pearson's Correlations Coefficient was applied using SPSS 13 software.

Results: The result of the first trial 103.1 ±42.9N was the closest value to the target among the three attempts (2.trial 116.0 ±48.7N and 3.trial 109.3 ±46.6N). The 2.trial showed the largest positive deflection in the performance despite of the fact that they estimated their achievement higher than the target after the 1.trial (est. after 1. trial 102.9 ±6.3N). The estimation is in accordance with the expected trend after the 3.attempt but not with the real target value (est. after 3. trial 102.3 ±42.9N) Relating the computed values the CE and the EE showed significant association $r=0,992$ $n=13$ $p<0.001$.

Conclusion: This result suggests that the noise in the performance arises from the not clearly defined nature of the stored information and from the competition between the automatic and conscious regulatory system.

SUBTLE MEMORY AND DYNAMIC ATTENTION DURING TWO TASKS OF COGHEALTH PROGRAM OF SCHOOL CHILDREN

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Introduction: This study was designed to evaluate with the cognitive performance of the school child and with the higher brain neurological system of human, quantitatively. We adopted CogHealth soft-program as this task of this experiment. Another object is to propose the evaluating function with the mild cognitive impairment of aging. **Method:** Twenty-six healthy adults (average age: 37.1yrs, AG) and fifteen children subjects (average age: 8.1yrs, CG) were employed to this study. Two tasks of the playing-card games of CogHealth were displayed on the CRO of PC. The first game is asked to determine whether a single pair of cards presented on the display was the same. If they were the same, subjects press the "K" yes key (memory M task). The second game are require to press the key as fast as possible whenever anyone of five cards may touch to two lines at the top- and bottom at the CRO (dynamic D task). These tasks require a rapid response correctly and to operate pushing the key on the random series of thirty cards. Those data of response times were processed to obtain estimating variables of their reaction velocity, the frequency rhythm, their mental fatigue, their integrated cognition and their subtle memory with using the time series analysis of the computer soft program (MEMCalc). Trajectory Charts and Power Spectrum of their reaction time were processed to get the motion (F), the locus-distance (LD), the gradient(gradient) and the total power spectrum (TPS). Furthermore these demographic and psychometric parameters were evaluated to compare with the aging and with one way of ANOVA, statistically. **Results:** As resulting of these processing variables, total reaction times of AG and (CG) were observed at average 475msec(846msec of pupils) of M task, and 438msec(730msec) of D task, individually. The subtle memory and the dynamic attention of CG showed inferior to those of AG ($p<0.05$). At the case of D task, parameters of F and LD appeared significant difference between two groups, and two values of gradient; and TPS were obtained to average -4.4(-7.4) gradient, and 0.2mV(12539;Hz)(0.7) area, significantly($p<0.05$). **Discussion/Conclusion:** There have been appeared a developmental delay of the higher brain neurological system, and of a psychometric association with aging about CG. Data of the task rhythm (F), the short-term memory (gradient), the mental fatigue (TPS), and the psycho-saturation(LD) might display to evaluate with a cognition level related to aging quantitatively. These results seem to indicate that those variables should help to indicate the demented attitude and the attentive levels related to the calendar aging and the