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Actual condition and consciousness of secondary disability in workers with cerebral palsy in community workshop centers - Suggestion for improvement and prevention

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Aiming at proposing improvements of the work conditions of workers with cerebral palsy in community workshop centers, and preventing their secondary disability, we conducted questionnaire survey for 261 workers with cerebral palsy. They were asked in the questionnaire about their work situation, work experience, work content, work environment, their opinion about work or their proposals about improvements, their consciousness to secondary disability, and supports they expect to specialists.

The results revealed that they did not have dissatisfaction with their present work condition but had anxiety about future. According to these results, the necessity for the medical and ergonomic supports for them became clear, i.e. we need to take cooperation with rehabilitation doctors, occupational doctors, engineers, and co-medical types of jobs. By doing so, we can construct the suitable work environments for workers with cerebral palsy and remove their anxieties to secondary disability.

Comparison of loneliness experienced by the aged living in nursing houses and living at home

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The residents of the nursing houses are separated from their families and incarcerated, so to speak, in a geriatric community. Our study examined the level of loneliness of the residents in nursing houses, which are considered to be somewhat like an isolation ward. Twenty-two questionnaires based on the UCLA loneliness scale in 5 levels were administered to 158 men and women, ranging in ages between 62 and 100. They were divided into 2 groups; the first group of 104 lived in the nursing house (of which 60 lived in aged care facilities and 44 in health care facilities) and 54 lived at home.

Three factors emerged from the questionnaires. Factor 1: After retirement from the workforce, aged people experience a sense of alienation from society and loneliness. Factor 2: After retirement

from the workforce, aged people experience a sense of alienation within their families and loneliness. Factor 3: After retirement from the workforce, aged people experience a feeling of spiritual loneliness within themselves. The results suggest that the aged moving into a nursing house experience spiritual loneliness greater than those living with their families do. The study will be useful to an understanding of the causes of loneliness in a geriatric society.

Seasonal birth distribution in Japanese W-Cup soccer players: A possible explanation from the viewpoint of human biology

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Among the members of the national soccer team of Japan in the World Cup Korea Japan 2002, 17 players (73.9 %) were born between April and September and 6 players (26,1%) were born between October and March. This rate appears comparable with the fact that twice as many top soccer players from the J1-League (430 top Japanese players) were born between April and September, as those born between October and March. In contrast, among college students (460 students of almost the same age as the J1 league players), about 53% were born between April and September. As for the Under-12 and Under-18 top players, over 66% of them were born between April and September.

A selection mechanism, resulting from organizational aspects of the training center system beginning in elementary school, and competition during junior high school or junior youth, youth or high school could explain this phenomenon. From the viewpoint of growth and development, especially the 'golden age' of skill development in children between 8 and 13 years of age, 6-month difference of birth date clearly reflects the development level of exercise ability and readiness for several kinds of soccer techniques. In relatively big games on the prefectural or district level, if the age group born between October and September were to be utilized in addition to the school-age group, born between April and March, a larger percentage of the players born between October and March would be selected, and the levels of the Japanese soccer players would become higher.

Determining space-dimension based on biomechanical and psychological variables in standing-up and sitting-down movements

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To obtain fundamental ergonomic information for designing relatively narrow spaces, variables including the height of a chair and the horizontal distance between the wall and front edge of the chair seat were manipulated in sitting up and standing down by 19 subjects. For each of the variables, movements of body segments were measured and the pressure sensation was evaluated by each subject in 5 points scale.

While the pressure sensation was appreciable if the chair-wall distance was less than 80 cm, the sensation declined rapidly with increase in the distance, to turn negligible with the distance more than 130 cm. Pattern of the segmental motion became stable for the distance more than 80 cm. Based on the observation above, to avoid any pressure sensation due to the wall in front of subjects, the chair-wall distance needs to be longer than 130 cm. To avoid motion restriction in standing-up and sitting-down while pressure sensation still exists, the distance should be longer than 80 cm.

The differences of physiological responses to cigarette smoke between smoker and non-smoker

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The response of EEG, heart rate variability (HRV) and skin resistance change (SRC) to cigarette smoke was compared between six smokers and six non-smokers. Smoke of incense and dried leaves was also used to be compared with cigarette one. Smoke was forced by an electric fan to stream through a small chamber in which each subject sat facing to the smoke. The experiment consisted of five minutes of non-smoke occurrence, two minutes of smoke occurrence, and 10 minutes of non-smoke occurrence in serial order. The order of the smoke given was randomized for each subject. EEG response, HRV and SRC were calculated for each minute and normalized by being subtracted or divided by the average of the value for three minutes just before the occurrence of the smoke. Subjects graded their taste for each smoke in seven points after the experiment.

EEG and HRV showed that the non-smokers felt uncomfortable more than the smokers did, although statistically significant different cases between these groups were few. The differences in EEG between the groups continued until nearly the end of the experiments. The non-smokers seemed to feel uncomfortable even for the low-level cigarette smoke.

A study of the comprehension of public signs among Chinese students in Japan

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Public signs are widely used throughout the world and are often misunderstood because of societal and cultural differences. Therefore, the relation between the understanding and the special characteristics of signs in different countries should be studied. The object of this research is to determine, through the administration of a questionnaire, how Chinese students identify 125 types of standardized public signs used in Japan. In cases that the exact meaning of the sign was difficult to comprehend, common factors such as shape, color, and wording between the signs of the two countries allowed the students to grasp a general understanding of the intended meaning. Independent of the level of abstraction or concreteness of the pictogram displayed, the signs of both countries are often similar in shape and are therefore easy to understand. Of the signs not often used in China, those with concrete shapes were more easily understood than those with abstract shapes. In the case that the signs of the two countries differed, students often answered incorrectly. As a result, it is necessary to promote worldwide understanding of public signs through the standardization of easy-to-understand symbols and products to convey information effectively.

Effects of respiratory exercises on pistol shooting performance

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Voluntary control of breathing has been used to relax or to influence the mind. Top level pistol shooters adopt some kind of breath control to get higher shoot scores. In this study, 14 inexperienced subjects shot an optical pistol ten times with and without 30 minutes of respiratory exercise, that is, voluntary control of breathing.

About half of the subjects got higher scores after the respiratory exercise, but another half got

lower scores. After respiratory exercise, the zone of impact of ten shots became narrower compared to that without exercise. The results were analyzed by comparing the recorded autonomic functions: face and palm skin temperature and finger perspiration. Skin temperature rose after shooting with and without preceding respiratory exercise. The degree of temperature rising was greater when the respiratory exercise had been done. Finger perspiration gradually decreased during the shoot session, while increasing at the shoot times.

Revisiting acquisition and implementation of occupational safety data

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Examination of the current occupational safety practice in the field of the municipal fire department has revealed that no description of unsafe act and conditions exists in their operation manuals. This study is concerned with the importance of safety measures which should be so described in workers' task manuals as task contents and their procedures that workers be safe in their work place. The factors which constitute the safety data collection forms are identified by referring to the occupational death and injury statistics issued by the governmental report. These include "accident type", "accident agents", "unsafe acts", and "unsafe conditions" which should be compiled in the work manuals along with the job processes. No attempt has been made to provide the complete details of any one of the myriad areas of practice. The safety data, however, acquired through these forms may help to reduce the loss due to industrial accident and hazards in workplace. The use of action checklist makes the data collected useful to implement safety programs.

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A study on the effect of heat stress on workers' performance and cognitive functions during simulated construction work

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As construction works are often operated outdoors, construction workers are much affected by work environments. In summer, the workers suffer from heat stress in addition to physical workload. It is known that the task performance deteriorates in the hot environment, and there seems to be the high possibility of occurrence of human errors or accidents during work in the hot. In this study, the effect of thermal stress during simulated construction work on work performance and cognitive functions were examined to assess the possibility of occurrence of accidents.

Eight healthy male students took part in the experiment as test subjects. They carried out simulated construction work for 90 minutes under three thermal conditions, i.e. 23, 29 and 35 degrees

centigrade. Subjects were forced to interrupt simulated work and do performance tests by PC on the desk when ordered at random intervals. On 35 degrees, results of the performance test were the worst and inclined to deteriorate as time of work passed. These results suggest that there is much possibility of occurrence of errors during physical work in hot environment and that it is necessary to consider countermeasures such as taking rests to keep safety at work.

Comparison of three methods for assisting patients in sitting up from Futon-mattress: From the viewpoints of caregiver and the person who needs care

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It is well recognized that assisting the recumbent patient in sitting up causes a considerable burden in the body of caregivers. A variety of methods have been developed to lessen the burden in assisting the patient in bed. Since, however, a large number of elderly in Japan still are using Futon-mattress for sleep, development of practical methods to assist the recumbent patients in sitting up from Futon-mattress is desirable.

In this study, three kinds of method to assist the sitting up were mutually compared, i.e. A; to assist from behind with the arms inserted under the armpit; B; to pull up the patient from in front with the arms crossed behind the back; and C; to take advantage of the trunk rotation by the patient. Heart rate and back muscle EMGs during the assistance were monitored and subjective assessments of the physical workload were obtained from the caregivers (12 nurses). Subjective assessments on the three methods were also obtained from those given the assistance (40 healthy volunteers older than 60 years of age).

Results of heart rate and EMG revealed that the physical burden in the caregiver was significantly less in methods B and C than in method A, while method C was significantly more preferred to other two by subjective assessment of the care-givers. The subjects given the assistance preferred method C significantly more to the other two methods. These results suggest that the method C is by far the most suitable method in assisting the sitting up of the patients, although psychological factors between the patient and caregiver should not be neglected.

Effects of short-term immobilization on neuromuscular functions analyzed by the twitch interpolation technique

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Neuromuscular function deteriorates in short-term immobilization from a few days to a week, causing the elderly to become bedridden. The purpose of this study was to clarify the mechanism of the neuromuscular deterioration due to short-term immobilization. The first dorsal interosseus muscle (FDI) of 10 healthy male adults was immobilized for 1 week by using casting tape. For the FDI, force in maximum voluntary contraction (MVC), cross-sectional area in magnetic resonance images (MRI), twitch force at rest, and voluntary activation (VA) index, obtained by using the twitch interpolation, were measured before casting, and immediately after and 1 week after the termination of immobilization.

While the MVC force declined after immobilization ($p < 0.01$), and recovered after 1 week from

the termination of immobilization ($p < 0.01$), the cross-sectional area showed no significant changes between the 3 stages examined. Both the twitch force at rest and the VA at MVC declined after immobilization ($p < 0.01$), and recovered after 1 week ($p < 0.05$). These results suggest that the temporary decline of the MVC force was not caused by muscular atrophy but brought about by the deterioration of peripheral and central elements in the neuromuscular systems. Possible factors in the peripheral and central systems affected by the immobilization were discussed. The results of this study will be useful in developing training devices that prevent the elderly to become bedridden as a result of disuse syndromes.