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THE IMPACT OF NONTRADITIONAL FORMS OF TRAINING ON THE HEALTH OF STUDENTS. L. Avetissyan, State Medical University, Yerevan, Armenia

The study of nontraditional forms of training shows that hygienic and medical aspects are not taken into consideration in practice. The main goal of this study is to determine the impact of nontraditional forms of training on the students' state of health and to study the influence of training loads on the students' capacity for work, functional state of main systems of the organism as well as the state of students' health while conducting new nontraditional forms of training

The studies (duration: 3 years) were carried out in a college for gifted children (378 students) and at a secondary school (control group of 218 pupils). During the academic year in both of these educational establishments, we studied daily, weekly, and yearly dynamics of intellectual faculties; determined response reactions of the cardiovascular and central nervous systems on learning loads; assessed the occurrence rate of diseases and physical development; and studied microclimatic factors, day regime, and organization of educational processes.

Results showed that weekly learning loads in the said establishments substantially exceed accepted standards. Although the students' intellectual faculties were high enough to study without any difficulties, some pathological changes in their organisms — disorders in cardiovascular, central nervous systems, and eyesight — were observed by the time of graduation from the college. In this respect, a number of recommendations we developed are especially urgent: correction of training loads, daily regime, and timetable as well as medical–psycological control of students.

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A MODEL FOR EH&S WEB-BASED TRAINING. T. St. Clair, SoBran, Incorporated, Atlanta, GA.; D. Dahlstrom, Clayton Group Services, Kennesaw, GA.

While companies take advantage of web technology to deliver environmental health and safety (EH&S) training, learning effectiveness, without proper design, may be jeopardized. This paper presents a web-based EH&S training model that maximizes the learning experience through focused interactivity between the student and computer.

Academic studies have demonstrated that adults learn best from interactive forms of instruction and communication. Interactivity — defined as direct learner response to information queries conveyed by multimedia techniques — has been proved to increase learning retention by 40%–60% compared with traditional classroom instruction. Feedback mechanisms, an integral design element of the model, serve to further increase and ensure learning retention.

The featured web-based training model incorporates a variety of interactive tools, ensuring a stimulating, challenging, and entertaining learning environment. Training courses are divided into 10—12-minute lesson modules with some form of interactivity incorporated between modules.

Instructional materials are presented using a variety of multimedia techniques that enhance student interest. Quizzes at the end of each module measure and document comprehension and provide instant feedback. The score achieved determines if the worker is permitted to proceed to the next module or return to a review of lesson materials related to questions answered incorrectly.

Real-world safety incidents are used as practical exercises to test decision-making capability in role-playing scenarios. Placed in a "virtual" environment, students must solve problem(s) with the correct sequence of actions. Selecting the incorrect solution or performing actions in the wrong sequence results in feedback on the consequences of their decision-making skills.

Performance is measured, recorded, and evaluated for feedback from training managers. A self-documenting test at the conclusion of the instructional material is the final knowledge assessment exercise.

In conclusion, properly designed, web-based training significantly increases learning retention, effectively measures decision-making capabilities, and improves worker performance.

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REQUIRED TRAINING FOR THE SURFACE NON-COAL MINING INDUSTRY, INDEPENDENT CONTRACTORS AND CONSTRUCTION ON MINE PROPERTY — CFR 30, PART 46. R. Wood, Mine Safety and Health Administration, Beaver, WV

The purpose of this presentation is to help advise the mining industry of new training regulations promulgated to enhance the health and safety of miners as required by the Federal Mine Safety and Health Act of 1977. The Act directed the Secretary of Labor to promulgate regulations requiring that each mine operator subject to the Mine Act establish a health and safety training program for the miners at the operator's mine.

This presentation provides an overview of that final rule of the Mine Safety and Health Administration, which establishes requirements for the training and retraining of miners engaged in shell dredging or employed at sand, gravel, surface stone, surface clay, colloidal phosphate, or surface limestone mines. The new rule became effective on September 30, 1999, and will be enforced beginning October 2, 2000.

Discussions will include required training plans, training requirements for new miners (24 hours), newly hired experienced miners, refresher training (8 hours), new task training, and site-specific hazard awareness training.

The certification of training, involvement of miners representatives, competent instructors, compensation of employees for training, substitution of training requirements, and the legal responsibilities for training will also be discussed.

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THE EFFECTIVENESS OF THEORY-DRIVEN APPROACHES FOR TRAINING CARPENTERS TO PREVENT OCCUPATIONAL HEARING LOSS. C. Merry, M. Stephenson, NIOSH, Cincinnati, OH

The National Institute for Occupational Safety and Health (NIOSH) recently surveyed the noise levels associated with carpentry tasks. In a related effort, the hearing threshold levels were obtained on 617 carpenters. The results indicated that nearly every carpentry task involving power tools exposes carpenters to hazardous noise levels.

Not surprisingly, the audiometric test results demonstrated that carpenters begin losing hearing at an early age. By age 25, the average carpenter in this sample had hearing equivalent to that of an otherwise healthy, 50-year old worker not exposed to noise. By age 55, two of three carpenters in this sample were sufficiently impaired to need hearing aids. This paper will describe how NIOSH used these data and the results of hearing protector effectiveness studies to develop training materials designed to positively influence carpenters attitudes, beliefs, and behaviors about hearing loss prevention. The results of pilot trials of these training materials will be described in the context of the health communication theories used to frame the training messages.

The results will also be reviewed in terms of future efforts to develop practical education and training programs for preventing occupational hearing loss among construction workers in general.

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USING FOCUS GROUPS TO GATHER INFORMATION ABOUT SILICA DUST EXPOSURE IN THE WORKPLACE. B. Day, D. Tan-Wilhelm, NIOSH, Morgantown, WV

Focus groups provide researchers with an opportunity to gather qualitative information about particular issues that might otherwise be missed with traditional survey methods. In this study, focus groups were used to gather specific information to aid in the development of intervention materials.

A series of 13 focus groups were conducted with union and nonunion masonry workers and contractors in Pennsylvania, North Carolina, and South Carolina to gather information about silica dust exposure in the workplace. The focus groups were unique in that a theoretical framework was used to guide the discussions. Components of the Extended Parallel Process Model (EPPM) were incorporated into the focus group discussion to determine the participants' perceptions of threat and fear regarding silica dust and silicosis and their perceptions of efficacy regarding respiratory protection methods such as wet-sawing and respirator use.

EPPM research has indicated that health messages are most effective when threat and efficacy perceptions are high. The focus group discussion included questions that assessed current workplace safety behaviors, preferred sources of receiving health and safety information, and preferred format of health and safety information. The results indicate that there are clear differences in threat and efficacy perceptions between masonry contractors and workers concerning silica dust and silicosis.

These differences have been carefully considered in the design of targeted intervention materials for both contractors and workers. These materials have been pilot tested and will be implemented and evaluated in a larger study.

Focus groups served a crucial role in the assessment of target group perceptions and the formative evaluation of intervention materials. Focus groups should be seriously considered when developing health communication and educational intervention materials.

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NEW DIRECTIONS IN CONFINED SPACE RESEARCH. D. Davis, DeWitt Davis IV, Virginia Beach, VA

This paper is intended to be the lead for a technical platform on confined spaces. It is the industrial hygienist's responsibility to objectively recognize, evaluate, and control the confined space hazard. The recognition and evaluation of confined space hazards are well researched; several comprehensive volumes on confined spaces are published. This

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Abstracts