Final Progress

Summary Report

CDC/NIOSH Training Grant No.
T01/CCT610434

July 1, 1994 to June 30, 1999

Texas Tech University
Department of Industrial Engineering
Lubbock, Texas

Title: Training Grant Support
in Occupational Safety
and Health (MS)

Program: CDC/NIOSH Training

Program Director: M.M. Ayoub

Date: December 1, 1999

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I. Abstract

The Occupational Safety and Health (Ergonomic emphasis) at Texas Tech University has benefited greatly from the NIOSH training grant support over the past 18 years. Seventy one master's students have graduated throughout that time period. During the last five years, there has been an average of three M.S. student's graduate per year.

There have been a few changes in the departmental faculty over the years. During the past year, Dr. Jeffrey Woldstad left the program; however, we have already recruited one faculty member in the area of human factors, ergonomics, and biomechanics and are seeking one additional faculty member in the area of ergonomics with expertise in cognitive ergonomics.

Acquisition and update of laboratory equipment continues as needed. Although grant monies have not been used for such equipment, the update of laboratory equipment benefits all students in the program. Placement of our graduates remains at 100%. The program at Texas Tech continues to be strong and therefore graduates are highly sought after.

II. Significant Findings

The following are considered to be the important findings during the last five year grant period:

A. The curriculum continues to be reviewed by the department and changes are made as needed. The Department of Industrial Engineering has recently gone through the ABET inspection and it appears that the department will receive approval for six years.

B. One additional faculty in the area of ergonomics has been recruited to begin in January 2000 and another faculty in the area of ergonomics will be added to the faculty this year.

C. Typical program enrollment (FY99) include 10 M.S. students (3 NIOSH supported) and 4 Ph.D. students (0 NIOSH supported). An average of 20 other students take ergonomics and occupational safety and health courses.

D. All students graduating from this program have no difficulty finding jobs. In fact, they are immediately recruited upon graduation.

E. The timing of the program renewals continues to pose problems in recruiting students. With a desired Fall semester starting date, it would be preferable to be able to make firm offers to students in the early to mid-spring time frame. We have lost several students who accepted permanent employment after their B.S. degrees because we were unable to confirm an offer of a traineeship early enough.

III. Progress Summary

A. General

The NIOSH grant support has resulted in the development and continuation of a high quality training program at Texas Tech University. This grant provided funds which were helpful in supporting modest faculty development as well as some faculty support during the summer months. Overall, this support has resulted in the program growth, recognition, as well as increased career opportunities for our graduates. We continue to adopt our policy of hands on use of modern equipment in our laboratories. In addition, the library has provided support through textbook and reference book acquisitions, and also through the purchase and updating of several periodicals and other data systems. Such acquisitions have been essential to support the program over the years. Trainees are involved in a practicum which provides on the job experience in application of ergonomics and safety.

B. Faculty

Very modest faculty support is provided through the NIOSH training grant. Faculty support and development has been provided through departmental or research funding. The program faculty are very active professionally and are involved in development activities through attendance and presentations at professional conferences. The typical program faculty member attends 2 or more professional conferences per year and normally makes presentations at those conferences. In addition, program faculty often serve on discussion panels, as session chairs, or as organizational officers in the societies. Although the program has seen some turnover in faculty, the core faculty of Drs. Ayoub, Ramsey and Smith have been active in the program for over 20 years.

C. Enrollment

During the current NIOSH support, enrollment has been maintained at approximately three M.S. students per year. The faculty which support this occupational safety and health training program serve on several different positions in professional societies and play an important role in the promotion of occupational safety and health as well as ergonomics. These activities help in recruiting new students for the program.

D. Placement

The graduates of the program at Texas Tech University have been able to find excellent jobs upon graduation. Program graduates are highly sought after by employers and they are primarily working in the areas of occupational safety and health and ergonomics. They are not only employed within this region, but they seem to be able find jobs in many other states across the country. Table 1 shows placement of graduates for the past five years.

E. Student Support

Under this five year grant, approximately 14 students were supported with partial or full support. In order to reduce the tuition and fee cost, all the students out of state who are recruited for the program are offered scholarships so that out of state tuition can be waived.

Students are encouraged, and are supported, to travel to national conferences where occupational safety, health and ergonomics issues are discussed. Such meetings include the Human Factors and Ergonomics Society Meeting and the Industrial Hygiene Association Meeting. Funds are usually requested in the grant for these travels but are also complemented by funds from the university. Whenever possible, we invite outside speakers who provide seminars for our students. In the last five years, we had approximately three to four seminars to address ergonomics and safety issues to our students.

F. Laboratory Support

The laboratories at Texas Tech University in the area of ergonomics and safety are maintained by acquisition of new equipment and supplies as needed. At the beginning of the grant periods in the earlier years, support for equipment was provided by the NIOSH grant. Recently the university has taken over that activity and has maintained these laboratories. Therefore, we have continued to acquire equipment using funds primarily available from the State of Texas.

Table 1. Placement of Graduates

NAME	PLACE OF EMPLOYMENT	GRADUATION DATE
Blair Geismar	Tecumseh, Salem, IN	August, 1999
Jim Fullmer	Deere & Co., Moline, IL	August. 1998
Mary Garcia	USAA, San Antonio, TX	August, 1998
Amber Stern	General Motors, Arlington, TX	May, 1998
Jeff Brewer	Raytheon, Lewisville, TX	December, 1997
Maria Ortiz	Exxon, Houston, TX	December, 1997
Marcy McCullough	Shell Oil, Houston, TX	August, 1997
Bryan Mamantov	Sabre Corp., Dallas, TX	August, 1996
Antoinette Coker	Owens Corning, Huntingdon, PA	August, 1996
Steve Sherman	Boeing, Everett, WA	May, 1996
Charlyn Plunk	Raytheon, Lewisville, TX	December, 1995
Pamela Nolte	Eagle Picher, Lubbock, TX	August, 1994
Debra Jones	SA Technologies, Marietta, GA	May, 1994
Jeff Hanson	Industrial Molding, Lubbock, TX	May, 1994

G. Program Highlights

1. The program continues to be highly regarded and has a strong rational and has a strong rational and international reputation for excellence in ergonomics and occupational safety and health education.
2. Fourteen students graduated from the program.
3. All graduates of the program have been recruited upon graduation.
4. Most of these graduates hold positions in safety and ergonomics.
5. Practicum experiences continue to be supported by local and regional industries (Frito Lay, Owens Corning, Furr's Supermarket, Eagle Picher Industries).
6. The Ph.D. program continues to produce graduates for both industry and academia, with excellent (100%) placement rates.
7. The breadth and depth of the program faculty continues to be a strength of the program.

H. Final Invention Statement

No inventions were conceived under this grant award.

I. Conclusions

The following conclusions can be summarized with respect to the Texas Tech University training grant.

1. This training program in occupational safety and health at Texas Tech University has helped meet the regional and national need for occupational safety and health professionals.
2. The training program at Texas Tech provides excellent professional training in occupational safety and health that includes practical experience with a practicum.
3. Adequate resources are dedicated to the program.
4. The faculty have varied expertise and are well recognized in the field.
5. Enrollment has been maintained in the program with 100% placement.

IV. List of Publications of Faculty Serving the Training Grant

"Age Related Effects of Transitional Floor Surfaces and Obstruction of View on Gait Characteristics Related to Slips and Falls," accepted for publication in the *International Journal of Industrial Ergonomics*, 1999. (Yuthachai Bunterngchit, Thurmon Lockhart, Jeffrey C. Woldstad, and James L. Smith).

"Psychophysical and Physiological Study of One-Handed and Two-Handed Combined Tasks," 1999, *International Journal of Industrial Ergonomics*, 24, 49-60. (Hoonyong Yoon and James L. Smith).

"Evaluation of Satchels for Postal Letter Carriers," 1999, *International Journal of Industrial Ergonomics*, 23, 269-279. (M. M. Ayoub and James L. Smith).

"Trajectory of the Whole Body Center-of-Gravity During Slip and Fall Accidents Among Different Age Groups," accepted for presentation at publication by IEA 2000, San Diego, CA. (Thurmon Lockhart, James L. Smith, Jeffrey C. Woldstad, and Pingsham Li).

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"A Biomechanical Evaluation of Lifting Speed Using Work- and Moment-Related Measures," *Ergonomics*, Vol. 42, No. 8, pp. 1051-1059, 1999 (C.J. Lin, T.M. Bernard, and M.M. Ayoub).

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Memorandum

Date February 16, 2000

From Principal Engineer, OECSP

Subject Final Progress Report for entry into NIOSHTIC/NTIS for NIOSH Training Grant No. T01 CCT 610434

To William Bennett, IRB, EID (C-28)

The enclosed report has been received from the Program Director to document work performed during the specified grant project period. The following information applies to the designated Training Project Grant (TPG):

Title: Training Grant Support in Occupational Safety and Health

Project Director: M.M. Ayoub, Ph.D.
Department of Industrial Engineering
Texas Tech University
Lubbock, TX 79409-3061

Grant No.: T01 CCT 610434

Project Period: 7/1/94 - 6/30/99

Please place the report in DIDS and I also recommend it for entry into NIOSHTIC and submission to NTIS.

Thanks for your assistance.

John T. Talty, P.E., DEE

cc: S. Board/B. Kuchinski, OECSP

Enclosure

fpr.ttu