M O N T A N A B O A R D O F R E G E N T S

LEVEL II REQUEST FORM

Item No.:	**136-1004-R0707**	**Date of Meeting:**	**July 11-12, 2007**
Institution:	**The University of Montana - Missoula**		
Program Title:	**Montana Center for Work Physiology and Exercise Metabolism**		

Level II proposals require approval by the Board of Regents.

Level II action requested (check all that apply): Level II proposals entail substantive additions to, alterations in, or termination of programs, structures, or administrative or academic entities typically characterized by the (a) addition, reassignment, or elimination of personnel, facilities, or courses of instruction; (b) rearrangement of budgets, cost centers, funding sources; and (c) changes which by implication could impact other campuses within the Montana University System and community colleges. Board policy 303.1 indicates the curricular proposals in this category:

- ☐ 1. Change names of degrees (e.g. from B.A. to B.F.A.)
- ☐ 2. Implement a new minor where there is no major;
- ☐ 3. Establish new degrees and add majors to existing degrees;
- ☐ 4. Expand/extend approved mission; and
- ☒ 5. Any other changes in governance and organization as described in Board of Regents' Policy 218, such as formation, elimination or consolidation of a college, division, school, department, institute, bureau, center, station, laboratory, or similar unit.

Specify Request:

The University of Montana – Missoula requests authorization to create the Montana Center for Work Physiology and Exercise Metabolism (MWPEM) on The University of Montana – Missoula campus.

1. Overview

Provide a one paragraph description of the proposed program. Be specific about what degree, major, minor or option is sought.

The new Center would be called "The Montana Center for Work Physiology and Exercise Metabolism" (MWPEM). The purpose of the Center will be to serve as a dedicated facility for the advancement of research in the area of applied human physiology in extreme environments. The Center will work closely with AFSOC and the Air Force Research Laboratories (AFRL) in addition to the US Army Research Laboratory (USARIEM) to establish a better understanding of feeding strategies to maintain metabolic dominance on the battlefield. The Center will serve as a regional and national location for collaborative research efforts surrounding occupational and ultra-endurance work situations. Cooperative agreements established with AFSOC, USARIEM, AFRL, and the USFS will serve as avenues to establish continuous funding for the purpose of enhancing performance and safety on the battlefield and on the fire lines of the west. Through current funding from a legislative initiative and grant from AFSOC and AFRL, The Department of Health and Human Performance is constructing a new 4000 square foot laboratory, which will serve as the primary location for the MWPEM.

2. Need

a. To what specific need is the institution responding in developing the proposed program?

<u>There are four primary objectives associated with creation of MWPEM:</u>

- Promote an efficient approach to intensive data collection efforts in both laboratory and extreme field environments.
- To give state, national, and international recognition for this unit of The University of Montana.
- To enhance the connection between educational and research components of the Montana University System.
- To have a specifically designated "Center" for bringing dedicated funds to the University (grants, contracts, donations) and for attracting students, visiting scholars, and global collaborative research colleagues.

There is a gap in applied human physiology research and education in Montana. Although the state of Montana houses two HPL oriented facilities (UM-Missoula and MSU-Bozeman), there is not a facility dedicated to the research of applied human physiology during arduous work in extreme environments. With the present level of funding, we have established an aggressive data collection effort that includes the employment of three full-time and one half-time former UM graduates. Moreover, we are currently negotiating additional graduate student stipends to bring more out of state students to Montana. We are also starting to develop an internship program for students interested in pursuing additional research experience with the proposed Center. This program will be marketed to junior level undergraduate students to provide them with an opportunity to gain entry level and advanced research experiences and to present these findings at regional and/or national symposium.

b. How will students and any other affected constituencies be served by the proposed program?

The present UM Human Performance Laboratory (HPL) is involved in applied research and teaching on both the undergraduate and graduate level (M.S. level). The footprint of the laboratory has grown over the last 12 years and the number of undergraduate students has doubled. Similarly, in 1994, the laboratory supported the research agenda of one faculty member in the area of exercise physiology. Two additional tenure track faculty positions have also been added (exercise physiology, 1999; nutrition, 2003). Therefore, the current laboratory space functions to serve the needs of faculty funded and unfunded research, graduate student thesis research, student projects and laboratory classes.

The development of this Center will provide unique research opportunities for qualified undergraduate students while serving as a leading research laboratory in the Northwest. It is also anticipated that the Center will serve as an avenue to enhance funding opportunities for post-doctoral research fellows. Post-doctoral research fellows will be encouraged to solicit external funding to gain additional grant writing experience. Therefore, the Center intends to operate as a facility that encourages learning through research by serving undergraduate and graduate students in addition to the advanced training of post-doctoral fellows and future researchers.

The development of a Center specifically designed to evaluate human performance in adverse environments will attract new masters-level graduate students, post-doctoral applicants in addition to collaborative scientists from other agencies/institutions in the U.S. and abroad.

During summers of years 1-5, graduate and undergraduate research assistants will be hired as the needs arise and as funds from federal grants and private sources become available.

c. What is the anticipated demand for the program? How was this determined?

The University of Montana has been approached by AFSOC to create a dedicated research Center in order to provide scientific direction and leadership to coordinate applied human performance research specific to the training and deployment of Air Force Special Forces (combat controllers and para-rescue jumpers). Our laboratory expertise is in the measurement of metabolic activity during arduous field settings. We have received funding from the AFSOC, and/or AFRL, the USFS, and the US Army for the last 10 years to refine these research capacities. AFSOC recognizes that with the development of a dedicated laboratory facility, the proposed Montana Center for Work Physiology and Exercise Metabolism can provide for the specific and unique needs of smaller, specialized branches of the military.

The majority of these projects have contained significant field and laboratory components that range from intensive measures of muscle and liver metabolism of carbohydrates in the lab to measures of total energy expenditure and muscle

carbohydrate loss in the field. We are currently the best equipped laboratory in the northwest if not the nation for conducting human physiology field research in extreme environments.

The main benefit of a dedicated laboratory/center is the ability to attract extended external funding. However, in order to contract with these agencies, we must demonstrate an ability to provide research services in a timely manner. As mentioned above, the infrastructure (building and initial three years of funding) for the Center are currently in place and/or being developed.

A "Center for Work Physiology and Exercise Metabolism" designation would enhance the University's ability to attract outside funding and students. Grant announcements from branches of the United States Department of Defense, AFRL, AFSOC, USARIEM contain research programs and broad agency announcements with awards of $150,000 to $1,500,000 annually for equipment, salaries and other operating expenses for designated units like the "Center for Work Physiology and Exercise Metabolism." Reviewers of these grant applications look for an institutional commitment to the project. A "Center" designation would be one such commitment that could strengthen an application. In addition to the above mentioned granting agencies, we anticipate that private industry will also be attracted to the Center to assist with a variety of applied research questions (fabric and equipment design, nutritional interventions to enhance human performance and maintain immune function).

3. Institutional and System Fit

a. What is the connection between the proposed program and existing programs at the institution?

As quoted from question #2, there is a gap in applied human physiology research and education in Montana. Although the state of Montana houses two HPL oriented facilities (UM-Missoula and MSU-Bozeman), there is not a facility dedicated to the research of applied human physiology during arduous work in extreme environments.

b. Will approval of the proposed program require changes to any existing programs at the institution? If so, please describe.

No, in fact, it may free up existing laboratory space as described below.

c. Describe what differentiates this program from other, closely related programs at the institution (if appropriate).

The Department of Health and Human Performance currently administers the Human Performance Laboratory (HPL). This laboratory has historically served the research needs of department faculty and students. The development of the MWPEM will enable an expansion of this research agenda and will free up existing laboratory space so that the mission of the Human Performance Laboratory can be broadened. Separate directors to facilitate the diverse research agenda of the growing faculty and the interests of graduate/undergraduate student researchers will coordinate these research facilities (MWPEM and the HPL).

d. How does the proposed program serve to advance the strategic goals of the institution?

The mission of The University of Montana includes creating knowledge, providing an active learning environment, generating outreach and service to the State/nation/world, providing unique educational experiences, while being responsive to the needs of Montanans. The proposed University of Montana Center for Work Physiology and Exercise Metabolism is completely synchronized with the University mission. It will continue to give scientific oversight to the unique field laboratory offered in Western Montana and elsewhere in the world. Moreover, the Center will create an excellent learning environment for Montana students (graduate, undergraduate and post-doctoral, many of which will come from out-of-state). Creation of the Center will attract a large number of potential graduate students from other states because of the unique combination of field and laboratory research experiences. National and international outreach will come from the expanded opportunities for scholars to participate in research symposia, visiting scholar programs and collaborative research proposals. Finally, a side benefit of the Center is the enhancement of the region's economy through the retention of University graduates for research positions.

e. Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs; and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation.

Although there are other exercise science programs in Montana and in the surrounding region, close examination of these programs shows that there is minimal overlap with the proposed MWPEM. The University of Montana-Missoula and Montana State University-Bozeman are the only two graduate programs in the state. Montana State University houses a Human Performance Laboratory but maintains a separate research agenda. Other Universities in Idaho, Oregon and Washington also have similar undergraduate/graduate programs. However, we are the only group that is extensively involved in collaborative efforts with AFSOC and AFRL for the specific purpose of providing direct research functions specific to the unique needs of the warfighter. Moreover, we are the only laboratory that has the capacity for conducting diverse laboratory and field research with our developing new campus laboratory and our mobile laboratory facility.

4. Program Details

a. Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications. NOTE: In the case of two-year degree programs and certificates of applied science, the curriculum should

include enough detail to determine if the characteristics set out in Regents' Policy 301.12 have been met.

Funding the MWPEM will be a major activity. Grants and contracts will be written, submitted, and funded grants have to be administered. We anticipate that as the reputation of MWPEM grows in the community and the region, the Center will attract private contributions, as well. We have already demonstrated the capacity to attract external funding from federal granting programs and private industry. We anticipate that this will increase as the productivity of the Center develops through regional, national and international presentations and through peer reviewed publications of our research findings. We also anticipate that the grant activity will increase dramatically through the research activities and interests of post-doctoral research fellows and the potential for research assistant professors.

Administration and oversight of both the MWPEM will fall on the Center's staff, who report to the Center's Director; the MWPEM Director reports to the Chairperson of the Department of Health and Human Performance. Financial administration, personnel management, coordination with private industry and federal funding agencies, curricular management, and coordinating outreach will be included in these activities.

Scientific activities include study design, data collection, analyses, presentation and publication of research findings. Many of these activities will be carried out under MWPEM administrative oversight by research staffers, undergraduate and graduate student researchers, visiting researchers, and research colleagues within the US and abroad.

Educational activities of the MWPEM fall into two general areas. First are outreach activities through planned special programs, seminars, internship opportunities and, honors research programs. It is anticipated that students will have the opportunity to assist in the coordination of research efforts and data collection as part of undergraduate research experiences, master's theses, and/or doctoral dissertations. We also anticipate that a cooperative agreement will be established with AFRL to include the funding of additional masters student research assistantships.

5. Resources

a. Will additional faculty resources be required to implement this program? If yes, please describe the need and indicate the plan for meeting this need.

Additional personnel have been already added to achieve the initial research goals (post-doctoral research fellow, lab technicians – 2.5). The first round of funding also includes the construction (anticipated completion date – December, 2007) and overall operating budget for fiscal years 05-07. Additional staff will be added as programs grow commensurate to increases in federal and private funding.

<u>Research faculty</u>
With the use of AFSOC contributions and indirect cost recovery from the federal initiatives, we would like to establish at least one research professorship. This

would bring an additional researcher and grant writer to the staff. It is anticipated that the addition of this research professorship would increase the funding capabilities of the new laboratory and the MWPEM.

b. Are other, additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.

No additional funding will be needed as the Center will be well-supported financially. The existing Mansfield Library holdings will suffice; no major additional demands are anticipated in the near future. Likewise, nothing extraordinary is anticipated for telecommunications needs. At UM-Missoula, the Center will need its own telephone and fax line. Computer work stations will parallel the telephone requirements. However, these will be included in the construction of the new facility for which funding has already been established. Additional office space, and specific laboratory needs are being met by a $1million dollar expansion of McGill Hall. This new laboratory facility will include the necessary environmental capabilities, mobile lab unit, additional space for biochemistry and sample analyses in addition to the necessary research offices and a state of the art conference center. As previously mentioned, these funds have already been received and no additional state support is required to facilitate the development of the Center.

A legislative initiative from the Department of Defense (via AFSOC and AFRL) has funded the initial $2.3 million dollars to provide for early programming needs, construction, personnel, equipment and data collection (fiscal years 2005-2007). A second grant is being awarded through AFSOC and AFRL for fiscal years 2006-2008 (approximately $1 million). This award will help to finalize the construction needs and provide the necessary equipment and staffing needs for the next series of AFSOC driven research. A third round of funding is anticipated for fiscal years 2007-2009 at a similar level (approximately $1 million). Additional funding has been established through private agencies (Biothera, Gatorade Sports Science Institute, Technical Sourcing International, and THY Enterprises). These are an example of additional funding sources that we anticipate to continue through the development of the MWPEM.

Given the facility that has already received funding; we anticipate an annual operating budget of $500-$700k after the final round of funding through our federal initiative. By this time, we are confident that the level of research funding from private industry combined with federal grants and research contracts from AFSOC and AFRL will meet these program needs.

Furthermore, additional funds have been awarded as part of grant from AFRL (Warfighter Sustainability: Maximizing Human Performance in Hostile Environments, 2006) to provide for a new 4,000 square foot laboratory. Given the current cooperative agreements with AFSOC, USARIEM, and the USFS, we feel that we can bring recognition to the University in the development of a state of the art research facility. The development of this research Center will increase the awareness of our unique area of applied human physiology research and will lead to an increase in external funding to maintain the annual operating budget associated with the current staff, equipment and supplies.

6. Assessment.
How will the success of the program be measured?

The Center will be evaluated with respect to the number of graduate and undergraduates enrolled, and by the amount of funding obtained.

7. Process Leading to Submission
Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.

The following is a list of agencies, organizations, institutions and advisory councils who were involved in this proposal:

- The University of Montana - Missoula
- Department of Health and Human Performance
- Air Force Special Operations Command, Florida
- Air Force Research Laboratories, Texas
- US Army Research Institute of Environmental Medicine, Massachusetts
- US Forest Service, Missoula Technology Development Center (MTDC), Montana and National Interagency Coordination Center, Idaho
- Hyperion Biotechnologies, Texas

This Proposal was reviewed and approved by the affected departments:
Department Name: Health and Human Performance Date: March 16, 2007

In addition, the Deans of the following schools/colleges reviewed and approved the proposal:
Dean of Education: Date: March 16, 2007
The proposal was reviewed and approved by the Faculty Senate at the University of Montana
Date: April 2007

In addition, please see attached letter of support from Colonel James K. Wright of Air Force Special Operations Command below.

DEPARTMENT OF THE AIR FORCE
720TH SPECIAL TACTICS GROUP (AFSOC)
HURLBURT FIELD, FLORIDA

19 January 2007

MEMORANDUM FOR WHOM IT MAY CONCERN

FROM: 720th SPECIAL TACTICS GROUP SURGEON

SUBJECT: Montana Center for Work Physiology and Exercise Metabolism

Air Force Special Operations Command, the Air Force Research Laboratory, and the 720th Special Tactics Group strongly support the development of the Montana Center for Work Physiology and Exercise Metabolism. The Air Force is looking for research partners to cooperate with existing Air Force research capabilities and Air Force operational units to help solve the many performance problems experienced by our warfighters. We recognized that the Department of Defense cannot go alone in trying to find solutions to our performance needs and cooperation with academic and private institutions is vital. We support any effort which builds research capabilities that are capable of providing answers to the problems our airmen experience.

JAMES K. WRIGHT, COL, USAF, MC, SFS
720TH Special Tactics Group Surgeon

First There...That Others May Live