PROPOSAL

submitted to
Instructional Development Committee

Enhancement of Fitness- Based Physical Education classes through the use of heart rate monitors.

submitted by:

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Physical Education Fitness Classes Project Description:

1. Overview (objectives): The role of the Physical Fitness core curriculum (PHED 1010, PHED 2310, PHED 2250, PHED 2520) at Pellissippi State is to positively impact students health by enhancing their physical fitness. It also strives to motivate our students to sustain life long physical activity by providing information and feedback. Presently, the instructor monitors blood pressure, flexibility, weight and body composition. However we do not consistently track exercise heart rate which promotes/defines cardiovascular/cardiorespiratory fitness. Heart disease and related diseases are the leading cause of death in the United States. The ability to accurately track heart rate during class will enable students to more clearly understand the correlation between heart rate and physical activity.

The project will allow use of heart rate monitors to assist students in measuring heart rates during physical education classes that include fitness activities requiring sustained aerobic exercises. For example: PHED 1010 (Lifetime Fitness), PHED 2250 (Exercise to Music), 2310 (Fitness Walking), and 2520 (weight training). Another course possibility will be PHED 1100 (Wellness). The information provided by the monitors will enable the student to maintain their heart rate at correct levels for improvement in the following areas: fitness level, body composition, girth measurement/BMI, and other areas of the Wellness components.

The proposed Polar FT2 monitors display the heart rate and total exercise time. Students get immediate feedback and can adjust their effort level accordingly. The daily data for each student will be recorded on a card. Data will enable teacher/student evaluation and recommendations.

2. Problem:
Students take estimated heart rates at various times during exercise in core fitness based classes and attempt to maintain their individual target heart rate zone for “X” number of minutes. Students are often asked to use their “perceived” target zone heart rate since counting may be difficult. Many students end up exercising either above or below their target zone heart rate. Most students do not have the experience to understand the body’s response to exercise which leads these students to incorrectly interpret “being” in the target zone. Students that reach and maintain their target heart zone on a consistent basis while participating in core fitness based classes show physical, psychological, social, emotional and cognitive improvements in their overall wellness. Conversely, students that do not maintain the “zone” do not show much improvement, if any at all, in wellness and health-related fitness components. Students showing positive results often continue to exercise after the course ends and are more aware of the benefits of aerobic exercise.

3. Solution:
Students would utilize a heart rate monitor during a core fitness-based class to monitor and maintain their heart rate in their “target zone”. Target zones are determined by age and percentage levels of the student’s max heart rate. Student fitness levels determine how quickly or how slowly they must exercise for their heart rate to stay in their target zone.

The students in the core fitness classes come in with varying goals and fitness levels. The heart rate monitor allows each student to work at his/her level for maximum benefits. It gives immediate feedback with beats per minute and shows the student if he/she is in their target zone. The monitors beep when the target zone heart rate is exceeded. Monitors may be adjusted for fitness levels or injury rehab. The duration in the zone allows the student to consistently work to achieve his/her goals. It does not matter what the fitness level of the student is beginning the program/course. The heart rate monitor individualizes each workout and maximizes the chance of safely achieving student goals. Students who can consistently use a heart rate monitor for workouts can learn to accurately estimate their heart rate based on perceived exertion. Each student knows the “feeling” of working in the target zone and can
transfer this knowledge to any type of aerobic exercise workouts outside of class time and on through their lives.

By utilizing heart rate monitors in class, the student will have visible motivation to maintain their target heart rate. Students are safer when heart rate information is readily available. The monitors will enable progress to be accurately tracked. Faculty would have objective data for evaluative participation and effort in class for grading purposes. Since staying in the target zone should show improvements in body composition, girth measurements, and total fitness, students could compare time in zone (effort) with pre- and post- tests for girth measurements, electrical impedance results on body composition, and Rockport Mile walk results. A survey would be developed to ask students about other changes: such as energy level, mood changes, academic work, etc. For evaluation purposes to indicate possible cognitive benefits, students could be surveyed (subjective) and could be tracked by semester GPA comparisons (objective).

4. Outline of Proposal:

Our students impact the community, their families, co-workers and friends. The American health care community, USDA, and other entities are pushing for more physical activity for children. This should be done. Our beliefs propose that parent’s and family members that have experienced gains from exercise would be more encouraging to their children to participate in physical activities and might even join their children in activities. The following information indicates how the consistent use of the heart rate monitors might contribute to the fulfillment of the General Education goals that are highlighted below. (The information from General Education goals was taken from the PSCC website.)

General Education:
Pellissippi State has identified a core of college-level competencies expected of all graduates. The school measures those competencies to determine the degree to which graduates have achieved them. Pellissippi State graduates should be able to

• Write clearly.
• Read proficiently.
• Communicate orally.
• Analyze and use quantitative information.
• Solve problems.
• Use technology effectively.

As a Tennessee Board of Regents institution, Pellissippi State also must evaluate the competency of students in the following general education subject categories:

• **Natural Sciences.** Enhance abilities to define and solve problems, reason with an open mind, think critically and creatively, suspend judgment, and make decisions that may have local or global significance.
• **Social/Behavioral Sciences.** Develop an understanding of self and the world by examining the content and processes used by social and behavioral sciences to discover, describe, explain, and predict human behavior and social systems; enhance knowledge of social and cultural institutions and the values of this society and other societies and cultures in the world; and understand the interdependent nature of the individual, family, and society in shaping human behavior and determining quality of life.
Natural and Behavioral Sciences Department Goals

I. Communication Outcome: Graduates shall record, analyze, interpret, and articulate facts and ideas orally and in writing. To achieve this outcome, students shall: articulate factual information relevant to a chosen course of study. (Natural Sciences)

II. Personal Development Outcome: Graduate shall possess skills and attitudes necessary for developing and achieving their personal and professional goals. To achieve this outcome, students shall:
1. Formulate achievable, measurable, and challenging goals. (Physical Education)
2. Recognize personal strengths and limitations and employ strategies to capitalize on personal strengths and compensate for personal limitations. (Psychology and Physical Education)

III. Problem Solving and Decision Making Outcome: Individually and within a team, graduates shall use appropriate methods of inquiry and analysis to define and solve problems and to make effective decisions. To achieve this outcome, students shall:
1. Apply the scientific method in suitable problem solving situations. (Natural Sciences)
2. Use critical thinking skills to interpret, evaluate, and make informed judgments about the adequacy of arguments, data, and conclusions. (Natural Sciences)

VI. Numerical Literacy Outcome: Graduates shall possess mathematical and analytical skills that enhance their effectiveness in communicating, problem solving, and decision making. To achieve this outcome, students shall: Interprete and draw conclusions from tables, graphs, and data. (Natural and Behavioral Sciences)

5. Cost: Polar FT2 information is attached to this document.

40 monitors: $2160.00
80 monitors: $4320.00

Cost by item:
1 heart rate monitor$54.00

Item not included on invoice, but very beneficial for collection of monitors and storage:
Storage/carry bag holds 12 monitors, straps and transmitters: 69.95 each
Polar information/cost on attached email

Three carry bags added to 40 monitor total: $2369.85
Six carry bags added to 80 monitor total: $4739.70

6. Number of students affected: Initially students in PHED 1010 (Lifetime Fitness), PHED 2310 (Fitness Walking), PHED 2250 (Exercise to Music), and PHED 2520 (weight training) would be in the pilot group. Number of students affected would also be related to number of heart rate monitors purchased.

Projected number of students in pilot program classes:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>SECTION MAX</th>
<th>SECTIONS &amp; PROJ.TOTAL ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHED 1010</td>
<td>30</td>
<td>1 section PC</td>
</tr>
<tr>
<td>PHED 2310</td>
<td>30</td>
<td>2 sections PC, 1 section BC</td>
</tr>
</tbody>
</table>

$2369.85
$4739.70

30
90
7. Self-sustaining feature:
If the data from this pilot program indicates student successes, then the PHED Department/PSCC Foundation could search for funding from outside sources. Some colleges have students purchase their own heart rate monitors (with transmitter and strap). Other colleges have the students purchase a strap at approximately $14.95 plus bookstore mark-up. Polar will help with advice on further funding and grant writing.

8. Project evaluation:
   Methods of evaluation:
   a. Student physical test results that are administered at the beginning (pre-) and end (post) of the semester. These tests include: girth measurements, body composition analysis, Rockport Mile Walk times, and resting heart rate.
   b. Student survey of psychological (mood and cognitive processes), emotional, physical, and social changes in their lives.
   c. Analysis of success relating to the achievement of goals which the student wrote at the beginning of the semester.

Long-term assessment for assessing cognitive benefits could include:
   a. pre-class and post-class GPA
   b. retention rates