The physical education department is dedicated to facilitating the development of the knowledge, skills, values and attitudes leading to lifelong wellness. We therefore, measured the currently accepted dimensions of wellness—physical, emotional, social, spiritual and mental in our student body. One total set of classes (all students in all PE classes during Spring B 2004) took a pre-test and a post-test class survey. Thirteen alumni responded to an e-mail survey. *New data is marked with an asterisk and includes: 1) A survey of one-hundred-thirteen freshmen who did not take a Physical Education class their first year—they were interviewed by trained students in PE 4010, Psychology of Coaching; 2) Data on retention correlated with students enrolled in PE during their first and second years, 3) Data on aerobic versus anaerobic PE classes, 4) New questions throughout and 5) Quotes from other’s new research in the field.

I. Demographics
   A. Class Survey Responders
      1. Total responders N = 690
      2. Female 22.8%,
      3. Male 73.8%
      4. Caucasian 87.4%
      5. International Students 6.7%
      6. Class in School
         First-year Freshmen 21.0%
         Second Year 18.8%
         Third Year 22.8%
         Fourth Year 12.6%
         Senior graduating within 2 semesters 20.3%
         Graduate 1.2%
   B. Freshmen Survey
      1. Total Responders N=117
      2. Female 34%
      3. Male 66%
      4. International Students 2.5%

II. Assessing Student Learning

A. Learning Outcomes/Goals
   1) The physical education department will assist all graduates of the baccalaureate program develop a depth of understanding of the behavior, values and attitudes leading to lifelong wellness.
Students will answer confidently to questions 10-23 on the post-class survey that reflect influences on personal overall wellness issues learned in the class. Questions new to this section are marked with a *.

The key for answering this section:
1 -- Not at all   2 -- A little   3 -- Moderately   4 -- yes   5 -- Very much so

1. I am confident in my ability to use the skills learned in this class for recreation.
   1 -- 1.6%
   2 – 2.9%
   3 – 12.2%
   4 – 39.1%
   5 – 43.8%
   Total Expressing Moderate to Very Confident 95.1%

2. *This class helped me understand the importance of being active.
   1 – 10.4%
   2 – 11.3%
   3 – 31.3%
   4 – 28.8%
   5 – 17.7%
   Total Expressing Moderate to Very Confident 77.8%

3. This class helped me learn how to stay fit.
   1 – 16.7%
   2 – 17.8%
   3 – 31.0%
   4 – 20.1%
   5 – 13.8%
   Total Expressing Moderate to Very Confident 64.9%

4. *This class provided time for active physical involvement.
   1 – 6.1%
   2 – 10.1%
   3 – 16.4%
   4 – 31.6%
   5 – 35.1%
   Total Expressing Moderate to Very Confident 83.1%

5. This class helped me learn to use the activity to reduce stress.
   1 – 5.5%
   2 -- 8.6%
   3 – 23.2%
4 – 31.4%
5 – 30.9%
Total Expressing Moderate to Very Confident 85.5%

6. I learned skills I plan to use in college and as an adult.
   1 -- 8.8%
   2 -- 9.3 %
   3 – 24.5%
   4 – 31.6%
   5 -- 25.4%
   Total Expressing Moderate to Very Confident 81.5%

7. My increased skill level helps me take part in this activity with more confidence in front of others.
   1 -- 3.9%
   2 – 6.5%
   3 – 20.1%
   4 – 41.2%
   5 – 27.8%
   Total Expressing Moderate to Very Confident 89.1%

8. This class helped me set reasonable personal goals related to this activity and fitness.
   1 – 9.3%
   2 – 11.3 %
   3 – 30.4%
   4 – 30.3%
   5 – 17.8%
   Total Expressing Moderate to Very Confident 78.5%

9. This class helped me manage my time to include activity as part of my life.
   1 – 10.7%
   2 – 14.6%
   3 – 32.0%
   4 – 26.8%
   5 – 15.2%
   Total Expressing Moderate to Very Confident 74.0%

10. *This class was fun and it taught me how to have fun with these skills after the class.
    1 – 1.9%
    2 – 3.6%
    3 – 13.2%
    4 – 39.4%
11. I learned how to be safe while participating in this sport.
   1 – 5.1%
   2 – 7.1%
   3 – 20.9%
   4 – 31.6%
   5 – 34.6%
   Total Expressing Moderate to Very Confident 93.9%

12. *This class included values and ethics of participating with others.
   1 – 5.5%
   2 – 9.7%
   3 – 26.5%
   4 – 33.5%
   5 – 24.1%
   Total Expressing Moderate to Very Confident 87.1%

13. *Participation in this class helped me learn to deal with new challenges.
   1 – 8.8%
   2 – 12.2%
   3 – 32.0%
   4 – 29.0%
   5 – 17.4%
   Total Expressing Moderate to Very Confident 78.4%

14. This class provided an opportunity to mix with students of varying ethnic backgrounds.
   1 – 5.5%
   2 – 9.7%
   3 – 26.5%
   4 – 33.5%
   5 – 24.1%
   Total Expressing Moderate to Very Confident 87.1%

Analysis: The questions in this section relate to the motivating factors necessary for behavior changes. Self-efficacy is the number one influence on an individual’s behavior to be active or not (95.1%). Viewing what they learned as something they will use as adults (81.5%) enhances efficacy. High numbers in the questions about confidence in skills and participating in front of others (89.1%) indicate
we are helping students become and stay active--people repeat experiences they were successful with and that they enjoyed.

Past MTU Physical Education Department assessment research tells us that stress is the number one problem for students at MTU. A huge eighty-percent on this survey indicated there was an impact of PE helping them with stress. There is a statistical correlation on retention and the number of students who take Physical Education early in their college careers. Psychology backs this up. Anxiety leads to stress reactions, high and chronic stress leads to burnout, and burnout leads to dropping out.

Past PE assessment research at MTU also indicated that the number one reason that kept students from being physically active was lack of time. Here, seventy-four percent of our students said the class they just completed helped them to manage their activity time, and over seventy-eight percent said the class helped them set reasonable goals related to activity participation. If someone believes they can do something through setting and achieving reasonable goals, they are more likely to continue in their personal growth in the area, in this case, activity and wellness.

The weakest area was that only sixty-five percent indicated the PE class helped them learn how to stay fit. Surprisingly, 83.1% said their class provided time for active physical involvement. There’s about 20% difference in students who must be getting active involvement, but don’t think their class taught them how to stay fit. This correlates with past research, and needs to be an area all instructors should work on. It is important that students understand that it is not necessary to sweat and be tired for an activity help them stay fit and/or enhance their well-being.

A new question this year was “This class helped me understand the importance of keeping active.” Seventy-eight percent said this class helped them understand the importance, despite that some classes are not aerobic in nature. Even the non-aerobic classes have wellness qualities, and students need to recognize even moderate activity is helpful. We need to stress more cognitive education on how to stay fit, because some students are not learning it through activity alone.

Sports, even low-level recreational sports, offer students opportunities to learn teamwork, and how to get along with people of all walks of diversity. This is exemplified in a new question, “This class included values and ethics of participating with others.” Eighty seven percent of students indicated that the class they just completed was helpful in
their development toward diversity. This verified a similar question, “This class provided an opportunity to mix with students of varying ethnic backgrounds”; the same percentage of 87% answering in the affirmative.

Another new question, “Participation in this class helped me learn to deal with new challenges”, had a high of 74.5% say that this class challenged them. Physical Education continues to be a source of deep learning in team-work, stepping up to new challenges, and diversity.

2) Students will use physical activities to impact their own wellness.

Note: This section has not changed from prior assessment strategies.

a) Incorporating the Transtheoretical Model of Exercise Adherence, a majority of students will answer on the post-class survey that they are either an active exerciser or will move up one stage toward maintenance during the course of the class in which they are surveyed. A description of these stages is included here:

**Exercise Stages of Change Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I currently do not exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I intend to exercise in the next 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I currently exercise regularly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I have exercised regularly for the past 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I have exercised regularly in the past for a period of at least 3 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The scoring instructions for each stage:
- If item 1 = true and item 2 = false, then = Pre-contemplation
- If item 1 = true and item 2 = true, then = Contemplation
- If item 1 = false and item 3 = false, then = Preparation
- If item 3 = true and item 4 = false, then = Action
- If item 3 = true and item 4 = true, then = Maintenance
- If item 5 = true and item 1 = true, then = Relapse

Description of stages:
- Pre-contemplation describes an individual who is not engaged in exercise and has no intention of exercising in the future.
- Contemplation describes an individual who is not exercising but is thinking about it in the near future.
- Preparation describes an individual who exercises but not regularly
- Action describes an individual who participates occasionally in exercise.
• Maintenance describes an individual who exercises regularly (at least 3 times a week for a minimum of 20 minutes).

85.7% are exercisers

(a) a gain of 7.5% from pre-class to post-class survey
(b) 3.5% more students were in maintenance from pre-class to post-class survey.
(c) 4.6% fewer students were in relapse from pre to post test.
(d) 2.4% fewer students indicated they did not exercise or were not planning to start in the near future.

Few students remained in the pre-contemplation and contemplation stages. Teaching towards trying to convince people to workout (the cognitive level) is actually counterproductive except in the lowest stages, and has even been proven to increase relapse for those in the higher stages. Since our students are in the higher stages we need to emphasize behaviors--dealing with relapse (taking more effective action on their next attempt) and continuing or intensifying exercise behaviors.

b) Students will enhance their social wellness by making friends and/or using PE as recreation with previous friends.

1. Students indicated on question six of the post-class survey, that they made friends that they have spent recreational time with outside of class.
   a) made no close friends 62.6%
   b) made one close friend 18.1%
   c) made 2-3 close friends 16.1%
   d) made 4-5 close friends 1.6%
   e) made 6 or more close friends 1.4%

   Analysis: Thirty-seven percent made close friends in the PE class.

2. Students indicated on question nine of the post-class survey, that they made casual friendships in PE class.
   a) made no casual friends 29.0%
   b) made one casual friend 22.3%
c) made 2-3 casual friends 38.6%

d) made 4-5 casual friends 7.4%

e) made 6 or more casual friends 2.8%

Analysis: Seventy-one percent made causal friendships in the PE class. Forty-six percent knew someone in the class initially, but only twenty-one percent signed up with a close friend. The vast majority come in to class with no friends or very few; however they make casual friends (71%), with thirty-seven percent making close friends.

This is important as students acclimate into college. Making friends is a necessary part of this transition, and raises student satisfaction of being at Tech, which is necessary for retention.

3) The Physical Education Department will inspire graduates of the baccalaureate program to practice health-enhancing behaviors leading to wellness.

a) An aggregate of responses in this report lead to a positive analysis:

- Eighty-two percent indicated they learned skills they plan to use as an adult; Eighty-nine percent said they were confident with their skills.

- The MTU population exercises more (85.7%) than the national average (40%) of adults. By requiring Physical Education classes, students maintain a degree of activity for several years while in college. This theoretically creates habits over time, which as indicated in *recent outside research, is necessary in late adolescence in order to establish a lifetime habit of activity.

- Cognitive ability is a start for someone to decide to participate in activities. If they know the importance of activity (knowledge), have the skills necessary to engage in activity (behavior), and have developed the sense of its importance to them (values and attitude), they are more likely to find the time, and are more likely to be active. All of this is reflected in the MTU Physical Education Department 2003-2004 assessment survey.

b) *A survey was sent to thirty MTU employees who are also alumni and graduated between 1985 and 1989. Thirteen surveys were returned. No names were attached, so the results were completely anonymous. During this period of limited financial resources, this was one way to seek a response from alumni that was cost-free.
An amazing 54% of alumni stayed at the same activity level from when they were in college. Fifteen percent (two) relapsed into not exercising, while 31% (four) improved since college.

Also, 76% of alumni indicated they exercise compared to 86% of current students, both were well above the national adult average of 40% and above the 50% average of college-educated individuals (Weinberg and Gould, 2003, p.411).

The percentage of alumni who reported 3-5 (moderate to most helpful) on the affect of MTU Physical Education Classes follows:

<table>
<thead>
<tr>
<th>Influence</th>
<th>Alumni 03-04</th>
<th>Alumni 02-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental</td>
<td>69%</td>
<td>78%</td>
</tr>
<tr>
<td>Social</td>
<td>92%</td>
<td>65%</td>
</tr>
<tr>
<td>Physical</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>Emotional</td>
<td>69%</td>
<td>49%</td>
</tr>
<tr>
<td>Spiritual</td>
<td>46%</td>
<td>35%</td>
</tr>
</tbody>
</table>

*Freshmen Survey*

This was the first time information was gathered on students prior to taking any PE classes. It makes a comparison between students who put-off enrolling, and those who managed to enroll during their first year.

1. Before orientation, did you expect you would take a PE class this year?
   - 30% (35 people) yes
   - 55% (64 people) no
   - 14.5% (17 people) No expectations
   - 0.5% (1 person) No Response

2. Are you aware of the PE classes that are available?
   - 84.5% (99 people) yes
   - 15.5% (18 people) no
3. When and where was this information presented to you?
   13.5% (16 people) No Response
   17% (20 people) Catalog
   16.5% (19 people) Internet
   10% (12 people) Orientation
   13% (15 people) Friends
   3.5% (4 people) Other

4. Did you try to enroll in a PE Class?
   36% (42 people) Yes
   64% (75 people) No

5. Did your advisor give you any guidance toward taking a PE?
   21.5% (25 people) Yes
   77% (90 people) No
   1.5% (2 people) No Response

6. If so what points about PE did your advisor tell you?
   81% (95 people) No Response
   7% (8 people) They are important but you don’t have time
   5% (6 people) Wait until next year
   0% (0 people) Physical Education is not important
   7% (8 people) Other

7. Have friends talked about PE classes?
   78.5% (92 people) Yes
   21.5% (25 people) No

8. What did they say?
   21.5% (25 people) No Response
   5% (6 people) Waste of time
   4.5% (5 people) Boring
   14.5% (17 people) Just okay
   48% (56 people) Fun
   6.5% (7 people) Good Exercise
   4.5% (5 people) They are important but you don’t have time
   13.5% (16 people) wait until next year
   1% (1 person) Physical Education is not important
   6.5% (8 people) other

9. What would have been your top 5 choices if you had taken a PE?
   Bowling-53 responses
   Archery-37
   Basketball-33
   Billiards-29
   Swimming-28
   Golf-27
10. Why did you not take a PE?
   40% (46 people) No time in my schedule
   9.5% (11 people) Classes I wanted were full
   3% (4 people) Lack of time
   1% (1 person) Lack of energy
   2.5% (3 people) Lack of motivation
   1% (1 person) Facilities too far away
   0% (0 people) Felling uncomfortable in front of others
   1.5% (2 people) Extra Cost of Tuition
   9% (12 people) Other
   4.5% (5 people) No Response

11. Do you now wish you had taken a PE?
   44.5% (52 people) Yes
   51% (60 people) No
   4.5% (5 people) No Response

12. What would you expect to gain from taking a PE class
   12% (14 people) fun
   11% (13 people) Get some exercise
   4.5% (5 people) Learn a new skill
   4.5% (5 people) Practice a skill I know
   4.5% (5 people) No Response
   1.5% (2 people) make new friends
   1.5% (2 people) Break from my heavy academic schedule

13. Do you plan to take a PE class next year?
   59% (69 people) Yes
   30% (35 people) If it fits into my schedule
14. Did you get involved in intramurals this year?
   65% (76 people) Yes
   34.5% (40 people) No
   0.5% (1 person) No Response

15. Were you active at least three times a week before coming to Tech?
   84% (98 people) Yes
   14.5% (17 people) No
   1.5% (2 people) No Response

16. Are you active at least three times a week now?
   46% (54 people) Yes
   31.5% (36 people) No
   22% (26 people) Most of the time
   0.5% (1 person) No Response

17. Have you engaged in physical activities with Friends?
   0.5% (1 person) Never
   41.5% (48 people) 1x – 6x
   16% (19 people) 7x-15x
   41.5% (48 people) Frequently
   0.5% (1 person) No Response

18. Did you enjoy PE in High School?
   55.5% (65 people) Yes
   15.5% (18 people) No
   27.5% (32 people) sometimes
   1.5% (2 people) No Response

19. Have you thought about leaving Tech?
   27.5% (32 people) Yes
   60.5% (71 people) No
   11.5% (13 people) No really
   0.5% (1 person) No Response

20. Are you planning to come back next fall?
   84% (98 people) Yes
   4.5% (5 people) No
   10% (12 people) Not Sure
   1.5% (2 people) No Response
21. Do you think it’s a good idea to have PE classes required at Tech?
   66% (77 people) Yes
   32.5% (38 people) No
   1.5% (2 people) No Response

Analysis:
Most students indicated they were aware of the variety of PE classes available, yet 77% claimed they received no official guidance from their advisors. Most had friends who talked about PE classes, with the majority claiming they were fun and good exercise. Thirty six percent tried to get into a class, with forty percent saying they had no time and ten percent saying the classes they wanted were already full. Fifty-nine percent plan to take a PE class next year.

Eighty-four percent claimed they were active three times a week before coming to Tech, a number comparable with the Class Survey. However, only forty-six percent are that active now, compared to eighty-five percent of students who responded on the Class Survey.

It should be noted that forty-three percent of these students commented negatively about their high school physical education experiences. Compared to other research, this too recognizes that past experience is the basis for decisions about the importance of PE at Tech: High school students who didn’t like their PE classes didn’t want to take PE in college; Professors who didn’t like their PE classes were reticent about requiring PE at Tech. Research comparing retention of students who take PE early in their careers points out its positive effect.

Correlation of the Freshmen Survey with past research indicates that students don’t understand the importance of taking PE classes until after they are forced to take their first class. If they take the first class early, preferably their first year, they benefit from them, and enroll in others right away. Seniors who put off taking PE classes, view them as a problem, especially with fitting them into their limited time as a student (comments from PE administrators). There is a positive relationship between students who take PE classes and retention, an impact that increases from the first year to the second year.

*Impact of PE on Retention*

*Retention of Aerobic versus Non-aerobic Classes*
The Physical Education Department and the University Assessment Coordinator questioned the relationship of aerobic versus non-aerobic classes on retention. There was no negative effect on retention if students enrolled in non-aerobic classes such as bowling. However only one-third of students first choosing non-aerobic classes enrolled in an aerobic class within one year. Research indicates that the benefits of exercise are best derived from moderate activity. The PE
department needs to further assess whether we should limit the number of non-aerobic classes a student can take toward the graduation requirement.

**Demographics**  
The percentage of seniors graduating within 2 semesters jumped from the previous two years. We had seen 4.2%-8.3% in this category that past couple of years, but this year it was 20.3%. This is notable, and needs to be addressed. It further points to a need to require students to begin taking PE classes as a freshman. It has been pointed out that students will postpone classes if they had a negative experience in high school, and if they are pressured because of lack of time as a freshman. Administrators need to work on finding a way for students to enroll in a PE class of their choice sometime during their first year.

**Summary**  
MTU students reported a positive impact of physical education classes on their lives, and potentially after graduation. All classes indicated they view classes as important in learning skills, making friends, and developing lifelong knowledge, behaviors and attitudes leading toward a positive wellness lifestyle.

Fifty-six percent of students reported they were regular exercisers, with another thirty percent exercising but not regularly. With eighty-six percent of students exercising, we need to teach toward the behavioral strategies. We need to talk about and teach strategies of how to incorporate activities into their busy schedules, find programs, friends and situations to practice their skills. We need to help students face relapse, how to avoid it and how to get back on track when it does occur. If students are not making opportunities for activity three times a week or more, we need to encourage them to do that and provide positive feedback in classes to raise their efficacy – their confidence level and belief in their ability to succeed.

We need to continue incorporating teaching strategies that encourage students to make friends in class. Previous statistics show and the precept is, that students need to find a niche on campus and make friends before they are satisfied and stay. We won’t know if a student in a beginning class is a freshman unless we ask; that needs to be part of assessing at the start of a class.

*The main points garnered from the alumni results indicate that MTU alumni do not decrease in their activity level at the same rate as the national norms. Weinberg and Gould point out (p. 412) that the prediction of adults exercising has less to do with childhood programs and patterns and more to do with developing physical habits during the adult years. In other words, the habits a student makes as a young adult in college are probably better predictors than their pre-college activity levels. More than ever, this recent research again emphasizes the importance of maintaining a Physical Education requirement for graduation.*
IV. Conclusions
We helped students move up the ladder toward achieving a lifetime of personal wellness. The proactive strategies of requiring Physical Education classes has impacted our students during late adolescence, a time of their growth and development that research says is the most important predictor of exercise adherence in adulthood. Students indicate they recognize the importance of the PE department’s classes on their wellness; again research tells us that exercising with purpose and meaning in mind is a consistent factor in longtime exercise patterns and habits (Weinberg and Gould, 2003, p. 422).

Research from others, and our own correlation between retention and taking Physical Education classes early in one’s college career, indicate the importance of Physical Education for our students.


*The following quotes from Preventive Medicine 31, are important to add to this report as support for our research:

By age 21, only 42% of males and 30% of females report participating in vigorous physical activity on a regular basis. P494

The steepest decline in physical activity occurs during adolescence (ages 15-18) and young adulthood (ages 20-25). P494

37.6% of college students and 14.0% of adults participate in regular vigorous physical activity. P495

Colleges and universities are potentially crucial settings in which to implement interventions to help to promote exercise behavior throughout the life span. Health beliefs and practices are still evolving during late adolescence, and it is important to support life-styles facilitating good health. P495

Participation in physical education classes was the most important discriminating variable …between action and maintenance stages. P499

Friend social support for physical activity, physical activity history, and exercise self-efficacy were the best predictors of exercise stage among males. P500
Most likely, if young adults leave the college campus as sedentary individuals, they will be very unlikely to adopt a physically active lifestyle upon entry into the workforce. P504

V. Collecting, storing and analyzing data.
The physical education department assessment committee created and will continue to oversee the implementation of the assessment plan. Students taking the survey were told the purpose of it and how it will be used. Confidentiality is insured, as each matched survey was given a number and tabulated without a name indicated. The committee will review the results prior to the initial pre-fall staff meeting where a report will be given.

VI. How will this report affect curriculum?
The assessment committee will analyze the report, with discussion by the entire faculty on how this is to be utilized in curriculum and pedagogical changes.

VII. Sharing information.
Information will be discussed at faculty/staff meetings; there are no plans to share it further except as information offered in the normal course of teaching.

VIII. Assuring Continuation
The assessment committee is a permanent committee, and as such, the process will continue on an annual basis.

References

