Annual Assessment Report

Department: Kinesiology
Academic Year: 2015-16
Date of Submission:
Department Chair: Christine Milner

I. Response to the previous year PRC's recommendations

Item: PLO#3-How accurate is the software data used in the nutritional analysis?	**The software is the industry standard for this kind of assessment which continually updates food databases .** "NutritionCalc Plus CD is a suite of powerful dietary self-assessment tools. Use NutritionCalc Plus to analyze and monitor personal diet and health goals. An easy-to use interface and the reliability of the ESHA database make NutritionCalc Plus the best choice for nutrition analysis software. Enhancements include an updated MyPlate report, replacing the MyPyramid report, the ability to track up to three profiles, 365-day calendar function, and the ability to track Omega-3 and Omega-6 data." (http://www.mheducation.com/highered/product.0077637550.html?searchContext=nutritioncalc .)
Item: PLO#1-Who will be in charge of overseeing changes to research rubric? **Concern was expressed about a baseline pre-assessment**	**Response: Tim Van Haitsma was in charge of reviewing the research rubric and used it to analyze student work in the 2015-16 academic year.** **There is no pre-assessment baseline with the research process because students come in with no experience. Standard procedure, however, is to give a presentation on writing a scientific paper on the first day of class, followed by scaffolding the writing process by having students write two sections at a time, culminating in a full research paper.**
One thing that could be clarified is how many literature sources are "many," or "few," etc.	**The grading rubric was kept purposely vague to apply to a wide variety of projects and professor requirements. i.e. 5 or 10 required sources.**
That assessment should then be a joint activity involving all	**Good suggestion and we plan on implementing an inter-rater reliability approach in the fall when using rubric.**

members of the Kinesiology Department, with all members reading the papers, etc., assessing them independently, and then pooling faculty assessment results. This would address the comment from the second assessor who stated that: The rubric is appropriate for assessing students' work, (*but*) It would have been valuable to know if issues of rater-reliability were addressed. Was any student work assessed by more than one rater? If so, what was learned about inter-rater-reliability?	
Item: PLO#3-Difficulty in comparison of 2011 nutritional data with 2016 data	**Response: We have not rehired the adjunct responsible for teaching our nutrition courses and completing the 2015 assessment for our department. This course will be taught by a new temporary hire in 2016-17. It is unrealistic to expect her to conduct a comparison assessment. If our department had known that this class would be taught repeatedly by adjunct help due to Glenn Town's retirement, we would not have selected this PLO for this 6 year cycle.**

II A. Program Learning Outcome (PLO) assessment
If your department participated in the ILO assessment you may use this section to report on your student learning in relation to the assessed ILO. The assessment data can be requested from the Dean of Curriculum and Educational Effectiveness.

Program	PLO#2-Majors will measure the body's ability to adapt to the stress of exercise.

Learning Outcome	
Who is in Charge /Involved?	Gregg Afman; Tim Van Haitsma
Direct Assessment Methods	In KNS 105, standardized laboratory procedures for measuring oxygen consumption and protocol adherence for training were used to examine the effect of REHIT (Reduced Endurance High Intensity Interval Training) training on maximal oxygen consumption. KNS 105 students trained subjects for 10 weeks at 3 times per week.
Indirect Assessment Methods	In KNS 105, reflective questions were given at the end of the semester to solicit input from students on the value of the experience. Students were asked to describe what they learned about physiology of exercise, conducting research, and working with people. They were also asked if they would recommend this experience for future classes. See appendix A.
Embedded	In KNS 105, a 7-part question was embedded in the final exam. Discussion regarding the project was ongoing during the semester during class time and labs, reinforcing laboratory techniques, data understanding and research methods. See appendix B.

In KNS 110, assessment of the exercise stress test was embedded in a practical exam. |
| Real world | In KNS 105, students conducted and interpreted four maximal oxygen consumption tests, which are used on the job when determining exercise prescription. Quote from student: *In the research sphere, I learned how precision and attention to detail can lead to successful predictions of health and exercise, ultimately improving data. It was particularly enjoyable to see how what I learned in class applies to the real-world experience of exercise and training.*

In KNS 110, the exercise stress test is a common test done in the medical environment to detect electrical abnormalities of the heart with excellent validity, reliability and objectivity. |
| Major Findings | In KNS 105, 74.5% of all students scored *"well developed"* or *"somewhat developed"* when compiling the cumulative results of all seven assessment questions. This met the minimum percentage of our benchmark value of 75%. However, questions 1-4 averaged 63.3%, which was below the benchmark. A secondary question that emerged was "is it possible to embed a research project in class involving equal contributions from every student?" This was assessed indirectly and 95% of the students recommended that this experience to be continued in future classes. See appendix C.

In KNS 110, out of 15 students, the average grade on the exercise stress test was a 93% with scores ranging from 85.5 to 97.5. All 15 students met the benchmark established. |
| Closing the | The end result of this assessment was that the process was meaningful and educational to all students. What we learned |

Loop Activities	was to start the process at the onset of the semester and thus have time to complete the analysis of all data.
Collaboration and Communication In KNS 105, all 30 students took part in this study. 15 students were recruited from the GE class PEA 032 Fitness for Life to participate as subjects. This was a unique opportunity for collaboration between upper class kinesiology students and lower division Fitness for Life students. All maximal tests were administered by students and supervised by the professor.	

Program Learning Outcome	**Fitness for Life GELO:** *Students will write and successfully implement an appropriate fitness program based on the training principles of frequency, intensity, and duration.*
Who is in Charge /Involved?	**Tim Van Haitsma**
Direct Assessment Methods	**Westmont College students who were enrolled in the Fitness for Life class (FFL) (n=307, 119 male, 184 female) were recruited for the study. Of the 307 students, 109 of the students were part of the control group that participated in the class in the Spring of 2015. The remaining 194 participated in the Heart rate monitor group in the Fall of 2015.** **All participants completed three different exercise tests near the beginning of the semester (end of week two and beginning of week three) and near the end of the semester (two weeks before the end of the semester, separated by 10-11 weeks). These exercise tests consisted of one cardiovascular endurance test and two muscular endurance tests.** **Cardiovascular endurance was measured using the 12-minute run/walk as described by the American College of Sports Medicine (ACSM). Muscular endurance was measured using two different tests as described by ACSM—the push-up and curl-up tests.**
Indirect Assessment Methods	
Embedded	**Fitness logs were required for the course and information regarding frequency, intensity and duration was collected from these weekly logs.**

Real world	
Major Findings	*12-minute Run/Walk Test* For the control group, the average distance run increased from 5.49±0.96 to 5.96±0.84 laps for a significant increase of 0.47±0.56 laps (p<0.001). The average distance run for the HRM group increased from an initial distance of 5.41±0.98 to 5.96±0.88 laps for a significant increase of 0.55±0.60 laps (p<0.001). When the increases between the control and HRM groups were examined, no difference was found between the groups (p > 0.05). *Push-up Test* For the control group, the average number of push-ups increased from 21.34±9.42 to 27.67±7.81 push-ups. This was a significant increase of 6.33±6.76 push-ups (p < 0.001). For the HRM group, the average number of push-ups increased from 18.74±10.26 to 28.19±8.38 push-ups for a significant increase of 9.45±8.09 push-ups (p < 0.001). When the increases between the control group and HRM group were compared, there were no differences found (p > 0.05). *Curl-up Test* For the control group, the average number of curl-ups increased from 50.96±18.57 to 68.39±9.79 curl-ups. This was a significant increase of 17.43±17.26 curl-ups (p <0.001). The HRM group increased from 51.28±21.72 to 66.57±16.32 curl-ups. This was also a significant increase of 15.28±19.35 curl-ups (p<0.001). There was no difference found between groups. See appendix D.
Closing the Loop Activities	The purpose of the study was to determine if exercise outcomes were improved by using Polar heart rate monitors rather than just log cards. The heart rate monitor was not effective in further increasing fitness outcomes over log cards alone and will no longer be used in the class. As a Kinesiology group, we will continue to innovate within the Fitness for Life class in order to ensure increased knowledge and increased exercise outcomes in the enrolled students. We would like to try both a psycho-social motivational approach and the use of pedometers to improve motivation in the future. In addition, our department secured an innovative edges grant to further discuss potential changes in the Fitness for Life program, including an examination of assessment measures and the addition of guest speakers who can address mental health issues of our students.

Collaboration and Communication
This process involved many members of our department. Four classes in the fall were involved in this assessment; 3 in the spring. Five professors in total participated in the assessment of this GELO. In addition, two kinesiology students helped with data entry.

Fitness for Life or similar programs is required in many colleges across the country. We are all asking the same questions. How can we motivate students to exercise at an appropriate frequency, intensity and duration to produce needed health benefits? As a result, this study was presented by Dr. Tim Van Haitsma this June at the Christian Society for Kinesiology and Leisure Studies national conference held at Westmont College June 8-10.

Four professors from our department met this summer to discuss ways to improve the Fitness for Life program. We have secured Eric Nelson and David Hernandez as guest speakers for the fall classes, utilizing resources across campus.

II B. Key Questions

Key Question	
Who is in Charge/Involved?	
Direct Assessment Methods	
Indirect Assessment Methods	
Major Findings	
Recommendations	
Collaboration and Communication	

III. Follow-ups

Program Learning Outcome or Key Question	PLO #1:
Who was involved in implementation?	Tim Van Haitsma
What was decided or addressed?	The rubric could be an effective tool used elsewhere.
How were the recommendations implemented?	The rubric developed was so effective it is now being used to evaluate student research papers in the research class, as well as other classes requiring a research paper. The rubric is given to students in class at the beginning at the semester.

IV. Other assessment or Key Questions related projects

Project	
Who is in Charge /Involved?	
Major Findings	
Action	
Collaboration and Communication	

V. Adjustments to the Multi-year Assessment Plan (optional)

Proposed adjustment	Rationale	Timing
Revise Multi-year assessment plan wording to reflect current Fitness for Life GELO: Change from: *Department to assess FFL students' health behaviors* ***to:*** *Students will write and successfully implement an appropriate fitness program based on the training principles of frequency, intensity, and duration.*	**We deemed it more important to assess frequency, intensity and duration of students' fitness programs than healthy behaviors during this 6-year cycle.**	**Assessment done Fall/Spring 2015-16**

VI. Appendices

A. Value of REHIT study--student responses
B. REHIT questions from KNS 105 final
C. Assessment responses from KNS105 final
D. FFL Run/Walk Test results with/without HRM

Please reflect on your experiences training and testing your REHIT subject for the class research project. Include in your reflections what you have learned about the physiology of exercise, conducting research, and working with people. Would you recommend this experience for future classes? Why or why not?
**Note there is no right answer to this question.

- *It was cool to be able to immediately apply material learning in class to the study and to be able to explain what was happening and why with each stage along the way. My knowledge of the physiology of exercise has grown substantially from the extra practical exposure.*
- *In the research sphere, I learned how precision and attention to detail can lead to successful predictions of health and exercise, ultimately improving data. It was particularly enjoyable to see how what I learned in class applies to the real-world experience of exercise and training. Regarding the physiology of exercise, I saw firsthand how acute responses gradually changed into chronic adaptations in my subject. I would definitely recommend this experience for future classes because of the rich learning experience that it is.*
- *It provided application of in class/lab material and encouraged me to connect to the concepts we were learning in class in a new way.*
- *I would recommend this experience because it made me feel important and I was able to use info that I learning in class in a real-life situation.*
- *I'd recommend it for future classes, because for me it put a lot of concepts learned into practice. Being able to see the numbers on the VO2max tests each time made more and more sense as the training went on. The training sessions of short duration buy high intensity helped with the understanding of physiological processes (energy systems, muscle fiber types, etc.)*
- *I loved my experience in training my REHIT subject. I was able to immediately apply (and force myself to learn) the material that was being taught in class. I learned and was able to participate in research which was an entirely new experience and something I've never done before.*
- *I learned about conducting max tests and the physiology behind the results (RER, VE, HR, VO2, etc.)*
- *I received a hands-on approach to understanding things such as VO2 and RER. Being able to conduct some of the research allowed me to actually think critically about why certain physiological things occurred, such as a continued RER increase during cool down.*
- *I learned how to assemble different parts of the VO2 max test, and feel confident that I could run a max test on my own. I also learned what normal VO2 (kg) levels are, and the different fitness levels and how they are associated with VO2.*
- *It was helpful to be able to work with the VO2 max equipment so many times so as to become very familiar with how to properly perform the test.*
- *In reflecting on the study I thought it was good to be actively involved in the REHIT study while we learned about it in class. However, I do not feel like I was able to learn all that much about the physiological changes that took place because we were able to analyze results over time – this would have greatly enhanced the learning experience.*
- *The hands-on aspect of training and individual and running multiple max VO2 tests is huge. I think having the visual experience means a lot more than just discussing it in class.*
- *Yes I would recommend this research experience for future classes because it reinforced and made me critically think about and apply important factors of exercise physiology.*

8. The provided data form (*see gray computer printout*) is from a $V0_{2max}$ test performed recently by one of our REHIT study subjects in the lab. Use this information to answer the following questions: (14 pts)

- At what time in the exercise test did the subject begin using CHO exclusively for energy production?

- What was the subject's $V0_{2max}$ in both liters/min and milliliters/kg/min? How many Kcals was the subject consuming at this stage of the exercise test

- Did the subject reach the predicted maximal heart rate during the test? What is the percent difference between the actual max HR and the predicted max HR?

- Which two data columns are most necessary for the calculation of oxygen consumption?

- Which two data columns are most necessary for the calculation of respiratory exchange rate?

- What aerobic *fitness rating* would you give this person?

- If the subject weighed 10 pounds more at the time of this test, what value(s) do you think would be most affected?
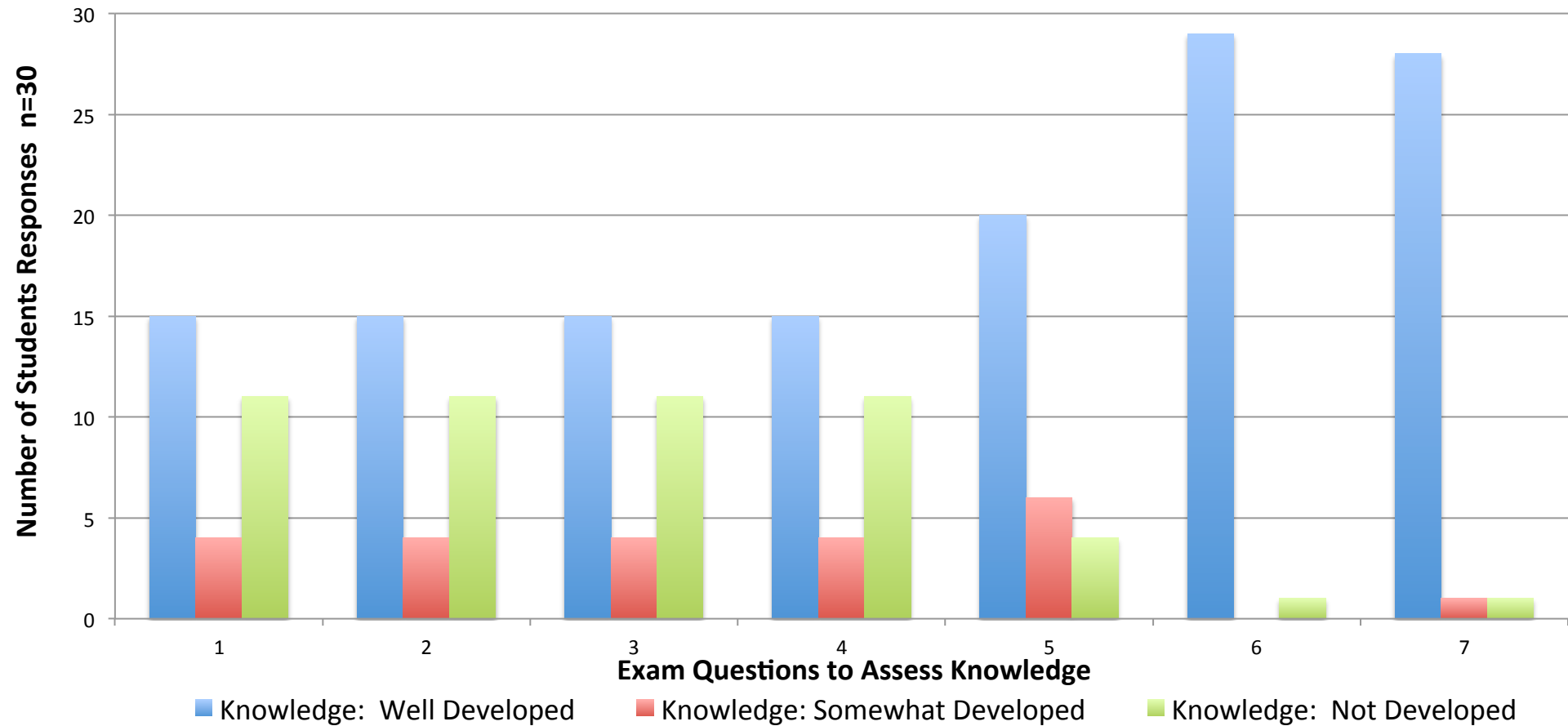
The provided data form (*see gray computer printout*) is from a VO_{2max} test performed recently by one of our REHIT study subjects in the lab. Use this information to answer the following questions: (14 pts)

1. At what time in the exercise test did the subject begin using CHO exclusively for energy production?
2. What was the subject's VO_{2max} in both liters/min and milliliters/kg/min? How many Kcals was the subject consuming at this stage of the exercise test
3. Did the subject reach the predicted maximal heart rate during the test? What is the percent difference between the actual max HR and the predicted max HR?
4. Which two data columns are most necessary for the calculation of oxygen consumption?
5. Which two data columns are most necessary for the calculation of respiratory exchange rate?
6. What aerobic *fitness rating* would you give this person?
7. If the subject weighed 10 pounds more at the time of this test, what value(s) do you think would be most affected? 2.
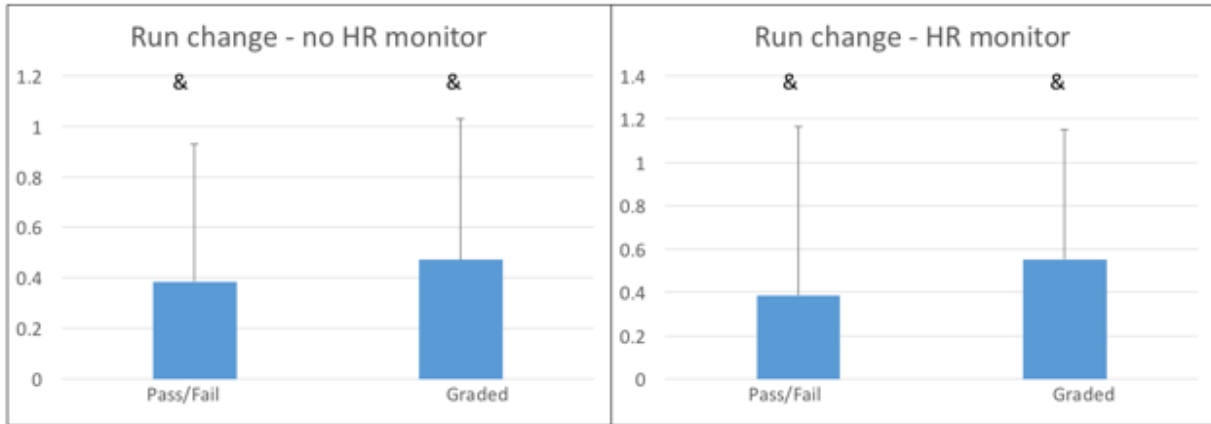
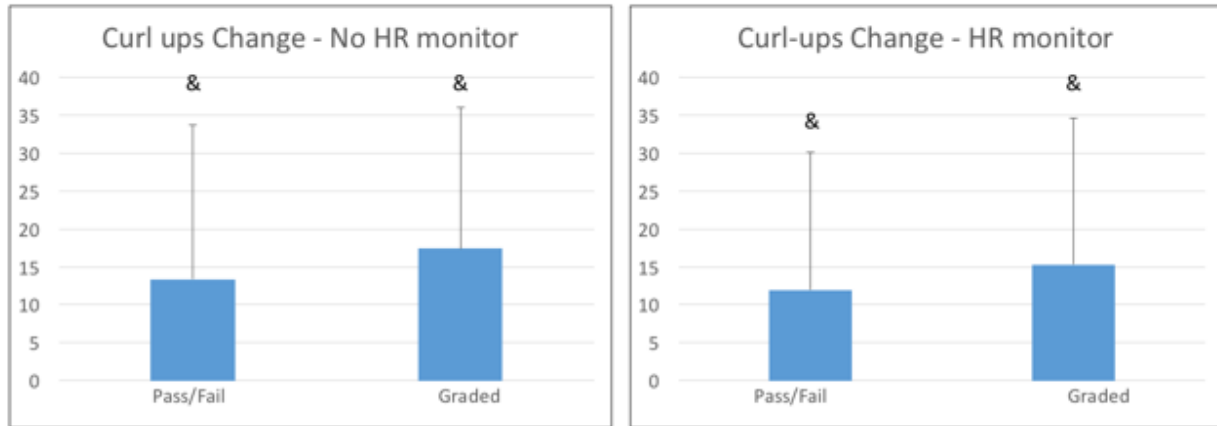& = p < 0.05 for changes from pre-post test

Figure 1 – The Fitness for Life class resulted in an increase in cardiorespiratory fitness no matter if the students took the class with a pass/fail or graded option. Also, the addition of the heart rate monitor did not further increase the cardiorespiratory fitness of students in the class.
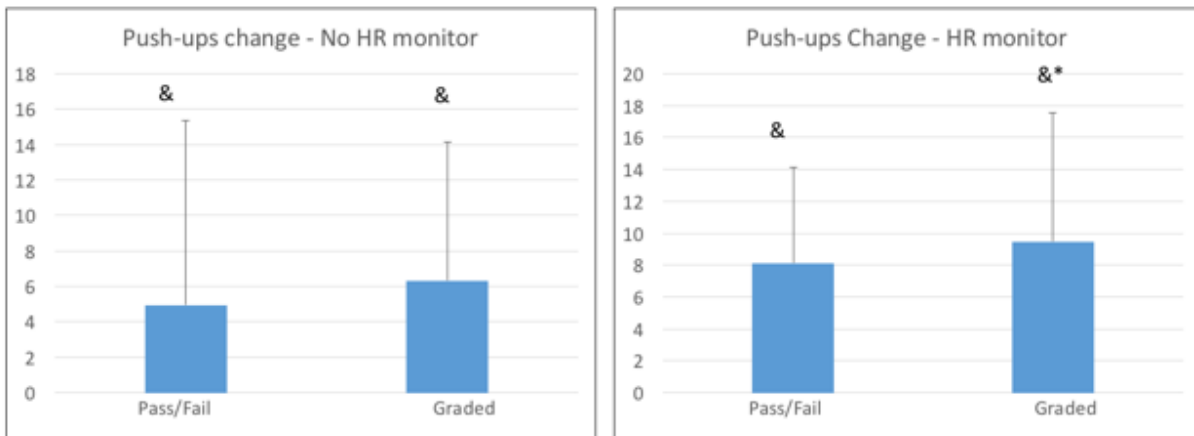
& = p < 0.05 for changes from pre-post test, * = p<0.05 for differences between HR monitor/No HR monitor

Figure 2 – The Fitness for Life class resulted in an increase in muscular endurance fitness as evidenced by an increase in Push-up ability from the beginning of the semester until the end of the semester with no differences between students who took the class pass/fail or for a grade. Here, the heart rate monitor did result in additional increases in push-up ability in individuals

who used the heart rate monitor and took the class for a grade as compared to traditional means of classroom administration.

Curl ups Change - No HR monitor

Curl-ups Change - HR monitor

& = p < 0.05 for changes from pre-post test

Figure 3 - The Fitness for Life class resulted in an increase in muscular endurance fitness as evidenced by an increase in curl-up ability from the beginning of the semester until the end of the semester with no differences between students who took the class pass/fail or for a grade. Again, the heart rate monitor did not result in any additional increases as compared to traditional means of classroom administration.