

**Assurance of Student Learning
2020 – 2021**

College of Health and Human Services

School of Kinesiology, Recreation & Sport

Kinesiology – MS 0454

Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.

Student Learning Outcome 1: Students develop and demonstrate advanced skills needed to recognize, evaluate, and prescribe solutions from an integrated and holistic approach regarding human movement, wellness, and performance.

Instrument 1 **Direct:** A comprehensive exam in Advanced Exercise Testing & Prescription (KIN 522) evaluates core knowledge and performance domains for KIN students to be prepared for the American College of Sports Medicine (ACSM) Certified Clinical Exercise Physiologist (ACSM – CEP) certification exam.

Instrument 2 **Direct:** A comprehensive hands-on practical GXT assessment in Advanced Exercise Testing & Prescription (KIN 522) evaluates core knowledge and performance domains for KIN students to be prepared for the American College of Sports Medicine (ACSM) Certified Clinical Exercise Physiologist (ACSM – CEP) certification exam.

Instrument 3 **Direct:** Student online ZOOM presentations

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.

Met

Not Met

Student Learning Outcome 2: Interpret and apply advanced knowledge of the physiological influence of physical activity/exercise on health, fitness, sport performance, and clinical practice.

Instrument 1 **Direct:** A comprehensive exam in Advanced Exercise Physiology (KIN 504) evaluates the students' theoretical and applied core knowledge of human physiology related to all aspects of the acute and chronic impact of exercise on health, fitness, sport performance, and clinical practice.

Instrument 2 N/A

Instrument 3

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.

Met

Not Met

Student Learning Outcome 3: Students develop advanced capacity as researchers and as practitioners who use evidence-based practices to develop and conduct a research project, as well as to implement, assess, and revise consumer-based exercise prescriptions and community health initiatives based on scientific advancements.

Instrument 1 **Direct:** Students will be assessed through evaluation of a final research proposal, including an introduction, review of literature, and detailed methodology, to be prepared and submitted in written form, as well as presented orally to the class and the professor.

Instrument 2 N/A

Instrument 3 N/A

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.

Met

Not Met

Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)

Formative and summative assessment strategies are utilized across the continuum of course offerings in the Kinesiology (KIN) program. The program progresses students from knowledge to action. Based on the sequence of the KIN course offerings, each course introduces additional depth and difficulty for the students to integrate and demonstrate proficiency. Graduate faculty development and communication efforts focus on creating continuity throughout the KIN courses. Students demonstrate proficiency through high impact practice evaluation strategies that include examinations, lab practical exams, group projects, and co-evaluation with internship preceptors. The KIN courses (KIN 522, KIN 504, and KIN 501) in this Assessment of Student Learning represent the courses that reflect the advanced acute & chronic applications of the physiology of exercise, research skills for future researchers & research applications for practitioners, and the clinical applications of exercise for special populations.

The KIN program provides mentoring and support for the KIN students to participate in collaborative research projects with KIN faculty members and across CHHS and WKU as well. The students are encouraged to present research findings at university, local, regional, or national conferences. In addition to mentoring KIN students to participate in research, the students are encouraged to join and participate in one professional organization related to the field of Kinesiology and/or Exercise Physiology. As students are participating in research and professional organizations they are networking and building confidence in the job/career they are about to enter.

Overall, this Assurance of Student Learning assessment supports that the SLOs for the KIN program have reached the program targets in each category reported. Moving forward, the KIN faculty will continue to collaborate and ensure that the learning needs of the KIN students are addressed in each of the courses and relevant and meaningful assessments are being used to evaluate student progress of the knowledge, skills, and abilities in the program.

Student Learning Outcome 1

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| Student Learning Outcome | | | | Students develop and demonstrate advanced skills needed to recognize, evaluate, and prescribe solutions from an integrated and holistic approach regarding human movement, wellness, and performance. |
| Measurement Instrument 1 | | | | DIRECT: A comprehensive exam in Advanced Exercise Testing & Prescription (KIN 522) evaluates core knowledge and performance domains for KIN students to be prepared for the American College of Sports Medicine (ACSM) Certified Clinical Exercise Physiologist (ACSM – CEP) certification exam. |
| Criteria for Student Success | | | | Students will score $\geq 80\%$ on the comprehensive exam. |
| Program Success Target for this Measurement | | Our target is for $\geq 80\%$ of our students to attain the above criterion of a score of $\geq 80\%$ on the comprehensive exam. | Percent of Program Achieving Target | (4/5) 80% |
| Methods | | | | <p>Student enrollment for the Spring 2021, N = 5.</p> <p>The multiple-choice comprehensive exam content addresses core clinical content such as EKG interpretation, Graded Exercise Testing (GXT), and prescribing exercise for clinical populations (Myocardial Infarction, Heart Failure, Stroke, & Peripheral Vascular disease).</p> |
| Measurement Instrument 2 | | | | <p>DIRECT: A comprehensive hands-on practical GXT assessment in Advanced Exercise Testing & Prescription (KIN 522) evaluates core knowledge and performance domains for KIN students to be prepared for the American College of Sports Medicine (ACSM) Certified Clinical Exercise Physiologist (ACEM-CEP) certification exam.</p> <p>Note: due to COVID 19 in the Spring semester 2020, a modification was made to the KIN 522 course and a final presentation and clinical case studies were completed in lieu of the hands-on practical GXT practical exam. See Measurement Instrument 3.</p> |
| Criteria for Student Success | | | | Students will score $\geq 80\%$ on the hands-on practical GXT assessment. |
| Program Success Target for this Measurement | | Our target is for $\geq 80\%$ of our students to attain the above criterion of a score of $\geq 80\%$ on the practical GXT assessment. | Percent of Program Achieving Target | N/A |
| Methods | | | | <p>Student enrollment for the Spring 2021, N = 5.</p> <p><i>The hands-on practical exam is anticipated to resume in the Spring 2022 semester.</i></p> <p>A practical skills testing environment is designed to mimic advanced exercise testing/prescription knowledge, skills, and abilities in a professional setting. At the end of each semester, KIN students report to the Exercise Physiology lab and perform a graded exercise test (GXT) on a simulated patient. A KIN faculty member utilizes a scoring rubric to assess the skills and abilities of each student. Consideration will be given to further integration of case studies and have the students provide presentations at least 20 to 30 minutes.</p> |

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| Measurement Instrument 3 | Direct: Student online ZOOM presentations | | |
| Criteria for Student Success | Students will score >= 80% on the Clinical population presentation. | | |
| Program Success Target for this Measurement | Students will score >= 80% on the Clinical population presentation. | Percent of Program Achieving Target | N/A |
| Methods | <p>Spring 2021: the presentation will not continue for future semesters.</p> <p>Student online ZOOM presentations were 60 minutes each and covered the following topics: acute coronary syndrome, revascularization of the heart, cardiac electric pathophysiology, and Diabetes. Students defined clinical disease or procedure/s, provided the scope of the clinical disease or procedure/s, and explained the pathophysiology. Clinical considerations / clinical assessments were addressed relative to the Exercise Prescription for the specific population.</p> | | |
| Based on your results, highlight whether the program met the goal Student Learning Outcome 1. | | Met | Not Met |
| Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) | | | |
| <p>We plan to continue to complete the following actions for continued improvement beginning in the Spring of 2021 and evaluate each subsequent Spring semester until next review period. The KIN 522 course is evaluated each semester to ensure that course content and skills are added and/or modified to ensure that students are obtaining current and relevant content.</p> <p><i>Due to ongoing COVID restrictions in the Spring 2021, in regards to maintaining a distance of 6 feet and wearing masks, the decision was made to forgo the GXT practical component of the course. It is anticipated that we will be back to a point in the Spring 2022 semester where students will be able to perform the hands-on component of the practical exam. For the Spring of 2022, students will apply classroom material in the laboratory by performing a GXT as well as other clinical procedures (blood pressure, resting EKG, Spirometry etc.). Students learn the content relative to working with a clinical population in the classroom and are able to apply their skills by performing tests on their student peers and simulated patients. Students reported that they were better able to grasp the material when they applied it to a practical scenario.</i></p> <p>Based on the official start of the course (Monday class not starting until the next week) and the course being cancelled due to a snow emergency, adjustments were made to the course during the semester to ensure that all of the course content was covered. Students were provided more online (Zoom) lectures to bolster the course content being covered and to ensure that all content was covered and to ensure adequate time for in-person lectures and classroom interactions and student understanding of the material. Based on time and feasibility, the decision was made to forgo the student presentations and case studies. The presentation was implemented as a result of going online the previous semester (spring 2020) to do to the immediate reaction and adjustments due to COVID. It became evident that the presentation was not feasible for the Spring 2021.</p> <p>Despite having to make adjustments and make the best of a very difficult semester, the course material was covered and the students were able to get all of the course content with the in-person and online (Zoom) lectures and with the assessments provided. The student learning outcome 1 has been met.</p> <p>In addition to the clinical procedures and lab skills, further development and utilization of clinical case studies will be provided to ensure opportunities to apply the course material to specific patient populations.</p> <p>Despite students continuing to exceed the target, the lab component of the course and final exam will be assessed to ensure that the students are grasping the core clinical content and obtaining lab experiences that bolster course content and are prepared for clinical applications of skills in their internship and/or to start their clinical career or career in a closely related field.</p> | | | |
| Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) | | | |

Follow-up information for Spring 2021 Assessment of Student Learning. Based on the assessment of ASL's for KIN 522 an effort continues to be made to ensure the course content and practical skills align with core content for the ACSM – CEP clinical certification. Based on Alumni feedback and changes in the ACSM – CEP certification requirements, we are now encouraging KIN graduate students begin their clinical observation hours at the beginning of the Fall semester in the second year of the KIN program. Students will complete KIN 596 Internship in Exercise Physiology for 300 hours in the final Spring semester in the program. The goal is to ensure that students will complete the required 600 clinical hours prior to graduation and be prepared to take the ACSM- CEP certification exam. An effort will be made to work with the graduate students and determine if a need for a more formal approach is needed to insure students are working toward completing the clinical hours. This may vary for each student and some students may have obtained previous clinical experience or may have the opportunity to obtain hours once hired and take the ACSM – CEP certification in their first year of employment.

Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)

For future assessments of student learning outcomes (Starting Spring 2022), a continued effort will be made to ensure that the KIN 522 course content aligns with the current ACSM – CEP clinical certification performance domains and students continue to meet the criteria for student success at the completion of the course. The KIN 522 course is evaluated each semester to ensure that course content and skills are added and/or modified to ensure that students are obtaining current and relevant content. Performance on the comprehensive exam will be evaluated to ensure that students are appropriately demonstrating understanding the core clinical content.

Student Learning Outcome 2

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| Student Learning Outcome | Interpret and apply advanced knowledge of the physiological influence of physical activity/exercise on health, fitness, sport performance, and clinical practice. | | |
| Measurement Instrument 1 | Direct: A comprehensive exam in Advanced Exercise Physiology (KIN 504) evaluates the students' theoretical and applied core knowledge of human physiology related to all aspects of the acute and chronic impact of exercise on health, fitness, sport performance, and clinical practice. | | |
| Criteria for Student Success | Students will score $\geq 80\%$ on the comprehensive exam. | | |
| Program Success Target for this Measurement | Our target is for $\geq 80\%$ of our students to attain the above criterion of a score of $\geq 80\%$ on the comprehensive exam. | Percent of Program Achieving Target | 100% (7/7) |
| Methods | Student enrollment for the Fall 2020, N = 7. Direct: The essay-question format comprehensive exam content addresses core content such as cardiovascular physiology, pulmonary physiology, neuromuscular physiology, environmental physiology (thermoregulation, hyper- and hypobaric environments, pollution, and microgravity) and metabolism. | | |
| Measurement Instrument 2 | Direct: Students will complete a series of content-rich assignments throughout the semester on topics germane to the course, designed to foster analytical and critical-thinking skills and to enhance students' ability to apply course knowledge into practical settings. | | |
| Criteria for Student Success | Students will score $\geq 90\%$ on each of the assignments. | | |
| Program Success Target for this Measurement | Our target is for $\geq 90\%$ of our students to attain the above criterion of a score of $\geq 90\%$ on each of the assignments. | Percent of Program Achieving Target | 86% (6/7) |
| Methods | Student enrollment for the Fall 2020, N = 7. Direct: The assignments include "real world" examples of problems as well as videos, lectures, and Ted Talks. The essay questions are tied directly to the content included in these various formats and constructed to link theoretical knowledge and practical application. | | |
| Measurement Instrument 3 | N/A | | |

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| Criteria for Student Success | N/A | | |
| Program Success Target for this Measurement | N/A | Percent of Program Achieving Target | N/A |
| Methods | N/A | | |
| Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2. | | | Met |
| Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.) | | | |
| The format of the course is lecture, classroom discussion, and laboratory demonstrations & assignments. Based on the collaboration among KIN faculty and feedback from students, we ensure that we are utilizing the most appropriate materials (textbook, lab manual, etc.) for the KIN 504 course, and also that we are utilizing pedagogically sound techniques. Constant discussions among KIN faculty during the semester and following the semester ensure that students are prepared to apply the physiological principles taught in this course to their remaining KIN courses, e.g. Laboratory Methods (KIN 514). | | | |
| Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) | | | |
| For future assessments of student learning outcomes, a continued effort will be made by the KIN faculty, along with graduate student input, to ensure that the KIN 504 course content prepares students for the next sequence of KIN courses. As this is essentially the cornerstone course of the KIN program, we stress the importance of this collaboration to ensure that we are providing the most current, research-based material to our students, and that we are delivering this content in a variety of ways, e.g. lecture, discussion, and lab activities, to prepare our students as well as possible not only for their remaining courses, but also for their careers following graduation. | | | |
| Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome) | | | |
| The KIN 504 course is evaluated each spring semester (following the class being offered in the previous fall semester) to ensure that course content is added and/or modified so that students are obtaining current and relevant content based on the most current available research. Performance on the comprehensive exam is utilized to ensure that students are demonstrating an appropriate level of understanding the course content. | | | |
| Per the information above, this course will be evaluated again in Spring 2022 via students' performance on their comprehensive exam and the additional practical assignments. The course instructor will administer the exam and collect the data, at which time the data will be reviewed by the program faculty for any necessary modifications. | | | |

| Student Learning Outcome 3 | | | |
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| Student Learning Outcome | Students develop advanced capacity as researchers and as practitioners who use evidence-based practices to develop and conduct a research project, as well as to implement, assess, and revise consumer-based exercise prescriptions and community health initiatives based on scientific advancements. | | |
| Measurement Instrument 1 | Direct: Students will be assessed through evaluation of a final research proposal, including an introduction, review of literature, and detailed methodology, to be prepared and submitted in written form, as well as presented orally to the class and the professor. | | |
| Criteria for Student Success | Students will score $\geq 80\%$ on the research proposal presentation/submission. | | |
| Program Success Target for this Measurement | Our target is for $\geq 80\%$ of our students to attain the above criterion of a score of $\geq 80\%$ on the research proposal presentation/ | Percent of Program Achieving Target | 100% |

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| | submission. | | |
| Methods | <p>Student enrollment for the Fall 2019, N=4.</p> <p>Students are instructed on all aspects of conducting research with human subjects and how to construct a research proposal from inception of idea to developing methodology. The course covers how to complete the CITI training, writing an IRB application and obtaining IRB approval, obtaining CPR/First Aid/AED training, obtaining bloodborne pathogen training, biosafety levels for different types of laboratories, how to identify a research topic/question, write an abstract, introduction, literature review, and construct/write a methodology. In turn, they take all of this information and apply it by identifying a “mock” research topic, formulating a question, and writing up an IRB application and research proposal including all sections through the methods. This is submitted and graded along with their oral presentation of their research proposal.</p> | | |
| Measurement Instrument 2 | N/A | | |
| Criteria for Student Success | N/A | | |
| Program Success Target for this Measurement | N/A | Program Success Target for this Measurement | N/A |
| Methods | N/A | | |
| Measurement Instrument 3 | N/A | | |
| Criteria for Student Success | N/A | | |
| Program Success Target for this Measurement | N/A | Program Success Target for this Measurement | N/A |
| Methods | N/A | | |
| Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3. | | | |
| | | | Met |
| Not Met | | | |
| Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) | | | |
| <p>Students were provided course content relative to each of the components of a research proposal and research presentation throughout the semester. Utilizing lecture material and classroom examples, the content continued to build throughout the semester, leading to a final submission of the research proposal and research presentation at the end of the semester. Students responded well to how the content builds and leads to a final project. The students reported taking ownership of their personal project and gaining in depth knowledge in their area of interest. Despite exceeding the goal, the course will continue to assess student progress to ensure the students are developing throughout the semester and are prepared to submit and present quality work.</p> | | | |
| Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) | | | |
| <p>Following each time this course is offered, faculty discuss the quality of the students’ proposals and determine whether or not the students seem to be adequately prepared to complete a thesis. While not all students choose to do a thesis, success in this course is critical for a student to be prepared to take on a thesis project. If it is determined that a given student may not be completely ready, even after the course (which is rare), faculty meet with the student to determine their intentions. If they intend to do a thesis, we meet</p> | | | |

with them, usually more than once, to close the gaps on any areas where they may be deficient. We view this as very important to ensuring the success of our students as young scholars, particularly if their ultimate intention is to pursue a PhD.

Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)

The KIN 501 course is evaluated each spring semester (following the class being offered in the previous fall semester) to ensure that course content is added and/or modified so that students are obtaining current and relevant content based on the most current available research. Performance on the students' individual research proposals (both oral and written) is utilized to ensure that students are demonstrating an appropriate understanding of how to write and deliver a Master's level research proposal, including how to identify a research topic/question, write an abstract, introduction, literature review, and construct/write a methodology.

Per the information above, this course will be evaluated again in Spring 2021 via students' performance on their oral and written research proposals. The course instructor will supervise the students as they write their written proposals and also proctor the oral proposals. From this, the instructor will collect the data, at which time the data will be reviewed by the program faculty for any necessary modifications.

MAXIMAL GRADED EXERCISE TEST PROCEDURES

KIN 522 Advanced Exercise Prescription

Equipment Needed

Treadmill and EKG machine (we use a Quinton Q-Stress Integrated EKG –treadmill system)
Ten EKG electrodes
Electrode patient cable to connect client to EKG machine
Alcohol swabs and abrasive pad for skin prep for electrodes
Sphygmomanometer and appropriate size blood pressure cuff; tape for securing BP cuff on arm
Stethoscope
RPE scale
Clipboard and pen/pencil
Proper forms – informed consent, health history, and test data forms
Bring your USB drive to lab with you. You can save your GXT data.

1. **Clinical Exercise Physiologist** has the following responsibilities:
 - a. Describes test procedures to client and obtains informed consent for the procedure
 - b. Obtains health history from client prior to testing and interprets results
 - c. Determines test protocol based on client information (we'll use a Bruce protocol for all of our tests in this class)
 - d. Obtains all blood pressure and RPE measurements
 - e. Monitors client before, during and after test for responses to test procedures
 - f. Determines if and when to alter test protocol, when to terminate test, and post-test procedures
 - g. Making sure all equipment is available and in good working order (includes EKG machine, treadmill, BP equipment, etc.) and all needed supplies are available
 - h. Prepping client for 12-lead EKG monitoring
 - i. Monitors, records and labels EKGs throughout procedure
 - j. Operates Quinton Q-Stress system throughout testing procedures
 - k. Recording all data (BP, RPE, signs and symptoms, etc.) throughout testing procedures

NOTE: The Quinton Q-stress system you will be using has programmed testing protocols. That is, once the test is started, the TM speed and grade will automatically adjust according to the selected protocol. Also, the EKG controller will keep track of stage and total test time. It will automatically print a 12-lead EKG at the end of each stage. At the end of the test, when the TT selects recovery mode, the EKG controller will reduce TM speed and grade to a slow walking speed.

PROCEDURES FOR PERFORMING A MAXIMAL GRADED EXERCISE TEST (GXT)

PRE-TEST PROCEDURES

- A. Be sure all equipment is in good working order.
- B. Supplies needed for test should be obtained and made available. This is done before the subject arrives.
- C. Subjects should be dressed in clothing and shoes suitable for exercise. Generally, men and women should be dressed in a T-shirt or sleeveless shirt. Since 12-lead EKGs will be taken, it is best if women wear a sports bra under their shirt. You should inform the subject of the appropriate attire prior to them coming to the lab.
- D. Take precautions to ensure client privacy during preparation and testing.
- E. Ask the subject to complete ACSM Risk Stratification Questionnaire.
- F. Carefully review the questionnaire for current illness, presence of cardiovascular risk factors, medical history, any medications or supplements, and physical activity habits. Verbally confirm the information on this questionnaire with the subject.
- G. Determine ACSM risk category and whether physician supervision is required for testing.
- H. Explain testing procedures and properly obtain informed consent (use sample form provided) to conduct the GXT.
- I. Obtain subject's name and age and enter into Q-stress system as a "new patient."
 - Enter height, weight, gender
- J. Record the age-predicted maximum heart rate and 85% of this value as calculated by the Q-stress system.
- K. Make sure there is enough EKG recording paper in the dispenser for all the data to be collected during testing.

PRE-EXERCISE PROCEDURES

- A. Select an appropriately sized BP cuff and properly place it on the client's arm. Secure the cuff to prevent slippage during test.
- B. Measure resting seated and standing blood pressures.
- C. Prep the subject for a 12-lead EKG and perform an electrode impedance check with the Q-stress system
- D. Record seated and standing resting 12-lead EKGs. Label every tracing that you print.
- E. Thoroughly explain the GXT exercise procedures to the subject. This should include the following:
 1. Explanation of the Borg 6-20 scale for rating of perceived exertion.
 2. Emphasize to the subject that this is a maximal effort GXT, but also assure him/her that the test will be stopped at any time he/she requests to do so.
 3. If necessary, describe procedure to start walking on treadmill. If a demonstration is required, be prepared to do so.
 4. Describe to the client that he/she should inform the you of any of the following symptoms as soon as they appear:
 - Discomfort in the chest, shoulders, jaw, arm (i.e. anginal symptoms)
 - Shortness of breath
 - Dizziness or feeling faint
 - Pain or cramping in the legs
 - Unusual fatigue
- F. When appropriate, safely guide the subject to the treadmill and ask him/her to stand quietly in place while with a leg on each side of the treadmill. Be sure there are no safety issues such as loose shoelaces, dangling EKG cables.

EXERCISE PROCEDURES

- A. Orient subject to treadmill as needed and get him/her started at a slow walk without holding on to handrails. After the subject is comfortable on the treadmill start the protocol
- B. During the first few seconds of the GXT, be sure to check the blood pressure cuff to insure that it is properly positioned for blood pressure measurements.
- C. Maintain communication with the subject and ask for an RPE value during the last 15 seconds of each stage (prior to beginning of next stage). RPE evaluations may be more frequent during later stages of test.
- D. Carefully monitor the subject for any signs of distress (see above).
- E. Remember that the GXT should be stopped for any of the relative or absolute reasons displayed in *ACSM's Guidelines for Exercise Testing and Prescription, 8th edition*.
- F. Measure blood pressure at least once during each stage, usually during the last minute using proper technique. DO NOT interfere with the EKG by measuring blood pressure when the EKG is being recorded (this occurs during the last 10-15 seconds of each stage); the arm movement will result in motion artifact in the EKG. Recording the EKG usually takes precedence over measuring the blood pressure.
- G. Once the subject begins running during the test, it is not possible to accurately obtain blood pressures.
- H. Take the final blood pressure measurement immediate Post Exercise when the subject discontinues exercise.
- I. Monitor client carefully for indications to stop test.
- J. When testing, monitor the EKG for cardiac problems before, during and after the test and to accurately record all data.
- K. The Q stress system will record and exercise EKG during the last 10 seconds of every stage. Record and EKG when the HR reaches 85% of predicted max, and as close to the maximum exercise as possible, immediately post-exercise (when subject has straddled the TM). The Q Stress system automatically record and EKG when the recovery mode is engaged and then every odd minute of recovery. In addition, whenever an abnormal EKG waveform or rhythm is noted at any time during the test or if the subject reports any angina, dizziness, or other symptoms, an EKG should be recorded for future reference, and a note should be made describing the symptoms or abnormality and their time of occurrence. Labeling is very important
- L. The Quinton Q-stress system automatically adjusts TM speed and grade according to selected pre-programmed protocol.
- M. Record BP, RPE and any other data neatly and correctly on data sheet.

TEST TERMINATION & RECOVERY PROCEDURES

- A. Determines when the test is to be stopped (i.e. indications) or when subject requests to stop
- B. Obtain a RPE from the client at or immediately after max exercise. Obtain a blood pressure reading immediately post exercise.
- C. Upon test termination, select "recovery mode" on Q-stress system. The system will automatically record a 12-lead EKG and reduce TM speed and grade. The recorded EKG should be labeled as "MAX EXERCISE."
- D. Record an EKG, labeled as "Immediate Post Exercise" or "IPE," as soon as possible after the subject reaches maximal exercise. Often, the EKG recorded at maximum exertion is difficult to interpret due to motion artifact and, therefore, the IPE EKG may assume a critical place of importance in interpreting the overall results of the GXT.
- E. Unless emergency dictates that the treadmill should NOT be completely stopped, it should be slowed to about 2-3 mph (or a comfortable walking speed for the client) and lowered to 0% grade upon termination of the GXT. Generally, a walking cool-down is recommended (we will normally use a 3-5 minute active recovery).
- F. Usually, the BP and EKG should be measured and recorded every 2 minutes for 6 to 10 minutes of recovery (3-5 minutes active and 3-5 minutes passive recovery). As a general rule, recovery measurements are continued until the EKG and BP have normalized, and symptoms, if present, have dissipated. Note that the recovery phase is a high risk time for heart problems to develop, even though none may have been present during exercise.
- G. Determine when to discontinue monitoring and when subject can be disconnected from the monitoring equipment and released. However, it is always wise to keep the subject in the laboratory for an extended observation period if there is any question about his/her complete recovery from exercise.

- H. If necessary, you are responsible for dealing with any abnormal reactions to exercise or recovery such as nausea or vomiting, lightheadedness or syncope.
- I. Thank subject for his/her participation, obtain subject's email address and inform him/her that a brief summary of the test results will be sent within 48 hours
- J. When appropriate to do so, disconnect client from EKG and remove electrodes.

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| POST –GXT PROCEDURES |
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Prepare written test report including the following: Prepare a written report (Exercise Stress Test Report) and submit with all EKG's (properly labeled), data collection form, and assessment form

EVALUATION FORM FOR GXT

Student: _____ Date: _____ Score: _____

Done Well = all of the following are met: procedure/activity is consistently performed using excellent technique, at the appropriate time(s), and in a professional manner.

Done = all of the following are met: procedure/activity is performed using good technique (no major errors or mistakes), is done at the appropriate time(s), and in an acceptable manner.

Done Poorly = the procedure/activity was done, but with poor technique, significant errors, inconsistently, or at the wrong time(s).

Not Done = any of the following occurs: procedure/activity was not performed at all or was done so poorly that it was unsafe or grossly unprofessional

| Procedure/Activity | Comments | Done Well | Done | Done Poorly | Not Done |
|--|----------|-----------|------|-------------|----------|
| Informed consent procedures A. Explains all procedures, risks, benefits, properly using appropriate terminology. B. Answers client questions appropriately C. Obtains client signature in ink D. TA Signs "witness" line in ink | | | | | |
| Health History A. Has client fill out risk assessment form or interviews client to complete form B. Reviews completed form with client C. Asks appropriate questions regarding client responses D. Obtains proper exercise history E. Obtains other necessary health history information (medications, supplements, etc.) | | | | | |
| Pre-exercise procedures: A. Equipment and supplies responsibilities 1. Makes sure TM and EKG machine are in good working order and ready for use prior to test 2. Assembles all necessary equipment and supplies prior to the test B. Instructs client regarding proper clothing for comfort and safety. C. EKG prep 1. Skin is properly prepared for electrode placement 2. Electrodes are applied properly and in correct location on client 3. EKG cables are properly applied and secured 4. Electrode check shows good prep D. Properly records and labels seated and standing EKG tracings E. Assists client to TM safely Properly explains GXT procedures to client including F. Use of Borg RPE scale G. Use of treadmill at start and end of test H. Reporting of adverse signs/symptoms I. Importance of giving maximal effort during test J. End of test procedures | | | | | |
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| <p>Blood Pressure Measurements</p> <ul style="list-style-type: none"> A. Uses appropriately-sized BP cuff for client B. Applies and secures BP cuff correctly C. Uses proper technique for taking BP <ul style="list-style-type: none"> 1. Proper arm position 2. Proper stethoscope placement 3. Proper use of sphygmomanometer D. Accurately measures exercise blood pressure E. Takes BP measurements at appropriate times (prior to stage change or other transition) <ul style="list-style-type: none"> 1. before test 2. during test 3. after test in recovery F. Reports BP measurements to TT appropriately | | | | | |
| <p>Exercise procedures</p> <ul style="list-style-type: none"> A. Begins test appropriately B. Properly records and labels EKGs throughout test C. Properly records BP, RPE and other data D. Monitors EKG display properly E. Ensures a safe testing environment for client F. Obtains RPE values at appropriate times during test (prior to stage change and at end of test) G. Appropriately monitors client status throughout test noting adverse signs/symptoms H. Encourages client to go to max effort I. Takes client to max effort or until symptoms develop J. Transitions to recovery appropriately | | | | | |
| <p>Procedure/Activity</p> | <p>Comments</p> | <p>Done Well</p> | <p>Done</p> | <p>Done Poorly</p> | <p>Not Done</p> |
| <p>Recovery procedures</p> <ul style="list-style-type: none"> A. Gets client back on TM quickly after end of test B. Obtain IPE BP immediately after end of test C. Monitors client status appropriately D. Determines proper time to discontinue client monitoring A. Records and labels EKG at test termination B. Records and labels EKG immediately post exercise C. Records and labels EKG during active and passive recovery D. Records BP and other data appropriately E. Sets TM speed appropriately during active recovery F. Disconnects client from EKG appropriately | | | | | |
| <p>Overall behavior</p> <ul style="list-style-type: none"> A. Professional attire and behavior exhibited throughout testing procedures B. Communicates professionally and appropriately with client C. Demonstrates proper test control of test situation D. Records BP, HR, RPE and other data accurately and neatly on data form. E. Final data form submitted with report is neat, organized, and complete | | | | | |

| | | | | |
|--|--|--|--|--|
| Overall Test Performance - Comments | | | | |
|--|--|--|--|--|

| Procedure/Activity: TEST REPORT | Done Well | Done | Done Poorly | Not Done |
|--|------------------|-------------|--------------------|-----------------|
| Consent form is signed and dated by you and the client in ink | | | | |
| Data collection form is properly and completely filled out | | | | |
| Risk assessment form is properly and completely filled out | | | | |
| Appropriate demographic information included | | | | |
| Accurately notes test endpoint(s) reason (s) for stopping test | | | | |
| Exercise capacity | | | | |
| 1. Calculate VO ₂ max or peak and record in ml/kg/min and METS | | | | |
| 2. Compare max METS achieved with predicted values for age and sex | | | | |
| 3. Determine fitness level (below average, average, above average, etc.) | | | | |
| EKG findings | | | | |
| 1. Provide accurate and complete interpretation of baseline EKG. | | | | |
| 2. Document the presence or absence of any arrhythmias, ST-T wave changes, and any other findings at rest, during exercise, and during recovery. | | | | |
| 3. Any abnormal EKG findings are noted during the test, carefully document when they appear, their progression and severity, and how long they persist in recovery | | | | |
| Hemodynamic findings | | | | |
| 1. HR response to exercise and in recovery is described interpreted. | | | | |
| 2. Accurately calculates chronotropic index and HR change from max at 1 minute active recovery. | | | | |
| 3. Accurately describes and interprets BP response to exercise and in recovery. | | | | |
| 4. Calculate max double product and, if appropriate, the double product at the onset of angina or EKG changes suggesting ischemia | | | | |
| Describe any unusual signs or symptoms the subject may have which could be related to cardiac, respiratory, neurological, and/or musculoskeletal disorders. Particularly note the presence of any angina or anginal-like symptoms. | | | | |
| Overall interpretation of test results. This includes whether test was normal in all respects (if not, note abnormal responses) and whether negative or positive for CVD. | | | | |

Clinical Presentation Evaluation Form

Name _____ Date _____

Class _____ Topic: _____

| | Exceptional/ Professional (A-4) | Admirable/ Above Average (B-3) | Acceptable/ Average (C-2) | Amateurish/ Below Average (D-1) | Unacceptable/ Obviously didn't prepare or consider (F-0) |
|---|--|---|--|--|---|
| Content: Covered topic thoroughly? Synthesis of ideas? | | | | | |
| Coherence/ Organization: Could follow? Flowed well? Clarity? | | | | | |
| Creativity: Used imagination in covering topic? | | | | | |
| Material: PowerPoint? Handouts? Quality tables and graphs? | | | | | |
| Effective speaking skills? | | | | | |
| Proper length of presentation/audience response? | | | | | |
| Displayed depth of knowledge/practical application? | | | | | |
| Mechanics: Errors or misspelled words? | | | | | |
| | | | | | |

Comments: