

**GROUP EXERCISE EXAMINATION  
PROGRAM TECHNICAL REPORT**

December 5, 2008



## **Introduction**

This report provides an overview of examination program activities and the statistical properties of the new, practice-based version of the certification examination for Group Exercise Instructors, administered by the National Exercise Trainers Association – Group Exercise Instructor Certification Board (NETA-GECB). The version of the exam discussed in this report was administered in a number of locations at different times throughout the United States during the last quarter of 2008. The data from these administrations were combined and served as the basis for the statistics and analyses appearing in this report.

## **Background**

NETA has certified Group Exercise Instructors (since 1977) and Personal Trainers (since 1995). It has always been a priority for NETA to provide fitness professionals with a cost-efficient way to obtain the best education, knowledge and skills to enter the fitness industry. To that end, NETA strives to stay abreast of industry trends and changes in order to communicate those to its certificants through continuing education and certification workshops.

In 2003 it became abundantly clear that the industry was headed towards a higher standard of practice in relationship to certification agencies. NCCA accreditation was held up as the highest standard to achieve. Therefore, NETA began the NCCA accreditation application process in early 2004 for its Personal Trainer Certification and was approved by NCCA in April 2007. In 2008 NETA commenced the accreditation process for its Group Exercise Certification.

NETA established a separate board, currently known as the NETA-GECB, to govern all certification processes. Dr Gerald Rosen was retained to consult with NETA's Certification Director on psychometric subject matter. A Job Analysis was conducted and completed in September of 2008, at which time a new exam was constructed to reflect the Job Analysis findings and to better reflect the changes that were in progress. The exam that was constructed, analyzed and deemed accurate, sound and fair. That examination was used during the last quarter of 2008. During that time all test construction processes required by NCCA standards were conducted and documented. The result of the test construction processes is the examination that will be placed in service in January of 2009.

## Section I: Examination Administration

The examination was administered via computer based testing (CBT) and paper-and-pencil format using scannable answer sheets under a secure, proctored arrangement. Comira Testing was the CBT. The paper-and-pencil format was used at conventions and in areas in which Comira Testing Centers were not available or convenient for the candidate.

## Section II: General Test Results

The Group Exercise Instructor (GEI) examination consists of 100 questions. The mean, standard deviation, reliability coefficient and standard error of measurement reported here are based on all 100 items (see Table 1). The raw score mean is the arithmetic average of the total number of items answered correctly by the group of examinees. For instance, the table shows that the mean or average raw score for 76.54. The median is the score point above and below which half of the candidates scores fall. The median for the examination was 78.00. The standard deviation is a measure of the dispersion of the raw scores about the mean. The standard deviation of the examination was 8.05.

The Kuder-Richardson-20 (or KR-20) reliability reflects the degree of consistency in the test score. The KR-20 coefficient for the examination was 0.80. This reflects a high degree of internal consistency.

Table 1 also contains information on the reliability or consistency of pass/fail decisions computed via the Livingston method. The pass/fail decision consistency index was 0.88. This represents a very high degree of decision consistency.

The Standard Error of Measurement is interpreted as a standard deviation of the errors of measurement for the test, and is directly influenced by both the size of the standard deviation and the degree of unreliability of the test. The greater the standard error of measurement, the more the score reflects chance factors. For the GEI examination, the standard error of measurement was equal to 3.63. The Standard Error of Measurement at the cut score was 3.98.

Table 2 summarizes the pass/fail statistics for the GEI examination in terms of both the raw number of candidates and the percentage of candidates. A total of 137 (83.5%) of the 164 candidates passed the examination and 27 (16.5%) failed.

Table 3 contains a demographic profile of the Group Exercise Instructors who responded to the validation survey. Review of the table reveals that 48% have been in practice five years or less, 84% work in a private fitness facility or at a YMCA, 76% work in a non-managerial Group Exercise Instructor role, and 56% have a bachelor or associate degree. These percentages closely reflect the characteristics of the overall NETA client body.

Table 1  
**EXAM STATISTICS**

	GE Exam
Number of Scored Items	100
Total Number of Examinees	164
Raw Score Mean	76.54
Raw Score Median	78.00
Raw Score Variance	64.80
Raw Score Standard Deviation	8.05
KR-20 Reliability Coefficient	.80
Standard of Error of Measurement	3.63
Cut Score SEM	3.98
Raw Passing Score	70
Percent Passing Score	70
Decision Consistency (Livingston)	.88

Table 2  
**PASS/FAIL FREQUENCY DISTRIBUTION**

	GE Examination
Pass	137 (83.5%)
Fail	27 (16.5%)
Total	164 (100.00%)

Table 3  
**DEMOGRAPHIC PROFILE OF RESPONDENTS (N = 40)**

<b>I. Years In Practice</b>	Respondents	<b>III. Position Held</b>	
1 - 5	24 (48%)	Instructor	38 (76%)
6 - 10	19 (38%)	Dept Manager	7 (14%)
10 - 20	5 (10.0%)	Facility Manager	5 (10%)
21+	2 (4%)		
		<b>IV. Education</b>	
<b>II. Practice Setting</b>		HS Diploma or Equivalent	12 (24%)
Private Fitness Facility	28 (56%)	Associate Degree	8 (16%)
YMCA	14 (28%)	Bachelors Degree	20 (40%)
Community Rec Center	6 (12%)	Advanced Degree	4 (8%)
Independent Practice	2 (4%)	No Response	6 (12%)

## Section III: Test Development

### A. Role Delineation and Test Specifications Development

In an effort to certify industry professionals, the National Exercise Trainer's Association - Group Exercise Instructor Certification Board (NETA-GECB) has undertaken the task of developing and implementing certification examinations for Group Exercise Instructors. From its inception through 2007, the content of NETA-GECB's certification examination for Group Exercise Instructors was keyed to training program curricula and training materials providing comprehensive instruction for exercise professionals working as Group Exercise Instructors. More recently, NETA-GECB decided to change the foundation of the examination from "curriculum-based" to "practice-based". In so doing, the organization sought to enhance the legal defensibility of the Group Exercise Instructor certification program and, in addition, make it eligible for national accreditation. A necessary first step in the process of changing to a practice-based examination program was to perform a practice (job) analysis identifying the domains of practice, tasks, and knowledge required for safe and effective performance on the job. Once in place, these Domains, Tasks and Knowledge Statements formed the basis for item (question) writing and examination construction.

In the Summer of 2008, a workshop was conducted in Minneapolis, MN wherein a diverse group of nine subject-matter experts (SMEs) selected by and representing NETA-GECB met to conduct the practice analysis for the Group Exercise Instructor examination program. Specifically, the purpose of this meeting was to produce a document delineating the knowledge required for the safe and effective performance of the tasks carried out by the entry-level Group Exercise Instructor. An additional goal of the workshop was to identify a weighting factor associated with each Domain and Task. The weighting factors represented the pooled judgments of the SMEs of the relative importance of, and time spent on, each of the Tasks typically performed by the entry-level Group Exercise Instructor. Information on the participants in the Role Delineation study can be found in Table 4.

Table 4  
**PRACTICE ANALYSIS WORKSHOP PARTICIPANTS\***  
Minneapolis, MN  
September 13, 2008

Name	Title	Organization	City/State
Lu Herbeck	Certification Director	NETA-GECB	Minneapolis, MN
Stephanie Maks	Group Exercise Director	Gold's Gym	Minneapolis, MN Reno, NV
Suzanne Kranitz	Group Exercise Instructor	YWCA of Minneapolis	Minneapolis, MN
Shannon Schritz	Group Exercise Instructor	Busy Body Fitness	Bloomington, MN
Christine Simpson	Group Exercise Instructor	Gold's Gym	Buffalo, MN
Angie Laughlin	Group Exercise Instructor	Fremont Recreation Center	Freemont, OH
Candy Young	Wellness Consultant	Always Young	Tacoma, WA
Debra Orringer	Fitness Center Supervisor	NASA Kennedy Space Center	Cocoa Beach, FL
Hillary Roemsberger	Fitness Director	Town of Parker Recreation Center	Parker, CO

\* Please Note: All of these individuals have provided health and exercise training and educational workshops in nearly every state in the U.S. They have a broad prospective on consumer needs across the U.S. and the myriad of niche markets that make up the various regions.

The product of this role delineation workshop was a draft practice analysis that was subsequently returned to NETA-GECB staff and selected panel members for final review and comment. Since the product of this workshop represented the work of only nine individuals, the decision was made to validate the practice analysis document by submitting it to a randomly selected group of 260 professionals, all Group Exercise Instructors. In addition to the practice analysis document, participants were provided with an introductory letter from NETA-GECB and a packet of materials containing the following: a list of definitions of terms so that participants would become familiar with job analysis terminology; a set of detailed instructions for reviewing and commenting on the practice analysis, and a set of comment sheets containing the survey questions. The respondents recorded their responses to the survey questions directly on the comment sheets. The respondents were asked to review the practice analysis document and: (1) identify those Domains, Tasks and/or Knowledge Statements they would like to eliminate, reword, or revise; (2) suggest any additional Domains, Tasks and/or Knowledge Statements that they would like to add to the practice analysis; and (3) confirm or suggest changes to the Domain weights.

Based on the data obtained from the Role Delineation, the document was revised and a final set of test specifications was developed. The revised, practice-based test specifications formed the basis for subsequent item-writing and test development. Additional information on the Role Delineation and Test Specifications Development can be found in the NETA-GECB Practice (Job) Analysis Development and Validation Report.

## B. Item Development

A panel of 9 subject matter experts (SMEs) (Table 5) was assembled for the purposes of writing exam questions. Each expert received a copy of the Role Delineation (Appendix P), with specific content assignments, and a copy of the “Guide to Preparing Multiple Choice Questions (Exhibit A of this document) provided by Dr Gerald Rosen. Each SME / Item Writer was asked to write a specified number of questions, from their assigned section, to be included in the NETA-GECB item bank.

Table 5 contains information on the participants in the item development project.

Table 5  
**NETA-GECB Item Writers\***

Name	Title	Organization	City/State
Lu Herbeck	Certification Director	NETA-GECB	Minneapolis, MN
Stephanie Maks	Group Exercise Director	Gold’s Gym	Minneapolis, MN Reno, NV
Suzanne Kranitz	Group Exercise Instructor	YWCA of Minneapolis	Minneapolis, MN
Shannon Schritz	Group Exercise Instructor	Busy Body Fitness	Bloomington, MN
Christine Simpson	Group Exercise Instructor	Gold’s Gym	Buffalo, MN
Angie Laughlin	Group Exercise Instructor	Fremont Recreation Center	Freemont, OH
Candy Young	Wellness Consultant	Always Young	Tacoma, WA
Debra Orringer	Fitness Center Supervisor	NASA Kennedy Space Center	Cocoa Beach, FL
Hillary Roemsberger	Fitness Director	Town of Parker Recreation Center	Parker, CO

\* Please Note: All of these individuals have provided health and exercise training and educational workshops in nearly every state in the U.S. They have a broad prospective on consumer needs across the U.S. and the myriad of niche markets that make up the various regions.

Item development was accomplished via an iterative review process. The initial stages of the process were coordinated by the NETA-GECB certification director. Items written were subjected to several rounds of critical content, editorial and psychometric review prior to their import into the item bank. Each SME was sent, via password protected PDF file, the entire bank of items, with instructions to review each item for content, clarity, and errors. The SMEs were also instructed to return the items, with revisions, to the Certification Director. Revisions were made by the Certification Director, as were deemed necessary to improve the quality, content, clarity and accuracy of the item.

The revised items were sent, via password protected PDF file, back to the SMEs for review for a second round of revisions. The SMEs met to review each item, make changes, additions and deletions as needed. The item-writing and review activities, concluded with a conference call facilitated by the Certification Director. During the call the items were finalized. The process of finalization included final revisions to surviving items and final decisions on exclusion for those items that did not survive the iterative review process. During the conference call the SMEs verified that each of the retained items measured content that was of at least some importance to safe and effective practice, that the items did not stereotype any groups of individuals, and that the items did not contain any content that would result in bias or disadvantage to any candidate on the basis of group membership. The SMEs succeeded in producing 225 items for the NETA-GECB item bank.

## C. Test Construction

The test construction process began with the construction of a draft examination by NETA-GECB's Certification Director. The draft examination was built by selecting items from the NETA-Item bank in strict accordance with the content and weightings in the test specifications document. The consultant subjected the draft to editorial and psychometric review and sent it in a password-protected file to the SMEs who participated in the test construction process. Information on this group of SMEs can be found in Table 6.

Table 6  
**NETA-GECB Test Construction Participants\***

Name	Title	Organization	City/State
Lu Herbeck	Certification Director	NETA-GECB	Minneapolis, MN
Stephanie Maks	Group Exercise Director	Gold's Gym	Minneapolis, MN Reno, NV
Suzanne Kranitz	Group Exercise Instructor	YWCA of Minneapolis	Minneapolis, MN
Shannon Schritz	Group Exercise Instructor	Busy Body Fitness	Bloomington, MN
Christine Simpson	Group Exercise Instructor	Gold's Gym	Buffalo, MN
Angie Laughlin	Group Exercise Instructor	Fremont Recreation Center	Freemont, OH
Candy Young	Wellness Consultant	Always Young	Tacoma, WA
Debra Orringer	Fitness Center Supervisor	NASA Kennedy Space Center	Cocoa Beach, FL
Hillary Roemsberger	Fitness Director	Town of Parker Recreation Center	Parker, CO

\* Please Note: All of these individuals have provided health and exercise training and educational workshops in nearly every state in the U.S. They have a broad prospective on consumer needs across the U.S. and the myriad of niche markets that make up the various regions.

Following the individual review of the draft examination by the SMEs, a conference call facilitated by the Certification Director was scheduled. During the call the examination was considered item-by-item. For each item a decision was made to keep the item in the examination "as-is", keep the item in the examination with revisions, or return the item to the item bank. For each item returned to the bank a substitute item was selected from the item bank. In the course of the discussions the SMEs verified that each of the retained items measured content that was of at least some importance to safe and effective practice, that the items did not stereotype any groups of individuals, and that the items did not contain any content that would result in bias or disadvantage to any candidate on the basis of group membership.

The Certification Director executed all of the changes that resulted from the SME review of the draft examination. In making the changes the Certification Director verified that the examination still faithfully reflected the test specifications and, in addition, subjected it to another round of editorial and psychometric review. These activities on the part on the Certification Director resulted in the production of Draft 2 of the NETA-GECB Group Exercise Instructor examination. Examination draft 2 was sent to NET-GECB for a final review by a selected group of the SMEs. The final review was conducted to ensure that the Certification Director had accurately executed all of the requested revisions to Draft 1. In addition, review of Draft 2 provided an opportunity for the SMEs to once again consider the examination item-by-item on all of the dimensions that comprised the review of Draft 1. As a result of this review, several more changes were requested by the SMEs. The Certification Director executed the SMEs changes to Draft 2 of the examination and once again verified that the examination continued to faithfully reflect the test specifications. At the conclusion of these activities the finalized form of the NETA-GECB Group Exercise Instructor examination was produced and submitted..

## D. Cut-Score Determination

The study was conducted in the NETA-GECB office in Minneapolis, MN. The panel of SMEs was selected by NETA-GECB. Lu Herbeck, Certification Director was facilitator for the study. Dr Gerald Rosen, Licensed Psychologist was consulted on the procedure.

Table 7 contains the names of the SMEs and relevant biographical information.

The procedure used in this study was the Direct Standard Setting Method (DSSM) (Schoon, Rosen & Jones, 1988). The DSSM differs from some of the other criterion-referenced methodologies (e.g., Angoff, Modified Angoff) in that the process of making DSSM ratings is one of setting performance standards; the process of making Angoff ratings is one of estimating item difficulties for a hypothetical group of barely qualified examinees.

The DSSM requires judges to answer the following question for each set of 10 items on the examination, “How many questions in this 10 item set should a Group Exercise Instructor certification candidate answer correctly to be considered just barely qualified for certification?”

Prior to making these estimates, the SMEs: 1) engaged in a discussion of the characteristics of the “barely qualified” or “just good enough” candidate for certification. The discussion proceeded until the group arrived at a shared notion of “barely qualified for certification”; 2) received an orientation to the use of the DSSM. The orientation focused on the notions of item importance and difficulty as guides to making DSSM estimates; and 3) applied the DSSM to groups of items as practice in using the methodology. Discussion of the estimates made during the practice session allowed the SMEs to further refine the use of and comfort with the methodology.

After the training and orientation session, the SMEs proceeded to make their independent estimates. The NETA-GECB Group Exercise Instructor examination consists of 100 items. Therefore, each SME made 10 estimates, one for each group of ten items on the examination.

Table 7

### CUTSCORE STUDY WORKSHOP PARTICIPANTS\*

Name	Title	Organization	City/State
Lu Herbeck	Certification Director	NETA-GECB	Minneapolis, MN
Stephanie Maks	Group Exercise Director	Gold's Gym	Minneapolis, MN Reno, NV
Suzanne Kranitz	Group Exercise Instructor	YWCA of Minneapolis	Minneapolis, MN
Shannon Schritz	Group Exercise Instructor	Busy Body Fitness	Bloomington, MN
Christine Simpson	Group Exercise Instructor	Gold's Gym	Buffalo, MN
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## Results

The results of the standard setting exercise are summarized in Table 2. Inspection of the data contained in the table reveals that the SME's DSSM cut scores ranged from 75 to 81 items correctly answered out of 100 with a mean of 76.4. There was subsequent discussion of the effect of adopting a cut score of 76 or 77. Several participants expressed concerns about adopting either cut score because, in their opinion, it would be unacceptably high, dramatically increase the number of failures, and significantly reduce the pass/fail ratio that had been observed over the past several years. It was concluded that such a standard would in all likelihood result in the exclusion of otherwise acceptable candidates. It was also argued that a cut score of 76 or 77 would be inconsistent with the mission of the certification program which was designed to recognize near entry-level practitioners. Finally, it was noted that a significant upward shift in the passing score could not be justified in terms of any observed changes in the qualifications of the candidates. There had been no change in the eligibility requirements for certification and there was no basis in fact for concluding that preparation or characteristics of candidates had changed significantly in the recent past.

The discussion concluded with consideration of an appropriate adjustment to the DSSM obtained cut score of 76.4. The panel considered reducing the cut score by amounts equal to 1, 1.5 & 2 standard errors of measurement or 3.63, 5.45 & 7.26 points, respectively. The corresponding cut scores for these adjustments were 72.77, 70.95 and 69.14 correct answers, respectively. Consensus could not be achieved on the adoption of a final cut score. Therefore, the panel recommended that the Board make the final determination within the range of 69 to 71 correct answers.

Table 8

### DSSM ESTIMATES AND RECOMMENDED CUT SCORE

	SME 1	SME 2	SME 3	SME 4	SME 5
	8	8	8	8	9
	7	8	7	8	8
	8	7	7	7	8
	8	8	8	8	7
	8	8	7	8	7
	7	9	7	8	7
	7	8	7	7	7
	8	8	7	8	8
	7	8	7	7	8
	7	8	7	8	9
MEAN	7.5	8.0	7.2	7.7	7.8
Grand Mean = 7.64					
DSSM Cut Score = 76.4					

## References

Angoff, W.H. (1971). Scales, norms and equivalent scores. In R.L. Thorndike (Ed.), *Educational Measurement*. Washington, DC: American Council on Education.

Cizek, G.J. (2001). *Setting Performance Standards: Concepts, Methods, and Perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.

Schoon, C.G., Rosen, G.A. and Jones, J.P. (1988, April). A critique of difficulty estimation methodologies in the setting of cut points and a discussion of an alternative methodology: The Direct Standard Setting Method. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.