

PERSONAL TRAINER EXAMINATION  
PROGRAM TECHNICAL REPORT  
2010

June 2011

## Introduction

This report provides an overview of examination program activities and the statistical properties of the certification examination for Personal Trainers, administered by the National Exercise Trainers Association – Certification Board (NETA-CB).

The version of the exam discussed in this report was administered in a number of locations at different times throughout the United States during 2010. 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 certification, 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 recent years it has become abundantly clear that the fitness 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 for its Personal Trainer Certification and was approved by NCCA in April of 2007. NETA's Group Exercise Instructor Certification is also accredited by NCCA.

NETA established a separate board, currently known as the NETA-CB, to govern all certification processes. Dr. Gerald Rosen, a psychometrician and licensed psychologist was retained to consult with NETA's Certification Director to establish a psychometrically sound certification exam. That examination in this report was used throughout 2010. The most recent Job Analysis was conducted and completed in February of 2011, 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, was analyzed and deemed accurate, sound and fair.

## 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, an independent company that provides testing services 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. Independent proctors were used for all pencil-and-paper exams in accordance with NETA-CB exam administration policies.

## Section II: General Test Results

The Personal Trainer (PT) examination consists of 100 questions contained in one test booklet. 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 75.25%. The median is the score point above and below which half of the candidates scores fall. The median for the examination was 76%. The standard deviation is a measure of the dispersion of the raw scores about the mean. The standard deviation of the examination was 11.29.

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 .88. This reflects a very high degree of internal consistency.

The domain-level reliability coefficients were: I. Initial Intake = 0.59, II. Program Design = 0.72, III. Program Implementation = 0.69, IV. Reassessment = 0.42, V. Ethics/Professional Issues = 0.27. The magnitudes of these reliability coefficients reflect the relatively small number of items in each domain. (The official score report contains a cautionary statement regarding the interpretation and use of domain-level information.)

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 .90. This represents a very high degree of decision consistency.

Table 2 summarizes the pass/fail statistics for the personal trainer examination in terms of both the raw number of candidates and the percentage of candidates. A total of 766 (73%) of the 1050 candidates passed the examination and 284 (27%) failed.

Table 1  
EXAM STATISTICS

	PT Exam
Number of Scored Items	100
Total Number of Examinees	1050
Raw Score Mean	75.25
Raw Score Median	76
Raw Score Standard Deviation	11.29
KR-20 Reliability Coefficient	.88
Cut Score SEM	4.27
Raw Passing Score	70
Percent Passing Score	70
Decision Consistency (Livingston)	.90

Table 2  
PASS/FAIL FREQUENCY DISTRIBUTION

	PT Examination
Pass	766 (73%)
Fail	284 (27%)
Total	1050 (100%)

## Section III: Test Development

### A. Role Delineation and Test Specifications Development

In an effort to certify industry professionals, the National Exercise Trainer's Association - Personal Trainer Certification Board (NETA-CB) has undertaken the task of developing and implementing certification examinations for personal trainers. From its inception through 2005, the content of NETA-CB's certification examination for personal trainers was keyed to training program curricula and training materials providing comprehensive instruction for exercise professionals working as personal trainers. In 2005 NETA-CB 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 personal trainer 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.

The most recent practice analysis a workshop was conducted on November 15, 2010 in Minneapolis, MN wherein a diverse group of nine subject-matter experts (SMEs) selected by and representing NETA-CB met to conduct the practice analysis for the personal trainer examination program. The workshop was facilitated by Lu Herbeck, NETA's Certification Director. 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 personal trainer. 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 personal trainer. Information on the participants in the Role Delineation study can be found in Table 4.

Table 4  
PRACTICE ANALYSIS WORKSHOP PARTICIPANTS\*  
Minneapolis, MN November 15, 2010

Name	Title	Organization	City/State
Mike Iserman	Director of Personal Training	YMCA	Minneapolis, MN
Jon Giese	Personal Trainer Personal Trainer	RAC Mayo Clinic Patient Education	Frederick, MD Rochester, MN
Terry Balder	Personal Trainer	Diamond Fitness, Inc	Buffalo, MN
Angela Schroeder	Personal Trainer	Freemont Recreation Center	Freemont, OH
Jon Staton	Personal Trainer	Glenville State College	Glenville, WV
Shanan Lynch	Personal Trainer	Aguila, LTD	North Hollywood, CA
Autumn Stewart	Personal Trainer	Princeton Health & Fitness	Dolbo, MN
Tim Moes	Personal Trainer	Anytime Fitness	Sartell, MN
Emily Graham	Personal Trainer	Anytime Fitness	Durango, 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-CB staff and selected panel members for final review and comment. The final document was validated by submitting it to a randomly selected group of 200 professionals, all personal trainers. In addition to the practice analysis document, participants were provided with an introductory letter from NETA-CB, a cover memorandum from Dr. Gerald A. Rosen, Consulting Psychometrician, retained by NETA-CB to develop the practice analysis, 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-CB Practice (Job) Analysis Development and Validation Report.

## B. Item Development

A panel of 7 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 an specified number of questions, from their assigned section, to be included in the NETA-CB item bank.

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

Table 5  
NETA-CB Item Writers\*

Name	Title	Organization	City/State
Mike Iserman	Director of Personal Training	YMCA	Minneapolis, MN
Jon Giese	Personal Trainer	RAC Mayo Clinic Patient Education	Frederick, MD Rochester, MN
Angela Schroeder	Personal Trainer	Freemont Recreation Center	Freemont, OH
Shanan Lynch	Personal Trainer	Aguila, LTD	North Hollywood, CA
Matt Anderson	Personal Trainer	YMCA	Saint Paul, MN
Jon Staton	Personal Trainer	Glenville Community College	Glenville, WV
Shayne Adair	Personal Trainer	Train with Shayne	Shoreview, MN

\* 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-CB certification director. Items written were subjected to several rounds of critical content, editorial and psychometric review prior to their import into the item bank. In December 2010, 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 on or before September 9th. 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 in January 2011 for a second round of revisions. The SMEs met in February 2011 for 4 hours 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 examination consultant. 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 a substantial number of questions for the NETA-CB item bank.

### C. Test Construction

The test construction process began with the construction of a draft examination by NETA-CB's examination consultant. 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-CB Test Construction Participants\*

Name	Title	Organization	City/State
Mike Iserman	Director of Personal Training	YMCA	Minneapolis, MN
Jon Giese	Personal Trainer	RAC Mayo Clinic Patient Education	Frederick, MD Rochester, MN
Angela Schroeder	Personal Trainer	Freemont Recreation Center	Freemont, OH
Shanan Lynch	Personal Trainer	Aguila, LTD	North Hollywood, CA
Matt Anderson	Personal Trainer	YMCA	Saint Paul, MN
Jon Staton	Personal Trainer	Glenville Community College	Glenville, WV
Shayne Adair	Personal Trainer	Train with Shayne	Shoreview, MN

\* 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 examination consultant 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 examination consultant executed all of the changes that resulted from the SME review of the draft examination. In making the changes the examination consultant 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 examination consultant resulted in the production of Draft 2 of the NETA-CB personal trainer examination. Examination draft 2 was sent to NET-CB for a final review by a selected group of the SMEs. The final review was conducted to ensure that the examination consultant 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 examination consultant 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-CB personal trainer examination was produced and submitted.

#### D. Cut-Score Determination

The cut score study was conducted on March 9, 2011 in the NETA-CB office in Minneapolis, MN. The panel of SMEs was selected by NETA-CB. Lu Herbeck, NETA-CB certification director was the facilitator for the study. Dr. Gerald A. Rosen, Consulting Psychometrician 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 Personal Trainer 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-PTCB personal trainer examination consists of 100 items. Therefore, each SME made 10 estimates, one for each group of ten items on the examination.

Table 7  
CUT-SCORE STUDY WORKSHOP PARTICIPANTS\*  
Personal Trainer Certification Exam  
Minneapolis, MN - March 9, 2011

Name	Title	Organization	City/State
Holly Krohn	Personal Trainer	Lifetime Fitness	Cincinnati, OH
Mike Iserman	Director of Personal Training	YMCA	Minneapolis, MN
Matt Anderson	Personal Trainer	YMCA	Saint Paul, MN
Amy Stitt	Personal Trainer	Self Employed	Wayzata, MN
Ann Marie Hotop	Personal Trainer	University of Minnesota	Saint Paul, MN
Aly Hedman	Personal Trainer	Elements Fitness	Fargo, ND

\* 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 perspective on consumer needs across the U.S. and the myriad of niche markets that make up the various regions.

Table 8  
DSSM ESTIMATES AND RECOMMENDED CUT SCORE  
Personal Trainer Certification Exam

Items	SME 1	SME 2	SME 3	SME 4	SME5	SME 6
1-10	7	7	6	7	5	6
11-20	8	6	5	6	8	8
21-30	7	7	6	5	7	5
31-40	6	8	5	7	7	6
41-50	6	6	5	5	5	6
51-60	9	8	8	9	7	6
61-70	7	8	8	8	8	7
71-80	10	9	8	7	9	9
81-90	6	6	9	7	6	6
91-100	8	7	3	8	10	9
MEAN	7.4	7.2	6.3	6.9	7.2	6.8

Calculations Including Outlier

Grand Mean	6.97
DSSM Cut Score	69.7% (69.7 raw score points)
SEJ	1.60
DSSM Cut Score -SEJ	68.1
Recommended Cut Score	69% (69 raw score points)

Calculations Excluding Outlier

Grand Mean	7.10
DSSM Cut Score	71% (71 raw score points)
SEJ	1.22
DSSM Cut Score -SEJ	69.78
Recommended Cut Score	70% (70 raw score points)

## Results

The results of the standard setting exercise are summarized in Table 2. Inspection of the data contained in the table reveals that the SMEs' DSSM cut scores ranged from 63 to 74 items out of 100. As is customary, it was determined that the DSSM cut score would be adjusted by subtracting an amount equal to one standard error of judgement (SEJ). For a voluntary certification program, such adjustments are commonly made to ensure that the number of otherwise qualified candidates who might fail the examination due to measurement error alone is minimized.

### Calculations Including Outlier

Subtracting the SEJ of 1.6 from the DSSM score of 69.7 resulted in a cut score of 68.1. Because fractional cut scores are routinely rounded up, the final recommended passing score was 69 correctly answered items out of 100.

### Calculations Excluding Outlier

Subtracting the SEJ of 1.22 from the DSSM score of 71 resulted in a cut score of 68.78. Because fractional cut scores are routinely rounded up, the final recommended passing score was 69 correctly answered items out of 100.