

**Report on the statistical analysis conducted for 2016 annual data  
National Exercise and Sports Trainers Association (NESTA)  
Personal Fitness Trainer (PFT) Certification Exam**



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## Summary of Scale-Level Statistics

In 2016, the National Exercise and Sports Trainers Association (NESTA) Personal Fitness Trainer (PFT) certification examination has been administered via FormCast™, PSI's linear on-the-fly testing (LOFT) algorithm. The examination administered via FormCast™ is assembled according to an updated examination content outline, as compared to the two fixed forms. See table 1 for a summary of scale-level characteristics of the PFT examination administered in 2016.

Table 1

*Scale-level characteristics of the PFT examination*

Exam Form	n	k	Raw Cut	Mean Score	SD	Alpha	SEM	DC	Pass Rate
FormCast™ LOFT	1,100	100	69	73.35	11.00	0.946	5.951	0.947	69.55

*n* represents the number of exam candidates for each section. *k* represents the number of scored items in the exam. The raw cut is the minimum number of items a candidate must answer correctly to achieve passing score. The mean score is the average of candidates' score. SD is the standard deviation of candidates' scores, which is a measure of average dispersion of candidates' scores. Alpha represents Cronbach's alpha reliability estimate of the scale, which is a measure of consistency among candidates' responses to items. SEM is the standard error of measurement, which is a measure of the confidence interval around a given candidate's true score, which represents the average amount of variation associated with factors other than ability. DC represents the Livingston-Lewis Decision Consistency Index, which is an estimate of the consistency of pass-fail decisions across multiple hypothetical administrations. The pass rate is the percentage of first-time test candidates who achieved a passing decision outcome.

Although not used for the determination of candidate scores, subscale (content domain) information is provided to failing candidates for self-diagnostic purposes. See table 2 for a summary of subscale-level characteristics of the PFT examination administered in 2016.

Table 2

*Subscale-level characteristics of the PFT examination*

Content Domain	<i>k</i>	Mean Score	SD	Min Score	Max Score	Alpha
Assessment	18	13.22	2.47	4	18	0.796
Business Application	20	16.36	2.49	6	20	0.632
Exercise Application	10	6.77	1.91	1	10	0.950
Exercise Psychology	11	7.89	1.85	2	11	0.594
Exercise Science	15	9.68	2.64	2	15	0.893
Nutrition	10	7.49	1.82	0	10	0.892
Program Design	16	11.94	2.27	2	16	0.818

## Summary of Item-Level Statistics

A P-Value is a sample-dependent measure of item difficulty, ranging from 0.00 to 1.00 with higher values representing easier items. This statistic can be interpreted as the percentage of candidates who answered the item correctly. The acceptable range of difficulty levels for a four-option multiple choice item typically ranges from 0.25 to 0.95 (Anastasi and Urbina, 2009).

A Point-biserial correlation is a sample-dependent measure of an item's capacity to differentiate between higher- and lower-ability candidates. This statistic ranges from -1.00 to 1.00, with higher values reflecting that higher-scoring candidates answered the item correctly more often than lower-scoring candidates. The acceptable range of discrimination levels for an item typically ranges from 0.10 and above (Anastasi and Urbina, 2009).

See table 3 for a summary of item-level statistics of the PFT examination administered via FormCast™ in 2016.

Table 3

*Item-level characteristics of the PFT examination*

Item ID	n	P-Value	Pt-Bis
PFT00002	520	0.82	0.17
PFT00003	546	0.96	0.23
PFT00004	509	0.80	0.44
PFT00008	530	0.66	0.28
PFT00011	542	0.63	0.48
PFT00014	539	0.78	0.44
PFT00017	459	0.42	0.10
PFT00021	505	0.67	0.41
PFT00022	510	0.71	0.23
PFT00025	542	0.84	0.39
PFT00026	522	0.79	0.19
PFT00028	539	0.87	0.29
PFT00030	515	0.69	0.28
PFT00032	346	0.50	0.17
PFT00033	548	0.90	0.31
PFT00038	509	0.74	0.21
PFT00041	686	0.92	0.23
PFT00044	552	0.95	0.18
PFT00045	507	0.53	0.24
PFT00047	482	0.65	0.34

Item ID	n	P-Value	Pt-Bis
PFT00048	412	0.88	0.17
PFT00049	511	0.73	0.06
PFT00051	476	0.54	0.21
PFT00052	217	0.31	0.05
PFT00053	192	0.23	0.00
PFT00054	479	0.72	0.24
PFT00055	403	0.84	0.23
PFT00057	517	0.68	0.37
PFT00058	378	0.51	0.17
PFT00060	478	0.31	0.23
PFT00063	506	0.83	0.35
PFT00064	519	0.80	0.13
PFT00065	460	0.47	0.13
PFT00066	401	0.73	0.39
PFT00069	526	0.92	0.29
PFT00070	535	0.80	0.29
PFT00071	173	0.34	-0.02
PFT00072	547	0.94	0.05
PFT00073	391	0.80	0.34
PFT00075	529	0.66	0.12
PFT00079	488	0.54	0.37
PFT00080	540	0.84	0.33
PFT00085	404	0.55	0.51
PFT00087	265	0.95	0.24
PFT00095	671	0.83	0.32
PFT00097	972	0.63	0.22
PFT00098	983	0.93	0.27
PFT00101	976	0.73	0.45
PFT00103	975	0.80	0.33
PFT00105	990	0.87	0.37
PFT00107	1008	0.90	0.30
PFT00108	987	0.91	0.15
PFT00113	976	0.92	0.33
PFT00118	966	0.63	0.08
PFT00120	987	0.89	0.34
PFT00125	485	0.96	0.15
PFT00126	971	0.69	0.18
PFT00127	981	0.84	0.32
PFT00129	968	0.93	0.02
PFT00131	962	0.78	0.30

Item ID	n	P-Value	Pt-Bis
PFT00132	978	0.82	0.33
PFT00133	988	0.83	0.20
PFT00134	420	0.67	0.46
PFT00137	423	0.64	0.41
PFT00138	456	0.63	0.40
PFT00139	438	0.81	0.41
PFT00145	395	0.58	0.19
PFT00146	168	0.27	0.33
PFT00147	387	0.47	0.05
PFT00149	348	0.57	0.26
PFT00150	361	0.28	0.10
PFT00154	458	0.73	0.46
PFT00155	379	0.52	0.09
PFT00156	383	0.53	0.33
PFT00157	392	0.64	0.29
PFT00158	409	0.89	0.25
PFT00160	405	0.62	0.16
PFT00161	425	0.64	0.29
PFT00162	693	0.88	0.41
PFT00163	392	0.53	0.24
PFT00167	643	0.85	0.15
PFT00168	545	0.74	0.35
PFT00172	272	0.93	0.40
PFT00174	542	0.97	0.27
PFT00176	511	0.77	0.15
PFT00177	652	0.77	0.35
PFT00180	504	0.97	0.21
PFT00182	435	0.90	0.25
PFT00183	444	0.79	0.45
PFT00185	271	0.77	0.36
PFT00186	277	0.71	0.45
PFT00187	271	0.78	0.07
PFT00189	675	0.68	0.14
PFT00191	242	0.56	0.31
PFT00192	281	0.62	0.22
PFT00194	305	0.77	0.05
PFT00196	290	0.79	0.51
PFT00197	288	0.67	0.40
PFT00198	434	0.90	0.28
PFT00199	272	0.90	0.10

Item ID	n	P-Value	Pt-Bis
PFT00200	386	0.78	0.23
PFT00201	280	0.46	0.28
PFT00202	263	0.65	0.45
PFT00203	273	0.88	0.32
PFT00204	256	0.35	0.25
PFT00205	274	0.85	0.17
PFT00206	305	0.92	0.19
PFT00208	277	0.86	0.05
PFT00209	248	0.69	0.43
PFT00210	284	0.54	0.33
PFT00212	282	0.64	0.43
PFT00213	287	0.85	0.32
PFT00215	388	0.57	0.24
PFT00218	278	0.80	0.08
PFT00220	266	0.67	0.40
PFT00221	411	0.48	0.35
PFT00222	264	0.55	0.41
PFT00224	285	0.46	0.15
PFT00226	281	0.59	0.14
PFT00227	238	0.39	0.20
PFT00228	271	0.60	0.28
PFT00234	279	0.66	0.13
PFT00235	101	0.50	-0.05
PFT00241	301	0.59	0.32
PFT00248	285	0.72	0.25
PFT00253	425	0.84	0.19
PFT00263	274	0.66	0.07
PFT00266	263	0.91	0.14
PFT00267	291	0.47	0.22
PFT00269	301	0.69	0.45
PFT00270	277	0.77	0.47
PFT00273	107	0.51	0.03
PFT00275	305	0.63	0.31
PFT00276	408	0.46	0.47
PFT00279	253	0.51	0.26
PFT00282	637	0.91	0.30
PFT00283	644	0.80	0.29
PFT00284	651	0.87	0.12
PFT00285	654	0.85	0.27
PFT00286	649	0.85	0.27

Item ID	n	P-Value	Pt-Bis
PFT00288	658	0.77	0.35
PFT00290	649	0.63	0.33
PFT00292	657	0.75	0.24
PFT00295	645	0.85	0.32
PFT00301	618	0.56	0.24
PFT00306	421	0.60	0.33
PFT00307	396	0.87	0.33
PFT00309	636	0.83	0.25
PFT00311	629	0.41	0.30
PFT00313	654	0.66	0.17
PFT00314	629	0.60	0.27
PFT00320	670	0.89	0.22
PFT00321	638	0.67	0.39
PFT00326	267	0.94	0.31
PFT00328	732	0.92	0.24
PFT00336	622	0.66	0.19
PFT00337	673	0.83	0.23
PFT00338	667	0.87	0.39
PFT00339	669	0.86	0.24
PFT00344	676	0.79	0.48
PFT00353	716	0.84	0.27
PFT00354	635	0.38	0.23
PFT00355	685	0.91	0.38
PFT00361	681	0.73	0.17
PFT00370	407	0.62	0.21
PFT00372	408	0.50	0.36
PFT00376	383	0.56	0.11
PFT00383	416	0.69	0.34
PFT00392	415	0.54	0.33
PFT77061	968	0.79	0.27
PFT77103	1100	0.71	0.40
PFT77113	1100	0.81	0.28
PFT77114	1100	0.76	0.31
PFT77115	1099	0.68	0.18
PFT77154	1098	0.90	0.20
PFT77155	1100	0.93	0.26
PFT77163	633	0.78	0.42
PFT77213	1100	0.71	0.37
PFT77220	986	0.95	0.11
PFT77221	1099	0.79	0.40

Item ID	n	P-Value	Pt-Bis
PFT77629	951	0.71	0.34
PFT77686	966	0.70	0.15
PFT77696	993	0.96	0.23
PFT77700	542	0.22	0.29
PFT77703	1099	0.26	0.16
PFT77801	177	0.50	0.27
PFT77802	202	0.70	0.32
PFT77803	227	0.49	0.12
PFT77804	241	0.76	0.37
PFT77806	557	0.87	0.31
PFT77807	211	0.92	0.33
PFT77808	245	0.76	0.29
PFT77809	269	0.83	0.22
PFT77811	188	0.68	0.39
PFT77812	255	0.84	0.20
PFT77814	155	0.45	0.12
PFT77816	174	0.64	0.28
PFT77817	214	0.79	0.41
PFT77818	229	0.78	0.34
PFT77819	283	0.87	0.09
PFT77820	196	0.82	0.31
PFT77821	185	0.69	0.18
PFT77822	135	0.66	0.24
PFT77823	167	0.50	0.27
PFT77824	204	0.67	0.33
PFT77825	150	0.95	0.11
PFT77827	557	0.62	0.23
PFT77830	240	0.53	0.32
PFT77832	163	0.37	0.28
PFT77833	177	0.47	0.22
PFT77834	252	0.65	0.38
PFT77835	262	0.77	0.35
PFT77836	183	0.69	0.20
PFT77837	185	0.51	0.28
PFT77838	217	0.62	0.40
PFT77840	150	0.75	0.45
PFT77841	206	0.69	0.32
PFT77842	180	0.43	0.45
PFT77844	115	0.59	0.20
PFT77846	261	0.56	0.13



Item ID	n	P-Value	Pt-Bis
PFT77847	238	0.74	0.43
PFT77848	226	0.49	0.27
PFT77849	187	0.52	0.55
PFT77850	202	0.71	0.30
PFT77852	228	0.36	0.04
PFT77853	241	0.71	0.15
PFT77854	487	0.75	0.19
PFT77855	240	0.90	0.29
PFT77856	229	0.59	0.31
PFT77857	210	0.90	0.07
PFT77858	481	0.64	0.00
PFT00091	556	0.96	0.30
PFT00099	557	0.97	0.09
PFT00110	557	0.91	0.26
PFT00121	556	0.95	0.20
PFT00124	557	0.97	0.24
PFT00125	557	0.97	0.07
PFT77058	556	0.88	0.12
PFT77060	557	0.98	0.22
PFT77079	557	0.52	0.19
PFT77092	557	0.57	0.22
PFT77164	557	0.59	0.01
PFT77168	557	0.85	0.24
PFT77206	557	0.60	0.21
PFT77208	557	0.77	0.34
PFT77216	557	0.99	0.25
PFT77614	557	0.76	0.23
PFT77615	555	0.45	0.22
PFT77616	556	0.72	0.26
PFT77618	557	0.78	0.48
PFT77671	555	0.85	0.02
PFT77676	557	0.36	0.12
PFT77677	557	0.71	0.41
PFT77678	557	0.35	0.11
PFT77680	557	0.42	0.30
PFT77688	557	1.00	-0.05
PFT77801	232	0.53	0.11
PFT77802	219	0.63	0.22
PFT77803	253	0.45	0.02
PFT77804	257	0.74	0.19

Item ID	n	P-Value	Pt-Bis
PFT77805	168	0.13	0.11
PFT77806	194	0.88	0.34
PFT77807	214	0.91	0.09
PFT77808	236	0.74	0.24
PFT77809	281	0.84	0.19
PFT77810	251	0.96	0.18
PFT77811	170	0.65	0.23
PFT77812	242	0.81	0.08
PFT77813	265	0.46	0.03
PFT77814	217	0.40	0.20
PFT77815	229	0.16	0.08
PFT77816	241	0.68	0.24
PFT77817	205	0.77	0.31
PFT77818	223	0.83	0.41
PFT77819	269	0.84	0.12
PFT77820	213	0.83	0.14
PFT77821	214	0.69	0.10
PFT77822	259	0.68	0.05
PFT77823	177	0.49	0.09
PFT77824	183	0.72	0.33
PFT77825	256	0.88	0.11
PFT77826	188	0.20	0.11
PFT77827	181	0.64	0.20
PFT77828	211	0.26	0.06
PFT77829	226	0.41	0.26
PFT77830	243	0.53	0.15
PFT77831	293	0.68	0.23
PFT77832	220	0.30	0.26
PFT77833	250	0.45	0.16
PFT77834	288	0.61	0.29
PFT77835	242	0.76	0.18
PFT77836	226	0.69	0.11
PFT77837	189	0.62	0.27
PFT77838	277	0.61	0.35
PFT77839	248	0.09	0.01
PFT77840	281	0.67	0.33
PFT77841	171	0.59	0.34
PFT77842	214	0.45	0.28
PFT77843	229	0.28	0.13
PFT77844	289	0.62	0.15

Item ID	n	P-Value	Pt-Bis
PFT77845	196	0.79	0.18
PFT77846	268	0.57	0.10
PFT77847	265	0.77	0.35
PFT77848	253	0.45	0.20
PFT77849	203	0.54	0.45
PFT77850	233	0.75	0.20
PFT77851	221	0.26	0.05
PFT77852	263	0.40	0.11
PFT77853	262	0.70	0.17
PFT77854	272	0.74	0.10
PFT77855	255	0.89	0.37
PFT77856	234	0.59	0.19
PFT77857	230	0.87	0.17
PFT77858	270	0.72	0.12

## **References**

Anastasi, A., Urbina, S. (2009). Psychological Testing, 7th Edition. Upper Saddle River (NJ): Prentice Hall.