

**Report on the statistical analysis conducted for 2015 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 2015, 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 2015.

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	1,516	100	69	71.70	11.24	0.933	5.480	0.934	65.44

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 2015.

Table 2

Subscale-level characteristics of the PFT examination

Content Domain	<i>k</i>	Mean Score	SD	Min Score	Max Score	Alpha
1 – Exercise Application and Instruction	10	6.65	1.92	0	10	0.939
2 – Program Design	16	11.61	2.44	3	16	0.673
3 – Business Applications	20	15.93	2.48	6	20	0.595
4 – Assessments and Injury Prevention	18	12.76	2.55	5	18	0.794
5 – Exercise Sciences	15	9.74	2.69	1	15	0.882
6 – Exercise Psychology	11	7.27	1.74	1	11	0.463
7 – Nutritional Science	10	7.74	1.70	2	10	0.563

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 2015.

Table 3

Item-level characteristics of the PFT examination

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT00002	760	0.86	0.21
PFT00003	777	0.94	0.25
PFT00004	772	0.72	0.39
PFT00008	754	0.70	0.28
PFT00011	744	0.50	0.44
PFT00014	812	0.79	0.36
PFT00017	460	0.38	0.08
PFT00021	730	0.47	0.35
PFT00022	502	0.73	0.31
PFT00025	734	0.80	0.34
PFT00026	794	0.82	0.21
PFT00028	823	0.83	0.32
PFT00030	792	0.65	0.28
PFT00032	520	0.49	0.16
PFT00033	727	0.89	0.30
PFT00038	685	0.75	0.22
PFT00041	1151	0.94	0.29
PFT00044	771	0.93	0.11
PFT00045	725	0.59	0.25
PFT00047	715	0.55	0.42
PFT00048	523	0.93	0.23

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT00049	720	0.66	0.07
PFT00051	689	0.61	0.09
PFT00052	668	0.34	0.20
PFT00053	359	0.20	0.20
PFT00054	738	0.67	0.26
PFT00055	368	0.90	0.14
PFT00057	707	0.65	0.30
PFT00058	335	0.51	0.01
PFT00060	756	0.44	0.22
PFT00063	771	0.73	0.26
PFT00064	742	0.81	0.20
PFT00065	678	0.47	0.20
PFT00066	565	0.73	0.27
PFT00069	745	0.90	0.29
PFT00070	786	0.78	0.37
PFT00071	505	0.42	0.00
PFT00072	734	0.93	0.06
PFT00073	609	0.76	0.38
PFT00075	708	0.65	0.16
PFT00079	713	0.56	0.32
PFT00080	696	0.82	0.21
PFT00085	625	0.46	0.53
PFT00087	720	0.94	0.22
PFT00091	490	0.96	0.14
PFT00095	1352	0.81	0.31
PFT00097	1405	0.61	0.20
PFT00098	1419	0.91	0.25
PFT00101	1418	0.64	0.34
PFT00103	1441	0.80	0.26
PFT00105	1435	0.80	0.35
PFT00107	1424	0.83	0.34
PFT00108	1412	0.91	0.16
PFT00113	1423	0.88	0.34
PFT00118	1419	0.65	0.10
PFT00120	1417	0.86	0.26
PFT00125	1408	0.96	0.04
PFT00126	1419	0.73	0.19
PFT00127	1425	0.78	0.31
PFT00129	1431	0.95	0.08
PFT00131	924	0.72	0.32

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT00132	1437	0.73	0.26
PFT00133	912	0.84	0.24
PFT00134	590	0.61	0.43
PFT00137	594	0.60	0.40
PFT00138	611	0.68	0.39
PFT00139	661	0.84	0.46
PFT00145	650	0.64	0.27
PFT00146	337	0.30	0.24
PFT00147	574	0.59	0.15
PFT00149	545	0.47	0.22
PFT00150	533	0.38	0.16
PFT00154	594	0.75	0.49
PFT00155	618	0.68	0.35
PFT00156	562	0.53	0.26
PFT00157	574	0.65	0.31
PFT00158	610	0.88	0.24
PFT00160	593	0.63	0.21
PFT00161	583	0.69	0.45
PFT00162	1213	0.87	0.40
PFT00163	570	0.49	0.21
PFT00167	772	0.85	0.18
PFT00168	779	0.77	0.37
PFT00172	256	0.93	0.31
PFT00174	1514	0.97	0.32
PFT00176	721	0.73	0.18
PFT00177	1191	0.69	0.27
PFT00180	490	0.93	0.30
PFT00182	560	0.90	0.34
PFT00183	589	0.76	0.34
PFT00185	416	0.83	0.42
PFT00186	399	0.59	0.43
PFT00187	384	0.83	0.21
PFT00189	1163	0.63	0.18
PFT00191	381	0.51	0.25
PFT00192	342	0.57	0.28
PFT00194	370	0.83	0.15
PFT00196	432	0.69	0.44
PFT00197	428	0.66	0.31
PFT00198	588	0.88	0.37
PFT00199	373	0.91	0.24

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT00200	604	0.80	0.16
PFT00201	400	0.57	0.33
PFT00202	396	0.63	0.44
PFT00203	387	0.90	0.27
PFT00204	410	0.39	0.24
PFT00205	410	0.89	0.20
PFT00206	392	0.87	0.28
PFT00208	399	0.86	0.13
PFT00209	328	0.53	0.25
PFT00210	470	0.60	0.41
PFT00212	431	0.65	0.35
PFT00213	390	0.87	0.26
PFT00215	587	0.54	0.18
PFT00218	405	0.69	0.15
PFT00220	365	0.61	0.32
PFT00221	583	0.56	0.38
PFT00222	399	0.57	0.42
PFT00224	395	0.50	0.23
PFT00226	365	0.65	0.20
PFT00227	393	0.39	0.15
PFT00228	424	0.61	0.23
PFT00234	357	0.66	0.24
PFT00235	335	0.49	0.01
PFT00241	383	0.58	0.31
PFT00248	382	0.67	0.26
PFT00253	625	0.82	0.34
PFT00263	439	0.72	0.12
PFT00266	401	0.87	0.22
PFT00267	367	0.64	0.15
PFT00269	429	0.70	0.32
PFT00270	392	0.76	0.47
PFT00273	288	0.35	0.25
PFT00275	283	0.73	0.42
PFT00276	572	0.41	0.39
PFT00279	403	0.48	0.44
PFT00282	1349	0.84	0.28
PFT00283	1339	0.84	0.26
PFT00284	1316	0.89	0.17
PFT00285	835	0.85	0.25
PFT00286	1341	0.86	0.28

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT00288	871	0.83	0.31
PFT00290	1348	0.68	0.34
PFT00292	1335	0.79	0.24
PFT00295	1361	0.78	0.33
PFT00301	1349	0.58	0.28
PFT00306	631	0.70	0.23
PFT00307	600	0.83	0.30
PFT00309	762	0.77	0.20
PFT00311	1146	0.41	0.35
PFT00313	1143	0.65	0.27
PFT00314	1134	0.65	0.27
PFT00320	1161	0.83	0.18
PFT00321	814	0.59	0.48
PFT00324	375	0.25	-0.05
PFT00326	400	0.92	0.30
PFT00328	1203	0.90	0.19
PFT00336	1152	0.61	0.20
PFT00337	1186	0.72	0.26
PFT00338	1153	0.81	0.33
PFT00339	1196	0.84	0.30
PFT00344	1203	0.71	0.44
PFT00353	1197	0.83	0.34
PFT00354	1173	0.45	0.24
PFT00355	1163	0.89	0.37
PFT00361	1181	0.71	0.24
PFT00370	578	0.68	0.21
PFT00372	608	0.50	0.39
PFT00376	597	0.53	0.22
PFT00383	582	0.76	0.43
PFT00392	566	0.51	0.34
PFT77061	1417	0.68	0.19
PFT77103	1514	0.52	0.23
PFT77113	1514	0.77	0.27
PFT77114	1514	0.67	0.24
PFT77115	1515	0.71	0.20
PFT77154	1514	0.89	0.18
PFT77155	1514	0.91	0.32
PFT77163	1341	0.63	0.37
PFT77213	1515	0.61	0.27
PFT77216	490	0.99	0.16

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT77220	944	0.94	0.09
PFT77221	1514	0.72	0.33
PFT77557	490	0.20	0.12
PFT77629	1413	0.58	0.23
PFT77686	934	0.67	0.16
PFT77696	1422	0.94	0.22
PFT77700	1023	0.23	0.35
PFT77703	1515	0.29	0.08
PFT00017	490	0.39	0.03
PFT00022	490	0.73	0.12
PFT00053	489	0.21	0.14
PFT00055	490	0.85	0.17
PFT00058	490	0.54	0.10
PFT00131	490	0.67	0.19
PFT00133	490	0.84	0.10
PFT00146	489	0.28	0.29
PFT00164	489	0.99	0.15
PFT00167	490	0.89	0.12
PFT00180	490	0.95	0.17
PFT00247	490	0.21	0.27
PFT00275	490	0.66	0.29
PFT00285	490	0.84	0.23
PFT00288	490	0.83	0.26
PFT00296	490	0.23	0.18
PFT00298	490	0.34	0.06
PFT00302	490	0.21	0.07
PFT00309	490	0.72	0.20
PFT00321	490	0.52	0.35
PFT77060	490	0.96	0.23
PFT77220	490	0.94	0.08
PFT77686	490	0.69	0.18
PFT77688	490	0.99	0.09
PFT77700	490	0.20	0.25
PFT77801	430	0.44	0.04
PFT77802	427	0.67	0.22
PFT77803	479	0.45	0.13
PFT77804	469	0.77	0.34
PFT77805	352	0.11	-0.04
PFT77806	335	0.86	0.25
PFT77807	423	0.94	0.17

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT77808	471	0.73	0.15
PFT77809	517	0.88	0.06
PFT77810	405	0.96	0.27
PFT77811	342	0.64	0.21
PFT77812	479	0.83	0.16
PFT77813	478	0.49	-0.02
PFT77814	404	0.37	0.18
PFT77815	465	0.18	0.18
PFT77816	438	0.66	0.20
PFT77817	403	0.82	0.33
PFT77818	394	0.81	0.29
PFT77819	513	0.85	0.04
PFT77820	406	0.82	0.17
PFT77821	442	0.69	0.09
PFT77822	498	0.66	0.16
PFT77823	358	0.47	0.16
PFT77824	328	0.68	0.22
PFT77825	522	0.90	0.18
PFT77826	338	0.25	0.21
PFT77827	339	0.63	0.08
PFT77828	426	0.20	0.10
PFT77829	435	0.35	0.24
PFT77830	507	0.49	0.26
PFT77831	513	0.66	0.28
PFT77832	430	0.37	0.30
PFT77833	434	0.45	0.33
PFT77834	488	0.64	0.28
PFT77835	467	0.75	0.24
PFT77836	435	0.70	0.16
PFT77837	414	0.61	0.21
PFT77838	503	0.57	0.30
PFT77839	525	0.08	-0.04
PFT77840	523	0.74	0.39
PFT77841	350	0.67	0.29
PFT77842	398	0.45	0.26
PFT77843	385	0.35	0.15
PFT77844	507	0.55	0.17
PFT77845	334	0.78	0.22
PFT77846	493	0.59	0.10
PFT77847	475	0.75	0.29

Item ID	<i>n</i>	<i>p</i> Value	Point-Biserial Correlation
PFT77848	488	0.47	0.10
PFT77849	431	0.54	0.48
PFT77850	413	0.73	0.17
PFT77851	427	0.24	0.07
PFT77852	468	0.40	0.13
PFT77853	477	0.65	0.14
PFT77854	531	0.74	0.23
PFT77855	497	0.88	0.28
PFT77856	478	0.60	0.25
PFT77857	417	0.90	0.20
PFT77858	492	0.65	0.07

References

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