



Reliability of jump-and-reach, sit-ups, and one-leg stand tests among adults in Taiwan

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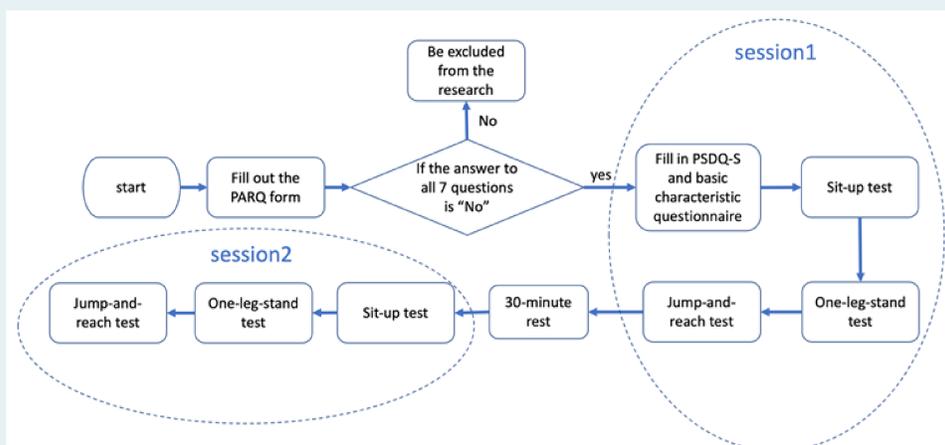
Background

- The index of every aspect in physical self-description questionnaire (PSDQ-S) is quite different between two genders in Qatar. (Bryna et al, 2019)
- The jump-and-reach test, sit-up test, and one-leg stand test have great reliability and validity. (Sofia et al, 2009)
- Men usually have more powerful lower extremities than women in American college. (Gong et al, 2012)

Purpose

- To know the reliability of the jump-and-reach, sit-up, and one-leg stand tests among adults in Taiwan.
- To check if men have more powerful LE than women.
- To know the correlation between the physical fitness and the physical self-concept.

Procedure



Method

- Subjects** : 10 males and 10 females between 18 and 48 years old (mean age 25.8 years)
- PARQ (Physical Activity Readiness Questionnaire)**
- PSDQ-S**
(The short version of Physical Self-Description Questionnaire):
Nine self-concept scales & Two global scales.

1. Activity	4. Coordination	7. Health	10. Self-concept
2. Appearance	5. Endurance	8. Sport	11. Self-esteem
3. Body fat	6. Flexibility	9. Strength	

- Sit-up test / One-leg stand test / Jump-and-reach test**



Result

Table 1. Test-retest reliability of three tests

	All Subjects					
	Test	Retest	SD _{pooled}	ICC	SEM	MDC ₉₅
Sit-ups (times)	30.00 ±10.60	25.45 ±10.13	10.49	0.868	3.81	10.56
Jump-and-reach (cm)	38.10 ±10.81	40.35 ±11.10	10.88	0.965	0.38	1.05
One-leg stand(s)	29.15 ±3.36	29.25 ±2.91	3.11	-0.154	3.34	9.25

Sit-up test and jump-and-reach test have excellent test-retest reliability, but one-leg stand test show poor reliability.

Table 2. Basic characteristics and health-related physical fitness (N=20)

	Male (N=10)	Female (N=10)	P
Age (years)	24.30 ±8.82	27.30 ±12.28	0.54
Exercise frequency/week	2.70 ±1.49	1.60 ±1.58	0.13
Exercise duration/time (min)	62.50 ±38.24	45 ±45.28	0.36
Weekly hours of exercise	3.55 ±3.30	2.10 ±2.42	0.28
Active/Sedentary	9/1	6/4	
Body composition			
Height (cm)	171.40 ±4.33	161.90 ±4.09*	0.00
Weight (kg)	69.50 ±11.65	55.80 ±6.18*	0.004
BMI (kg/m ²)	23.70 ±3.71	21.10 ±2.23	0.07

- There is significant difference between in height and weight between genders.

	Male (N=10)	Female (N=10)	p
Muscle strength and endurance			
Sit-ups (times)	33.00 ±10.72	27.00 ±10.12	0.21
Power			
Jump-and-reach (cm)	43.70 ±11.79	32.80 ±6.75*	0.02
Balance			
One-leg stand (sec)	30.00 ±0.00	28.30 ±4.72	0.26

- There is significant difference only in jump-and-reach test between genders.

- The index of most aspect in PSDQ-S scale has little statistical significance between two genders.
- The p-value of the appearance aspect almost approach the value of 0.05.

	Male (N=10)	Female (N=10)	p
PSDQ-S			
PSDQ-S total score	158.10 ±22.47	151.90 ±21.18	0.53
Health	23.80 ±4.85	26.60 ±3.26	0.21
Coordination	21.10 ±2.32	21.10 ±3.04	0.68
Activity	14.50 ±5.38	11.20 ±5.88	0.21
Body fat	9.90 ±4.41	10.80 ±4.21	0.65
Sport	10.00 ±4.03	11.90 ±2.08	0.20
Appearance	12.60 ±2.68	9.80 ±3.85	0.08
Strength	11.80 ±2.20	10.50 ±2.76	0.26
Flexibility	10.60 ±3.47	11.20 ±4.10	0.73
Endurance	11.70 ±2.98	10.10 ±2.60	0.22
Self-concept	12.00 ±2.75		0.36
Self-esteem	19.60 ±2.68	18.30 ±3.23	0.34

Table 3. Spearman Correlation between the three tests and PSDQ-S

	PSDQ-S total score	Health	Coordination	Activity	Body fat	Sport	Appearance	Strength	Flexibility	Endurance	Self-concept	Self-esteem
Sit-ups (times)	Spearman rho=0.35 P=0.14	Spearman rho=0.10 P=0.69	Spearman rho=0.21 P=0.38	Spearman rho=0.54 P=0.015*	Spearman rho=0.62 P=0.003*	Spearman rho=0.29 P=0.21	Spearman rho=0.17 P=0.48	Spearman rho=0.06 P=0.80	Spearman rho=-0.10 P=0.67	Spearman rho=0.27 P=0.24	Spearman rho=0.26 P=0.26	Spearman rho=-0.27 P=0.25
Jump-and-reach (cm)	Spearman rho=0.56 P=0.01	Spearman rho=0.09 P=0.72	Spearman rho=0.36 P=0.12	Spearman rho=0.49 P=0.029*	Spearman rho=0.44 P=0.054	Spearman rho=0.49 P=0.03	Spearman rho=0.24 P=0.30	Spearman rho=0.34 P=0.14	Spearman rho=0.02 P=0.93	Spearman rho=0.63 P=0.003*	Spearman rho=0.29 P=0.21	Spearman rho=0.05 P=0.84
One-leg stand(s)	Spearman rho=-0.02 P=0.99	Spearman rho=-0.44 P=0.05	Spearman rho=-0.18 P=0.46	Spearman rho=0.01 P=0.97	Spearman rho=0.28 P=0.24	Spearman rho=0.13 P=0.59	Spearman rho=0.12 P=0.62	Spearman rho=0.07 P=0.78	Spearman rho=-0.26 P=0.27	Spearman rho=0.35 P=0.14	Spearman rho=0.15 P=0.52	Spearman rho=-0.04 P=0.88

- Activity has moderately positive correlation with the sit-up and the jump-and-reach tests.
- Body fat has moderately positive correlation with the sit-up test, and almost reach significant correlation with the jump-and-reach test.
- Endurance has moderately positive correlation with the jump-and-reach tests.

Conclusion

- The jump-and-reach and the sit-up tests have good to excellent test-retest reliability, but the one-leg stand test is poor.
- Men have more powerful LE than women.
- Strength of abdominal muscles, standing balance, and the physical self concept comparable for men and women in Taiwan.

