

Reliability of the Physical Activity Enjoyment Scale Questionnaire in Indian College Girl Students Population

Tapesh Yadav¹, Dr Sandhaya Tiwari², Dr Yogesh Chander³

¹Research Scholar, Department of Physical Education and Sports Sciences, University of Delhi, B-block, Vikaspuri, New Delhi 110018.

²Professor, I.G.I.P.E.S.S., University of Delhi, B-block, Vikaspuri, New Delhi, 110018

³Associate Professor, Department of Education, BPS Mahila Vishwavidyalaya, Khanpur Kalan, Sonapat, Haryana, 131305

ABSTRACT The study focuses on evaluating the reliability and psychometric properties of the Physical Activity Enjoyment Scale (PACES-15) within a population of female college students in India. Given the linguistic and cultural diversity in the country, there is a need for Indian-specific insights into the scale. Data from 300 college female students were gathered to tailor the PACES-15 for the Indian context, particularly highlighting its adaptability for bilingual-speaking communities. This research addresses the gap in literature concerning the use of the PACES-15 in the Indian cultural milieu, emphasizing the importance of cross-cultural investigations to ascertain the scale's broad applicability in diverse cultural settings.

Keywords: Physical Activity Enjoyment Scale, PACES-15, psychometric evaluation, cross-cultural research, Indian college girl students, bilingual-speaking population.

Corresponding Author- Tapesh Yadav (tapeshyadav94@gmail.com)

INTRODUCTION

Physical activity is an essential component of a healthy lifestyle, and understanding the factors that influence an individual's enjoyment of physical activity is crucial for promoting sustained participation. The Physical Activity Enjoyment Scale (PACES) has been extensively used to assess the subjective pleasure associated with engaging in physical activities. It has consistently shown that enjoyment is a key determinant of physical activity behaviour, highlighting the importance of creating enjoyable physical activity experiences. Additionally, the PACES has identified various factors contributing to physical activity enjoyment, including intrinsic, extrinsic, and social aspects. While the PACES has been widely validated and used in several countries, there remains a gap in its adaptation to the Indian context, where diverse linguistic and cultural backgrounds exist. This study aims to fill this gap by adapting the PACES-15 into the Indian context, considering the potential bilingual-speaking population. The Physical Activity Enjoyment Scale (PACES) stands out as a pivotal tool in this pursuit. Developed by Kendzierski and DeCarlo in 1991, the PACES is designed to measure the degree of enjoyment and pleasure individuals derive from various physical activities. It provides a structured framework for individuals to self-report their subjective feelings while engaging in exercise, offering valuable insights into the emotional and psychological aspects of physical activity participation. This multidimensional instrument considers a range of factors contributing to enjoyment, encompassing both intrinsic elements related to the activity itself and extrinsic factors tied to external rewards and incentives.

In conclusion, the journey we embark upon in this research article is one of exploration, adaptation, and understanding. We recognize the pivotal role that enjoyment plays in shaping physical activity behaviour and its profound implications for public health. By identifying the determinants of enjoyment, investigating strategies to enhance it, and extending the reach of the PACES-18 into diverse cultural contexts, we hope to pave the way for more effective interventions and ultimately improve the health and well-being of individuals worldwide

PROCEDURE

Data were collected from 300 college female students of Indian origin, aged was minimum of 18 years old, from various academic courses. The study was conducted with the approval of experts and advisory committee members. The participants were selected randomly, and their family backgrounds and socioeconomic statuses were not considered during the data collection process. The study involved a detailed conversation with experts, advisory committee members, and a thorough literature review to justify the selection of the PACES for adaptation. The purpose of the study and the significance of the participants' contribution were explained to the subjects, emphasizing the investigation of physical activity enjoyment using the PACES.

STATISTICAL ANALYSIS

After the completion of data collection following statistical procedure will be employed for the calculation of the study. Descriptive statistics i.e., Mean, Standard Deviation on each subscale of the scale. The Statistical Package for Social Sciences (SPSS) was used to calculate Cronbach's Alpha to established the reliability.

FINDING OF THE STUDY

The purpose of this phase of the study was to test the reliability of the questionnaire. In this phase, statistical analysis was employed on all the fifteen statements. The participants completed the physical activity enjoyment scale was 300. But before conducting the reliability analysis, data screening must be done on each statement of the physical activity enjoyment scale using, mean and standard deviation, skewness, and kurtosis statistics as Field (2005) suggested values of the statements /variables should be normally distributed for measuring intercorrelations.

Table 1: Descriptive Statistics of Physical Activity Enjoyment scale

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Std. Error	Statistics	Std. Error
Q1	300	5.56	1.46	-1.001	.141	.536	.281
Q2	300	5.38	1.63	-1.012	.141	.224	.281
Q3	300	5.36	1.68	-.875	.141	-.178	.281
Q4	300	4.83	1.79	-.539	.141	-.675	.281

Q5	300	4.89	1.64	-.607	.141	-.219	.281
Q6	300	5.16	1.87	-.763	.141	-.517	.281
Q7	300	4.91	1.85	-.677	.141	-.598	.281
Q8	300	5.63	1.62	-1.314	.141	1.010	.281
Q9	300	4.98	1.78	-.783	.141	-.371	.281
Q10	300	5.61	1.49	-.973	.141	.225	.281
Q11	300	5.07	1.57	-.718	.141	.049	.281
Q12	300	4.97	1.80	-.622	.141	-.639	.281
Q13	300	4.81	1.85	-.593	.141	-.681	.281
Q14	300	4.85	1.69	-.531	.141	-.493	.281
Q15	300	4.44	1.91	-.241	.141	-1.123	.281
Q16	300	4.98	1.79	-.626	.141	-.544	.281
Q17	300	5.63	1.53	-1.284	.141	1.279	.281
Q18	300	3.57	1.90	-.224	.141	-1.080	.281
Valid N (listwise)	300						

Table 1 Shows the descriptive statistics for Physical activity enjoyment scale include all the eighteen statements and the mean value and standard deviation are 5.56 ± 1.46 , 5.38 ± 1.63 , 5.36 ± 1.68 , 4.83 ± 1.79 , 4.89 ± 1.64 , 5.16 ± 1.87 , 4.91 ± 1.85 , 5.63 ± 1.62 , 4.98 ± 1.78 , 5.61 ± 1.49 , 5.07 ± 1.57 , 4.97 ± 1.80 , 4.81 ± 1.85 , 4.85 ± 1.69 , 4.44 ± 1.91 , 4.98 ± 1.79 , 5.63 ± 1.53 and 3.57 ± 1.90 respectively.

Table 1 Also shows the values of skewness of the Physical activity enjoyment scale ranging from -0.224 to -1.314 (mean skewness value = 0.743). The value of Kurtosis of the Physical activity enjoyment scale ranged from 0.049 to 1.279 (mean kurtosis value = 0.580).

Both the values are less than the threshold, 3 for skewness and 7 for kurtosis (West, finch and Curron, 1995 cited in Zervas, Stavrou, and Psychountaki, 2007) so we may conclude that all the data scores set are Normally distributed.

Reliability Analysis of Physical Activity Enjoyment Scale and its Subscales

Reliability Analysis of Factor 1 (Passionate) of PACES

Analysis of reliability has been done with the help of Scale analysis which included Cronbach's Alpha, Item Analysis, Item total statistics, Inter-item Correlation of the total samples 300 for individual item subscales of Passionate/Pleasure of PACES was computed and the results are represented in the tables 2.

Table 2: Cronbach's Alpha Reliability Statistics of Physical Activity Enjoyment Scale Questionnaire sub scale with all five items of factor (1)

Cases	No. of Subjects	N(100%)	Cronbach's Alpha	NO. of items
Valid	300	100%		
Excluded	0	0.0	0.801	05
Total	300	100%		

Reliability is the measure of internal consistency of the constructs in the study. A construct is reliable if the Cronbach's Alpha value is greater than .70 (Hair et al., 2013).

We can see from the table. 2 that the Cronbach's alpha coefficient of reliability value obtained was 0.801 of Physical Activity enjoyment Scale, sub scale Passionate. The value indicates a good internal consistency for the factor 1 (Passionate) with the present sample of girl's college students studying in different college.

The statistics of each item of factor 1,(Passionate) of the Physical activity enjoyment scale were computed and the descriptive values of all the items represented below in table 3.

Table 3: Item statistics of item of Physical activity enjoyment scale

	Mean	Std. Deviation	N
Q1	4.8367	1.79464	300
Q5	4.9100	1.85293	300
Q10	4.9833	1.78335	300
Q11	4.8167	1.85324	300
Q17	4.9800	1.79546	300

The Item- total statistics of the Physical Activity enjoyment scale represented the value of scale mean if item deleted, scale variance if item deleted, correlated item- total correlation and Cronbach's Alpha if item deleted from the final column were shown in table 4.

Table 4: Item-Total Statistics of the sub scale Passionate of PACES 15

Items	Scale Mean If Item Deleted	Scale Variance if Items Deleted	Correlated Item- Total Correlation	Cronbach's if item Deleted
Q1	19.6900	31.211	.571	.766
Q5	19.6167	31.147	.547	.774
Q10	19.5433	29.981	.652	.741
Q11	19.7100	30.688	.573	.766
Q17	19.5467	31.132	.576	.765

As shown above in table.4 about the number of items the improvement in values if the particular item deleted from the scale, then the value of Cronbach's Alpha increases. But there was a marginal difference between the value of Cronbach's Alpha for Physical Activity Enjoyment scale for sub scale Passionate. Therefor need not to remove any of the items from the Questionnaire.

Inter-item correlation matrix for the Physical Activity Enjoyment scale questionnaire was computed and the results are represented in the table 5 given below.

Table 5: Inter -Item correlation matrix for the Physical Activity Enjoyment Scale

Items	Q1	Q5	Q10	Q11	Q17
Q1	1.000	.447	.504	.388	.415
Q5		1.000	.450	.396	.397
Q10			1.000	.512	.491
Q11				1.000	.462
Q17					1.000

The internal consistency (Cronbach's alpha) for the sub scale Passionate of Physical Activity enjoyment scale Questionnaire was $\alpha = 0.801$ with 05 items in the sub scale.

Reliability Analysis of Factor 2 (Revitalized) of PACES

Analysis of reliability has been done with the help of Scale analysis which included Cronbach's Alpha, Item Analysis, Item total statistics, Inter-item Correlation of the total samples 300 for individual item subscales of Revitalized of PACES was computed and the results are represented in the tables 6.

Table 6: Cronbach's Alpha Reliability Statistics of Physical Activity Enjoyment Scale Questionnaire sub scale with all five Items of factor(2)

Cases	No. of Subjects	N(100%)	Cronbach's Alpha	NO. of items
Valid	300	100%		
Excluded	0	0.0	0.765	05
Total	300	100%		

Reliability is the measure of internal consistency of the constructs in the study. A construct is reliable if the Cronbach's Alpha value is greater than .70 (Hair et al., 2013).

We can see from the table 6 that the Cronbach's alpha coefficient of reliability value obtained was 0.765 of Physical Activity enjoyment Scale, sub scale Revitalized. The value indicates a good internal consistency for the factor 2 (Revitalized) with the present sample of girl's college students studying in different college.

The statistics of each item of factor 2, (Revitalized) of the Physical activity enjoyment scale were computed and the descriptive values of all the items represented below in table 7.

Table 7: Item statistics of item of Physical enjoyment scale

	Mean	Std. Deviation	N
Q1	5.5600	1.46065	300
Q5	4.8933	1.64651	300
Q10	5.6133	1.49374	300
Q11	5.0733	1.57360	300
Q17	5.6367	1.53160	300

The Item- total statistics of the Physical Activity enjoyment scale represented the value of scale mean if item deleted, scale variance if item deleted, correlated item- total correlation and Cronbach's Alpha if item deleted from the final column were shown in table 8.

Table 8: Item-Total Statistics of the sub scale Revitalized of PACES

Items	Scale Mean If Item Deleted	Scale Variance if Items Deleted	Correlated Item- Total Correlation	Cronbach's if item Deleted
Q1	21.2167	21.033	.559	.714
Q5	21.8833	20.197	.524	.727
Q10	21.1633	20.331	.601	.699
Q11	21.7033	21.219	.480	.741
Q17	21.1400	21.084	.514	.729

As shown above in table 8 about the number of items the improvement in values if the item deleted from the scale, then the value of Cronbach's Alpha increases. But there was a marginal difference between the value of Cronbach's Alpha for Physical Activity Enjoyment scale for sub scale Revitalized. Therefore, no need to remove any of the items from the Questionnaire.

Inter-item correlation matrix for the Physical Activity Enjoyment scale questionnaire was computed and the results are represented in the table 9 given below.

Table 9: Inter -Item correlation matrix for the Physical Activity Enjoyment Scale

Items	Q1	Q5	Q10	Q11	Q17
Q1	1.000	.370	.517	.330	.434
Q5		1.000	.417	.430	.335
Q10			1.000	.362	.456
Q11				1.000	.314
Q17					1.000

The internal consistency (Cronbach's alpha) for the sub scale Revitalized of Physical Activity enjoyment scale Questionnaire was $\alpha = 0.765$ with 05 items in the sub scale.

Reliability Analysis of Factor 3 (Annoyance) of PACES

Analysis of reliability has been done with the help of Scale analysis which included Cronbach's Alpha, Item Analysis, Item total statistics, Inter-item Correlation of the total samples 300 for individual item subscales of Annoyance or Worry of PACES was computed and the results are represented in the tables 10.

Table 10: Cronbach's Alpha Reliability Statistics of Physical Activity Enjoyment Scale Questionnaire sub scale with all four Items of Factor(3)

Cases	No. of Subjects	N(100%)	Cronbach's Alpha	NO. of items
Valid	300	100%		
Excluded	0	0.0	0.741	05
Total	300	100%		

Reliability is the measure of internal consistency of the constructs in the study. A construct is reliable if the Cronbach's Alpha value is greater than .70 (Hair et al., 2013).

We can see from the table 10 that the Cronbach's alpha coefficient of reliability value obtained was 0.741 of Physical Activity enjoyment Scale, sub scale Annoyance. The value indicates a good internal consistency for the factor 3 (Annoyance) with the present sample of girl's college students studying in different college.

The statistics of each item of factor 3,(Annoyance) of the Physical activity enjoyment scale were computed and the descriptive values of all the items represented below in table 11.

Table 11: Item statistics of item of Physical enjoyment scale

	Mean	Std. Deviation	N
Q2	5.3833	1.63870	300
Q3	5.3600	1.68519	300
Q6	5.1633	1.87841	300
Q8	5.6300	1.62745	300
Q12	4.9700	1.80739	300

The Item- total statistics of the Physical Activity enjoyment scale represented the value of scale mean if item deleted, scale variance if item deleted, correlated item- total correlation and Cronbach's Alpha if item deleted from the final column were shown in table 12.

Table 12: Item-Total Statistics of the sub scale Annoyance of PACES

Items	Scale Mean If Item Deleted	Scale Variance if Items Deleted	Correlated Item- Total Correlation	Cronbach's if item Deleted
Q2	21.1233	25.252	.536	.685
Q3	21.1467	27.196	.383	.739
Q6	21.3433	22.594	.596	.658
Q8	20.8767	25.272	.541	.683
Q12	21.5367	24.972	.472	.709

As shown above in table 12 about the number of items the improvement in values if the item deleted from the scale, then the value of Cronbach's Alpha increases. But there was a marginal difference between the value of Cronbach's Alpha for Physical Activity Enjoyment scale for sub scale Annoyance. Therefore, no need to remove any of the items from the Questionnaire.

Inter-item correlation matrix for the Physical Activity Enjoyment scale questionnaire was computed and the results are represented in the table 13 given below.

Table 13: Inter -Item correlation matrix for the sub scale Annoyance of PACES

	Q2	Q3	Q6	Q8	Q12
Q2	1.000	.364	.489	.373	.308
Q3		1.000	.249	.277	.268
Q6			1.000	.518	.427
Q8				1.000	.370
Q12					1.000

The internal consistency (Cronbach's alpha) for the sub scale Annoyance of Physical Activity enjoyment scale Questionnaire was $\alpha = 0.741$ with 05 items in the sub scale.

Reliability Analysis of Physical Activity Enjoyment Scale Questionnaire

Analysis of reliability of the Physical Activity Enjoyment Scale Questionnaire (PACES) was computed with the help of item analysis and scale analysis and the overall reliability of the scale represented in the table 14 given below.

Table 14: The Cronbach's Alpha Reliability Statistics of the Final PACES Questionnaire

Cases	No. of Subjects	of (%)	N	Cronbach's Alpha	No. of items
Valid	300		100%		
Excluded	0		0.0	.857	15
Total	300		100%		

As shown in the above table 14 the Cronbach's Alpha reliability for the 15 items of Physical Activity Enjoyment Scale (PACES) with 3 sub-scales was found to be **0.857**, which reveals a very high level of the internal consistency of the questionnaire. So, the Physical Activity Enjoyment Scale questionnaire could be used with a similar population as selected in this investigation. So, it could be said that the Physical Activity Enjoyment Scale (PACES) with 15 items stand reliable for the study of female college going students.

Table 15: Item statistics of item of Physical enjoyment scale

	Mean	Std. Deviation	N
Q1	5.5600	1.46065	300
Q2	5.3833	1.63870	300
Q3	5.3600	1.68519	300
Q4	4.8367	1.79464	300
Q5	4.8933	1.64651	300
Q6	5.1633	1.87841	300
Q7	4.9100	1.85293	300
Q8	5.6300	1.62745	300
Q9	4.9833	1.78335	300
Q10	5.6133	1.49374	300
Q11	5.0733	1.57360	300

Q12	4.9700	1.80739	300
Q13	4.8167	1.85324	300
Q14	4.9800	1.79546	300
Q15	5.6367	1.53160	300

The Item- total statistics of the Physical Activity enjoyment scale represented the value of scale mean if item deleted, scale variance if item deleted, correlated item- total correlation and Cronbach's Alpha if item deleted from the final column were shown in table 16.

Table 16: Item- total statistics of the Physical Activity Enjoyment Scale

Items	Scale mean If item deleted	Scale variance If item Deleted	Corrected Item Total Correlation	Squared Multiple Correlation	Cronbach' s If Item Deleted
Q1	72.25	193.15 1	.517	.381	.847
Q2	72.42	194.00 5	.429	.344	.851
Q3	72.45	195.25 8	.386	.239	.853
Q4	72.97	185.83 9	.556	.383	.844
Q5	72.91	196.33 1	.373	.311	.854
Q6	72.64	187.38 6	.493	.464	.848
Q7	72.90	186.15 7	.527	.372	.846
Q8	72.18	189.47 9	.539	.400	.846
Q9	72.82	181.97 7	.646	.510	.839

Q1 0	72.19	190.44	.572	.445	.844
		6			
Q1 1	72.73	200.45	.299	.305	.857
		6			
Q1 2	72.84	190.34	.454	.335	.850
		2			
Q1 3	72.99	185.94	.532	.390	.846
		6			
Q1 4	72.83	185.37	.566	.405	.844
		9			
Q1 5	72.17	192.60	.501	.342	.848
	3	5			

As shown in the above table 16 about the number of items with the improvement in values if the particular item deleted from the scale, then the value of Cronbach's Alpha increases. But there was a marginal difference between the values of Cronbach's Alpha for final Physical Activity Enjoyment Scale questionnaire. Therefore, no need to remove any of the items from the final PACES scale.

Table 17: Test- retest correlation matrix between three trails of Passionate on PACES

Sub-scale	PASSIONATE. T1	PASSIONATE. T2	PASSIONATE. T3
PASSIONATE. T1	1.000	.909**	.715**
PASSIONATE. T2		1.000	.753**
PASSIONATE. T3			1.000

T= Trial

N=30

Table 17 clearly indicates that there was a high correlation between all the three trials of the subscale Passionate and the values ranged from **0.751 to 0.909**.

Table18: Test- retest correlation matrix between three trails of Revitalized on PACES

Sub-scale	Revitalized. T1	Revitalized. T2	Revitalized. T3
Revitalized. T1	1.000	.947**	.924**
Revitalized. T2		1.000	.950**
Revitalized. T3			1.000

T= Trial

N=30

Table 18 clearly indicates that there was a high correlation between all the three trials of the subscale Revitalized and the values ranged from **0.924 to 0.950**.

Table 19: Test- retest correlation matrix between three trails of Annoyance on PACES

Sub-scale	Annoyance. T1	Annoyance. T2	Annoyance. T3
Annoyance. T1	1.000	.853**	.856**
Annoyance. T2		1.000	.788**
Annoyance. T3			1.000

T= Trial

N=30

Table 19 clearly indicates that there was a high correlation between all the three trials of the subscale Annoyance and the values ranged from **0.788 to 0.856**.

Inter Trial Correlation between three trails of PACES

An inter item correlation between three trials of Physical Activity Enjoyment Scale Questionnaire was obtains and the result are presented in table.

Table 20: Inter-Trials Correlation Matrix for PACE

Item	T1.PACES	T2.PACES	T3.PACES
T1.PACES	1	.806**	.746**

T2.PACES		1	.825**
T3.PACES			1

The above table 20 clearly indicates that there was high correlation between three trials under physical activity enjoyment scale questionnaire and the values ranged from **0.746 to 0.825**.

The Alpha Coefficient of Reliability for three trials which were conducted after fifteen days duration between each trial on thirty subjects for physical activity enjoyment scale questionnaire for Indian college girl's students have been presented in table 21.

Table 21: Cronbach's Alpha Coefficient of Reliability for three trials of PACES

Cronbach's Alpha	N of Items
.887	3

The above table 21 indicates the Alpha Coefficient of Reliability for three trials of Physical Self-Description Questionnaire was found to be **0.887** which is a very good value. Therefore, it could be stated that the Physical Activity Enjoyment Scale Questionnaire could be very well be used on Indian girl's college students with minimum age of 17 years.

Conclusion:

The scale can help India build effective and lasting physical activity programmes by analysing enjoyment levels, identifying impediments, and customising treatments to cultural preferences. Individuals' quality of life may improve as a result of less sedentary behaviour, improved physical and mental health outcomes, and improved physical and mental health outcomes.

The Physical Activity Enjoyment Scale (PACES- 15) followed a detailed analysis based on that following valuable conclusions are drawn:

- The descriptive statistics of all the items are found satisfactory and with the help of skewness and kurtosis the normality of data checked. Based on that we concluded that the data is normally distributed for each item.

- The Reliability analysis shows the good internal consistency of each factor of PACES 15 and shows good value of Cronbach's alpha. The reliability confirmed all the factors are applied in Indian conditions

References:

- Alves, E.D. *et al.* (2018) 'Translation, adaptation, and reproducibility of the physical activity enjoyment scale (paces) and feeling scale to Brazilian Portuguese', *Sport Sciences for Health*, 15(2), pp. 329–336. doi:10.1007/s11332-018-0516-4.
- Anokye, N., Trueman, P., Green, C., Pavey, T., & Taylor, R. (2012). Physical activity and health related quality of life. *BMC Public Health*, 12(1). doi: 10.1186/1471-2458-12-624.
- Bentler, P.M. and Bonett, D.G. (1980) 'Significance tests and goodness of fit in the analysis of covariance structures.', *Psychological Bulletin*, 88(3), pp. 588–606. doi:10.1037/0033-2909.88.3.588.
- Booth ML, Bauman A, Owen N, Gore CJ (1997). Physical activity preferences, preferred sources of assistance, and perceived barriers to increased activity among physically inactive Australians. *Preventive medicine*. 1997 Jan 1;26(1):131-7.
- Bray SR, Born HA (2004). Physical activity and transition to university: Implications for health and psychological well-being. *American Journal of College Health*; 52: 181-188.
- Brodani J, Liparova S, Kral M (2016). The interaction of physical activity and the life quality of students in mid and late adolescence. *Physical Activity Review*; 4(1): 124-131. Doi: 10.16926/par.2016.04.15
- Brodani J, Siska L, Kovacova N (2018). Differences in physical activity, joy of movement and quality of life of boys and girls from secondary schools. In: Hubinak A. editor. *Current problems of physical education and sports VII*. Ruzomberok: Verbum; 25-35.
- Fritsch, J. *et al.* (2022) 'A study on the psychometric properties of the short version of the physical activity enjoyment scale in an adult population', *International*

Journal of Environmental Research and Public Health, 19(22), p. 15294.
doi:10.3390/ijerph192215294.

- Fu, Y. *et al.* (2016) ‘Comprehensive school physical activity programming and activity enjoyment’, *American Journal of Health Behavior*, 40(4), pp. 496–502. doi:10.5993/ajhb.40.4.11.
- Fuentesal-Garcia, J., Baena-Extremera, A. and Sáez-Padilla, J. (2019) *Psychometric characteristics of the physical activity enjoyment scale in the context of outdoor activity* [Preprint]. doi:10.20944/preprints201906.0058.v1.
- Monteiro, D. *et al.* (2017) ‘Translation and adaptation of the physical activity enjoyment scale (paces) in a sample of Portuguese athletes, invariance across genders nature sports and swimming’, *Brazilian Journal of Kinanthropometry and Human Performance*, 19(6), pp. 631–643. doi:10.5007/1980-0037.2017v19n6p631.
- Moore, J. B., Yin, Z., Hanes, J., Duda, J., Gutin, B., & Barbeau, P. (2009). Measuring enjoyment of physical activity in children: validation of the physical activity enjoyment scale. *Journal of applied sport psychology*, 21(S1), S116-S129.
- Murrock, C. J., Bekhet, A., & Zauszniewski, J. A. (2016). Psychometric evaluation of the physical activity enjoyment scale in adults with functional limitations. *Issues in mental health nursing*, 37(3), 164-171.
- Kendzierski, D. and DeCarlo, K.J. (1991) ‘Physical activity enjoyment scale’, *PsycTESTS Dataset* [Preprint]. doi:10.1037/t33669-000.
- Latorre Román, P.Á. *et al.* (2014) ‘Validity and reliability of Physical Activity Enjoyment Scale Questionnaire (PACES) in children with asthma’, *Journal of Asthma*, 51(6), pp. 633–638. doi:10.3109/02770903.2014.898773.
- Sucipto, S., Tarigan, B., Ma'mun, A., & Yudiana, Y. (2019). Content Validity of the Enjoyment Instrument in Physical Education Learning: A Field Study. In *3rd International Conference on Sport Science, Health, and Physical Education (ICSSHPE 2018)*. Atlantis Press.