

ORIGINAL ARTICLE

IJPHY

Validity and Reliability of Malaysian Sports Culture Index Instrument (MSCI'2020)

¹Gunathevan Elumalai²Mohd Salleh Aman²Mohd Nahar Azmi Mohamed³Vellapandian Ponnusamy³Shariffah Mamat⁴Tengku Fadilah Tengku Kamalden

ABSTRACT

Background: Malaysian Sports Culture Index (MSCI) is an evaluation system to measure the sports culture index among the Malaysian population. This study aims to validate and measure the reliability of the Malaysian Sports Culture Index questionnaire. The evaluation process needs a standard instrument to generalize the findings accurately for the targeted Malaysian population.

Methods: The Malaysian Sports Culture Index (MSCI'2020), an instrument built with five domains and eight indicators in a questionnaire by the Institute for Youth Research Malaysia (IYRES), Malaysia's Ministry of Youth and Sport. The five domains in this questionnaire are Participation, Passion for sports, Volunteerism, Expenditure, and Facility. The survey was conducted among 150 respondents selected randomly to get the reliability using the Cronbach Alpha test. This pilot study also selected five experts to validate the content by domains and indicators.

Results: The findings proved that this MSCI'2020 instrument has very high content validity, $r=.93$. The reliability analysis based on domain and indicator showed Domain Passion for sports $r=.91$; meanwhile, the two indicators also have high reliability. Indicator Attachment $r=.84$ and Indicator Dedication $r=.90$. In the second Domain, volunteerism showed $r=.91$; meanwhile, indicator sponsorship $r=.88$ and indicator volunteer service $r=.91$. The alpha value for Domain Expenditure is $r=.86$, and the domain facility also has a high validity of $r=.98$.

Conclusion: This pilot study proved that the Malaysian Sports Culture Index (MSCI'2020) questionnaire is valid and reliable for measuring the Malaysian population's sports culture index. The data collected for this research will give us meaningful feedback on the trend of participation in sports activities, physical exercise, and recreation activities as a culture among Malaysians. This study also indicates that this instrument can be adapted or used as a guideline for further studies.

Keywords: Facility, Participation, Passion for sports, Sports Expenditure, Sports Culture Index and Volunteerism.

Received 10th November 2021, accepted 26th February 2022, published 09th March 2022



www.ijphy.org

10.15621/ijphy/2022/v9i1/1146

¹Sultan Idris Education University, Faculty of Sports Science and Coaching, 35900 Perak, Malaysia.

²University Malaya, Sports Centre, 50603 Kuala Lumpur, Malaysia.

³Ministry of Youth and Sports, Malaysia, 62570 Putrajaya.

⁴University Putra Malaysia, Faculty of Education, 43400, UPM Serdang, Malaysia.

CORRESPONDING AUTHOR

²Mohd Salleh Aman

University Malaya, Sports Centre, 50603 Kuala Lumpur, Malaysia.



INTRODUCTION

Physical fitness is vital in our daily life. Physical fitness can be developed and maintained through various sports activities, exercises, and recreational activities. The level of participation in sports, exercises, and recreational activities could indicate the trend and sports culture among the country's population of the Singapore Sport Index [17]. Countries such as the United Kingdom, United States, New Zealand, Australia, and Singapore measure their pupils' sports index by the level of participation and activeness in any physical activities Institute for Youth Research Malaysia [8,9].

In 2018, the Malaysian Ministry of Youth and Sports started research to determine the trend and sports culture index among the Malaysian population. This research was conducted by Institute for Youth Research Malaysia (IYRES). As a result, the first Malaysian Sports Culture Index was successfully developed in 2018. The Malaysian sports culture index mainly focused on five domains and eight indicators. The five domains are participation, Passion for Sports, Volunteerism, Expenditure, and Facility. In addition, participation and activeness were evaluated based on World Health Organization's recommendation. The 2018 findings become a benchmark for this study conducted every year since 2018 to see the progress and development to make sports culture among multiracial Malaysian people [12]. This study was designed and conducted based on three primary policy papers. The Eleventh Malaysian Planning (2016-2020), The National Sports Policy 2009, and Strategic Plan for sports development by the Malaysian Ministry of Youth and Sports (2016-2020).

Eleventh Malaysian Planning (2016-2020) focuses on increasing the number of participants in sports activities by implementing a few new ideas such as sports for all, high prestige sports, and the development of the sports industry. These efforts will encourage Malaysian people to participate and compete to make it a trend and culture. Based on this policy, IYRES defines the Malaysian sports culture index as a tradition of sports activities, exercises, and active recreational activities by considering the Malaysian ecosystem. The National Sports Policy (2009) also focuses on sports development and makes it one of the four strategies in their policy. The sports development element consists of sports for all, talent identification (TID), develop the facility for high prestigious games, and the sports ecosystem. The Malaysian Ministry of Youth and Sports (2016-2020) strategic plan for sports development was designed to continue the National Sports Policy. This strategic plan focuses on researching and developing sports activities to make sure sports become a culture in our daily lives.

Sports Culture Index is the national Key Performance Indicator (KPI) to measure and report the achievements of the sports culture level of the Malaysian Population. IYRES designed and developed the MSC1'2020 instrument by adapting the previous questionnaire used in 2018 and 2019. The new questionnaire was modified with a few changes according to the current situation and sports ecosystem. The modification includes demographical factors,

additional information for participation, revised items in passion for sports, volunteerism, expenditure, facility, and esports based on current requirements and literature reviews. As a result, the revised questionnaire should be validated and found reliable due to the modification [11].

The validity and reliability of the instrument are essential and interrelated to collecting valid and reliable data in any research. The validity of a research instrument refers to the degree to which evidence and theory support the interpretations of the test score for the study. Cohen [5], and Pallant [15], suggested the validity value of more than .80 for new measuring instruments, but Polit & Beck [7] suggested .78 and above is also acceptable. According to Kane [10], validity is not a property of the measurement instrument but instead refers to its proposed interpretation and needs. Validity must be considered each time an instrument is used. An instrument may be validated for a specific population and purpose, but that does not mean it will work across all populations and for all purposes [7].

Usually, if previous studies collected validity evidence for the instrument for a similar purpose and with a similar population for continued research, researchers can use the existing validity evidence. But, the use of current validity of instruments usually allows the collection of less validity data than a newly validated instrument [14]. Therefore, it is essential to note that, even if an instrument has a long history of established use, this alone does not mean that it provides adequate validity evidence to use in the current study [2].

Researchers should identify all the different types of validity evidence and evaluate whether it is appropriate for the current situation, targeted population, and purpose of the study. For example, suppose there is any modification in the instrument. In that case, researchers must find the new validity to feel confident applying the instrument for their intended purpose of study and interpretation of the data collected accurately [16].

According to Council on Measurement in Education [14], reliability is about consistency when repeated testing procedures. Theoretically, reliability can be defined as the ratio between the true variance in the construct among the participating respondents. It is more to the respondents' latent, unobserved characters or attitudes that the researcher aims to interpret through data collected by the measurement instrument. Reliability itself cannot be directly measured and must be estimated. One way to estimate reliability is to distribute the instrument to the same category of respondents and measure using the Cronbach Alpha test. Coefficient alpha provides a means to estimate reliability for an instrument based on a single distribution. The calculation of coefficient alpha is based on the assumption that all items in a scale measure the same construct. If the average correlation among items on a scale is high, then the scale is said to be reliable [3]. Usually, a Cronbach alpha value of .60 to .80 is sufficient, but .80 and above will be more acceptable and reliable for collecting data from a large number of respondents [6].

The quality of measurement instruments is vital to all kinds of research. Although various terms are used in

different disciplines, the underlining principles and problems are the same across disciplines. In the discourse about survey quality, validity and reliability are the key concepts for measurement quality. Validity refers to whether a measurement instrument measures what it is designed to measure, and reliability is the consistency of the instrument's measurements [3]. Based on the needs and purpose of the study, IYRES decided to validate the MSCIP2020 questionnaire and measure the reliability due to the modification.

METHODS

This pilot study used a modified MSCIP2020 questionnaire conducted among 150 respondents. All the respondents were selected randomly to answer the survey. The sample size for the reliability test is more the requirement. Normally 30 to 50 respondents are enough to conduct a reliability test [4]. Researchers purposely selected 150 respondents to ensure the findings meet the objective based on Morrow, Jackson, Disch, and Mood [13]. They suggested a minimum of 30 respondents would be appropriate for a reliability study. The modified MSCIP2020 questionnaire has six constructs called the domain and eight indicators, including esports. The participation domain will provide information regarding sports, exercise, and recreational activities with duration and time spent. Domain passion for sports consists of 16 items under two indicators: attachment and dedication. Domain volunteerism with eight items with two indicators called sponsorship and voluntary services. Domain expenditure nine items and facility 16 items. These items will provide empirical data for estimating the Malaysian Sports Culture Index year 2020.

Five experts also validated the Malaysian Sports Culture Index measuring instrument. All the experts were selected based on their qualifications, experience in Sports Science, and involvement in related research for more than ten years. The content validity is measured based on experts' evaluation using a scale of 1 to 10 for each item under the respective domain and indicators. The questionnaire was finalized with the experts' comments and suggestions before data collection for the reliability test. The data were collected in Selangor, Kuala Lumpur, and Putrajaya through 10 enumerators registered with IYRES. All of them were trained by IYRES to collect data according to the requirements and purpose of the study. They randomly select the respondents based on criteria given by researchers. Respondents were divided based on demographical factors such as ethnicity, gender, age, marital status, residential location, and academic qualification. All the data were analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Reliability assessment was done by using Cronbach's alpha coefficient test.

RESULTS

This study aims to obtain the content validity and reliability of the Malaysian Sports Culture Index measuring instrument before the actual research was conducted throughout the country. The study's findings showed that the MSCIP2020 questionnaire was valid and suitable for measuring the Sports Culture Index among the Malaysian

population. Five experts' mean value for validity is $r=.93$ (table 1). It's proven that this questionnaire has high content validity based on the suggestion given by Cohen [5] and Pallant [15].

Analysis using Cronbach's alpha coefficient test also showed the Cronbach alpha value for Domain Passion for sports $r=.91$; meanwhile, the indicator attachment $r=.84$ and dedication $r=.90$. Domain Volunteerism showed $r=.92$, while indicator sponsorship $r=.88$ and indicator voluntary services $r=.91$. The other 2 Domains, Expenditure $r=.86$ and Domain facility $r=.98$. Overall, the instrument has high reliability with $r=.90$ (Table1). This result proved that the MSCIP2020 questionnaire has high reliability for all the domains and indicators [3,6].

Table 1: Cronbach alpha value for reliability MSCIP2020 Instrument

Domain & Indicator	Cronbach's Alpha Value	Number of Items
Domain Passion for Sports	.91	16
Indicator Attachment	.84	9
Indicator Dedication	.90	7
Domain Volunteerism	.92	8
Indicator Sponsorship	.88	4
Indicator Volunteer services	.91	4
Domain Expenditure	.86	9
Domain facility	.98	16
Overall Reliability (MSCIP2020)	.90	49

DISCUSSION

The current study aimed to assess the content validity and reliability of the Malaysian Sports Culture Index measuring instrument called the MSCIP2020 questionnaire. The findings indicate that this adapted and the modified instrument has high content validity and reliability. Researchers in this MSCIP2020 questionnaire do the modification to fulfill the requirement of reliable data collection throughout the country to represent the Malaysian Population. In addition, researchers made some corrections to demographical factors, language, and clarity of items based on the experts' comments and suggestions. The effort to validate and measure the reliability of this MSCIP2020 questionnaire by IYRES researchers is a good move rather than using the older version. Researchers have begun adopting existing measurement instruments in recent years because they have already been validated and tested for reliability [1,7,18,19]. In addition, young researchers prefer to do so due to the researcher's increased recognition and wide usage of the instrument. But based on National Council on Measurement in Education [14], the use of existing validity of instruments usually allows the collection of less valid data compared to a newly validated instrument. Therefore, even though the instrument has been recognized and generally accepted, it should be validated and measured for reliability according to the

study's current purpose and targeted population.

CONCLUSION

Research using survey methods is only appropriate when researchers have valid evidence within their particular context. Collecting data using questionnaires from many respondents typically has some limitations. The validation and measuring reliability process will reduce the errors in getting a valid dataset from the respondents. Researchers from IYRES understand the risk of a poor quality measurement instrument. Therefore, the validity and reliability of this MSCIP2020 questionnaire are fundamental and rigorous in this study. The Malaysian Sports Culture Index measuring instrument should be free from errors in the data collection process because it will disclose the level and trend of participation in sports, exercise, and recreational activities. The overall outcome of this research will show the index of sports culture among Malaysian for the year 2020. This index will determine the next move towards making Malaysia a sporting Nation by 2025, inspired by our Youth and Sports Ministry.

ACKNOWLEDGEMENT

The authors are grateful to the Malaysian Institute for Youth Research (IYRES), Ministry of Youth and Sports Malaysia, for the financial and expert support in conducting this study and publication.

REFERENCE

- [1] Andrews SE, Runyon C, Aikens ML. The Math-Biology Values Instrument: Development of a Tool to Measure Life Science Majors' Task Values of Using Math in the Context of Biology. *CBE Life Sci Educ.* 2017;16(3):ar45. doi: 10.1187/cbe.17-03-0043.
- [2] Anthony R. Artino Jr., Jeffrey S. La Rochelle, Kent J. Dezee & Hunter Gehlbach. Developing questionnaires for educational research: AMEE Guide. *Medical Teacher*, 2014; 36 (6): 463-474.
- [3] Bandalos, D. L. "Reliability and Validity," in *Measurement theory and applications for the social sciences*, 1st ed, New York: Guilford, 2018, pp. 1-661.
- [4] Baumgartner, T. A., Jacson, A. S., Mahar, T. M. and Rowe, A. R. "Reliability" in *Measurement for evaluation in physical education and exercise science*. 2006; 8th ed.
- [5] Cohen, J. (1968). Weighted kappa: Nominal scale agreement provision for scaled disagreement or partial credit. *Psychological Bulletin.* 1968; 70(4): 213-220. <https://doi.org/10.1037/h0026256>
- [6] Creswell, J.W. "Quantitative Methods" in *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 3rd ed, Sage Publications., 2009, pp.1-270.
- [7] Denise F. Polit Cheryl Tatano Beck. The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Res Nurs Health.* 2006;29(5):489-97. doi: 10.1002/nur.20147.
- [8] Institute for Youth Research Malaysia, "Malaysian Sports Culture Index 2018," Ministry of Youth and Sports, Malaysia, 2018.
- [9] Institute for Youth Research Malaysia, "Malaysian Sports Culture Index 2019," Ministry of Youth and Sports, Malaysia, 2019.
- [10] Kane, M. T. Explicating validity. *Assessment in Education: Principles, Policy & Practice.* 2016; 23 (2): 198-211.
- [11] K. Reba, Z. Argaw, B. Walle, and H. Gutema. Validity and Reliability of the Amharic Version of the World Health Organization's Quality of Life Questionnaire (WHOQOLBREF) in Patients with Diagnosed Type 2 Diabetes in Felege Hiwot Referral Hospital, Ethiopia. *Journal of Diabetes Research.* 2019;1:1-6.
- [12] Department of Policy Makers, "Malaysian Sports Policy," Ministry of Youth and Sports, Malaysia, 2018.
- [13] Morrow, J. R. Jr., Jackson, A. W., Disch, J. G. and Mood, D. P. *Correlation and Prediction in Measurement and evaluation in human performance*, Champaign, IL: Human Kinetics, pp. 1-360, 2005.
- [14] National Council on Measurement in Education, "Standards for Educational and Psychological Testing" American Educational Research Association: USA, 2014.
- [15] Pallant, J. "Reliability Test" in *SPSS Survival Manual: A Step By Step Guide to Data Analysis Using SPSS Program*, 6th ed, McGraw-Hill Education. 2016, pp. 1-450.
- [16] Reeves, T. D., & Marbach-Ad, G. Contemporary test validity in theory and practice: A primer for discipline-based education researchers. *CBE— Life Sciences Education.* 2016; 15(1):235-245.
- [17] Singapore Sport Index, "Participation Trends 2015. Live Better Through Sports" Market Insight and Consumer Analytics, pp. 1-28, 2016.
- [18] Wachsmuth, L. P., Runyon, C. R., Drake, J. M., & Dolan, E. L. Do biology students really hate math? Empirical insights into undergraduate life science majors' emotions about mathematics. *CBE—Life Sciences Education.* 2017; 16 (3):1-10, 2017, DOI: [org/10.1187/cbe.16-08-0248](https://doi.org/10.1187/cbe.16-08-0248).
- [19] Wiggins, B. L., Eddy, S. L., Wener-Fligner, L., Freisem, K., Grunspan, D. Z., Theobald, E. J., & Crowe, A. J. ASPECT: A survey to assess student perspective of engagement in an active-learning classroom. *CBE— Life Sciences Education.* 2017; 16(2): 1-13.